A COMPARATIVE ANALYSIS OF THE COMPETITIVENESS OF CONSTRUCTION FIRMS: ON FEDERAL HIGHWAY PROJECT IMPLEMENTATION

A THESIS SUBMITTED TO THE COLLEGE OF BUSINESS AND ECONOMICS, ADDIS ABABA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF EXECUTIVE MASTER OF BUSINESS ADMINISTRATION (EMBA).

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BY

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DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the thesis have been duly acknowledged.

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CERTIFICATION

This is to certify that Mr. Ahmed Abubeker has conducted the study on the topic of "A Comparative Analysis of the Competitiveness of Construction Firms: Federal Highway Projects**"** under my guidance and supervision.

Advisor Name: Jemal Mohammed (PhD)

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Abbreviations and Acronyms

CIRC	Construction Industry Review Committee
CMAR	Construction Management at Risk or
ERA	Ethiopian Roads Authority
ETB	Ethiopian Birr
KCIs	Key Competitiveness Indicators
KCCIs	Key Contactors‟ Competitiveness Indicators
LCC	Local Construction Companies
LCF	Local Construction Firms
RIV	Relative Importance Value
RSDP	Road Sector Development Programs
TCV	Total Competitiveness Value

Abstract

The understanding of firms' competitiveness and assessing Key Competitiveness Indicators has been a major issue for construction industry. Several attempts have been made in relation to this issue elsewhere although little attention has given to local construction firms' competitiveness in Ethiopian construction industry. The study was aimed at identifying key competitiveness Indicators (KCIs) for construction firm in the context of Ethiopian Federal Highway construction projects and assessing its association between KCIs and performance of the local construction firms. The finding of the study shows that there is a significant association between construction firm's competitiveness and key indicators such as; technology and innovation, marketing capability, financing capability, organizational management skills, and human resources strength. However, no statistically significant association was found between the construction firm's competitiveness and corporate image. The major objective of *the research is to make assessment of Competitiveness of Local Contraction Firms (LCFs) and find out solutions that have potential of filling the competitiveness gaps of LCFs. The study took only views or perceptions of professionals from ERA, however, views of private construction firms, and consulting companies were not considered.*

***Key words**: Key Competitiveness Indicators, Competitiveness, and Local Construction Firms*

CHAPTER 1: INTRODUCTION

1.1 Study Background

It is paramount important to understanding organization's competitiveness for the success of a business. Several studies have been extensively conducted on competitiveness by many researchers (Porter, 1980, and Tan, 2008). With increasing higher users‟ requirements, environmental awareness and limited resources on one side, and high competition for construction business marketplace on the other side, contractors have to be capable of continuously improving their performance (Enshassi et al. 2009).

Many literatures have covered the subject of contractors‟ competitiveness but most of them are focusing on tender price with less attention to evaluating a contractor's performance attributes. Price competitiveness is still popular as a mechanism for awarding contracts to contractors. However, the recognition that a quality service cannot be obtained if only the lowest tender is accepted has led to a growing urge for a shift from „lowest- price wins‟ to „multi-criteria selection‟ practice in the contractor selection process (Tan, 2008).

The construction industry is complex in its nature because it comprises large numbers of parties as owners (clients), contractors, consultants, stakeholders, and regulators. Despite this complexity, the industry plays a major role in the development and achievement of society‟s goals (Enshassi et al., 2009).

It is a fundamental economic sector which permeates most of the other sectors as it transforms various resources into constructed physical economic and social infrastructure necessary for socio-economic development. It holds the process by which the physical infrastructure are planned, designed, procured, constructed or produced, altered, repaired, maintained, and demolished (MoCUD, 2012). This industry is a vital element of the economy and has a significant effect on the efficiency and productivity of other industry sectors. One cannot think of widespread investment in manufacturing, agriculture, or service sectors unless the construction results of infrastructure facilities are in place. In some of the developing countries, the growth rate of construction activity outstrips that of population and GDP (Jemal, 2015).

Thus, the realization of longer vision partly depends on the existence of a reliable and competitive local construction industry that is capable of delivering quality services and value for money in the development and maintenance of the physical infrastructure. Since 2005 there have been a number of initiatives geared towards fostering the local construction industry in Ethiopia. Nevertheless, the state of the local construction industry has remained poor because of performance constraints include inadequate capacity of local contractors and consultants, inadequate public sector delivery capacity, corruption, erratic work opportunities, use of outdated technologies and practices, lack of effective supporting policies and poor state of the economy (MoCUD, 2012).

Within the above mentioned constraints and challenges , road transport provides the means for the movement of people, utilization of land and natural resources, improved agricultural production and marketing, access to social services, and opportunities for sustainable growth. The Government of Ethiopia has placed increased emphasis on improvement of the quality and size of road infrastructure in the country since it recognizes the importance of the road transport in supporting social and economic growth and its role as a catalyst to meet poverty reduction targets *(ERA, 2013*).

Participation of the local contraction industry has increased, in terms of both the value and number of projects, over the last fifteen years of the RSDP. Some local contractors are now taking relatively bigger contracts, with values amounting to as much as ETB 1.2 billion *(ERA, 2013*).

1.2 Problem Statement

Competitiveness has received due attention from scholars, researchers and practitioners across many industries. In the construction sector study on competitiveness has got concerns on large firms with high turnovers and becomes a center of focus both locally and internationally. Its variability is great from nation to nation, industry to industry, and project to project. Competitiveness has become of paramount importance for local construction contractors (LCC) in realizing business growth and continuous improvement in performance. For example, the recent trend in Uganda‟s construction industry indicates that nearly all big construction projects are not executed by LCC because of low level of their competitiveness in the construction

industry (Samson, et al., 2010).

International publications on Local Construction Firms competitiveness have been conducted by several researchers, thus, are barely applicable to countries where the specific studies have been conducted. So far, in the context of local construction industry in Ethiopia researchers have done and focused their assessment mainly on contractors' project performance in terms of quality, cost, and project schedule (Abubeker., 2015. Hailemeskel., 2013, and Asteway., 2008), with little or no attention given to local firms' competitiveness. The decreasing trend of construction output in recent years reduced the pace of change and improvement in the industry. More intensive competition in the market and long term goals to improve the performance of the industry in an effective and healthy way demand change in the local construction industry (Tan, 2008).

Construction industry comprises large numbers of parties as owners (clients), contractors, consultants, in addition to stakeholders, and regulators which make the industry complex in its nature. The industry plays a major role in the development and achievement of society's goals, and is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialized countries. However, many local construction project reports poor performance due to a variety of evidential project-specific causes such as: unavailability of materials; excessive amendments of design and drawings; poor coordination among participants, ineffective monitoring and feedback, and lack of project leadership skills (Enshassi et al., 2009).

Local contractors have still low capacity due to weak resource base and inadequate experience; erratic work opportunities; inappropriate contract packaging of works which favor foreign firms in donor funded projects. They also lack institutional mechanisms for managing finance, equipment, staff development, standards of safety and occupational hazards on construction sites (Hailemeskel., 2013). The rationale for the development of Local Contractors is that they contribute significantly to job creation, poverty alleviation, decreasing the welfare burden and absorbing low-skilled workers. If the industry's capacity building efforts cannot create enduring institutions, efforts remain futile exercises.

Given the above gap, measurement of competitiveness and a method for identifying Key Competitiveness Indicators are needed for helping contractors to participate actively in the industry and contribute to the healthy development of the local construction market by meeting

their project objectives in terms of cost, quality, and time.

Hence this research is planned to find out the Local Construction Firms' Key Competitiveness that are engaged in Federal Highway projects and help them meeting their project objectives in terms of cost, quality, and time and client satisfaction. And it leads to the development of the background of this research, which addresses the following major research questions.

Q1. What are key Contractors' Competitiveness Indicators of local contraction firms in execution of Federal Highway Projects?

Q2. How these key competitiveness factors affect construction firms' performance in Federal Highway Construction projects?

1.3 Objective of the Study

The major objective of the research is to make assessment of Competitiveness of Local Contraction Firms (LCFs) and find out solutions that have potential of filling the competitiveness gaps of LCFs. With this, Ethiopian Roads Authority as work client further looks into more options or alternatives that can attract more competent contractors for project execution. This objective can be achieved by sorting out construction firms' competitiveness indicators. Firms get opportunity to analyze points on which they have strengths and weakness in their business endeavors. Once the study is completed, it could help contractors to formulate their competitive strategies by considering necessary factors affecting their competitiveness both internally and externally. The following specific aims were considered to accomplish the stated research objective:

- To identify key competitiveness indicators and assess contractors 'competitiveness.
- To examine competiveness factors and local construction firms performances.
- To develop a competitive model and use the model to help contractors develop their competitive strategies in the local construction market.

1.4 Scope of the Study

This study attempts to carry out research on competitiveness of Local Construction Firms that have been engaged in construction of Federal Highway Projects in Ethiopia. Participants in the study are drawn from Ethiopian Roads Authority who are believed to have information and exposure to the area of interest by the researcher. Relevant departments of the Authority, namely, procurement, contract administration, quality control, and planning work units participated as they represent clients for opinion and availing relevant data.

The study, however, does not review Foreign Construction Firms' Competency and compare them with that of local construction firms.

1.5 Significance of the Study

Most studies that have been carried out by many researchers focus on construction project performances rather than measuring competitiveness of firms. It is very rare that local researches made attempts to identify Key Competitiveness Indicators in the road sector. Hence, the study has the following practical and theoretical significances:

a) Practical & Policy Significances

- It will be expected to add value towards streamlining the selection criteria used by ERA to assess firms' competitiveness.
- Local Construction Firms will be benefited largely by knowing those major competitiveness indicator gaps and mechanisms of minimizing them. They will learn on what key factors they should focus in their efforts to develop a competitive strategy to achieve better performances in road construction projects.
- ERA as client of various projects will be getting important information which could help the organization for the successful implementation of its future projects through policy intervention and capacity building initiatives.
- The study will be also helpful in application of theoretical training to policy makers to address practical problems in the sector, and to provide insights to today's and the future managers on the importance of firms' competitiveness for road construction project completion.

b) Theoretical Significance

- As a result of this research, model is developed from which researchers in construction sector, specifically, in road projects get important inputs for further understanding of firms' competitiveness.
- Moreover, theories that can be applicable to the industry could be presented for further research at higher education and construction industry. It is not exhaustive and encourages further researches to be done on the area.

1.6 Limitation of the Study

- The study only looked at those indicators affecting firms' competitiveness in federal road construction projects but not regional roads construction projects.
- The study also took only views or perceptions of professionals from ERA, however, views of private construction firms and consulting companies were not considered.
- Moreover, views of other private companies that are engaged in other construction businesses were not included in this study.

1.7 Organization of the Thesis Paper

This paper has been organized into five major chapters as shown below.

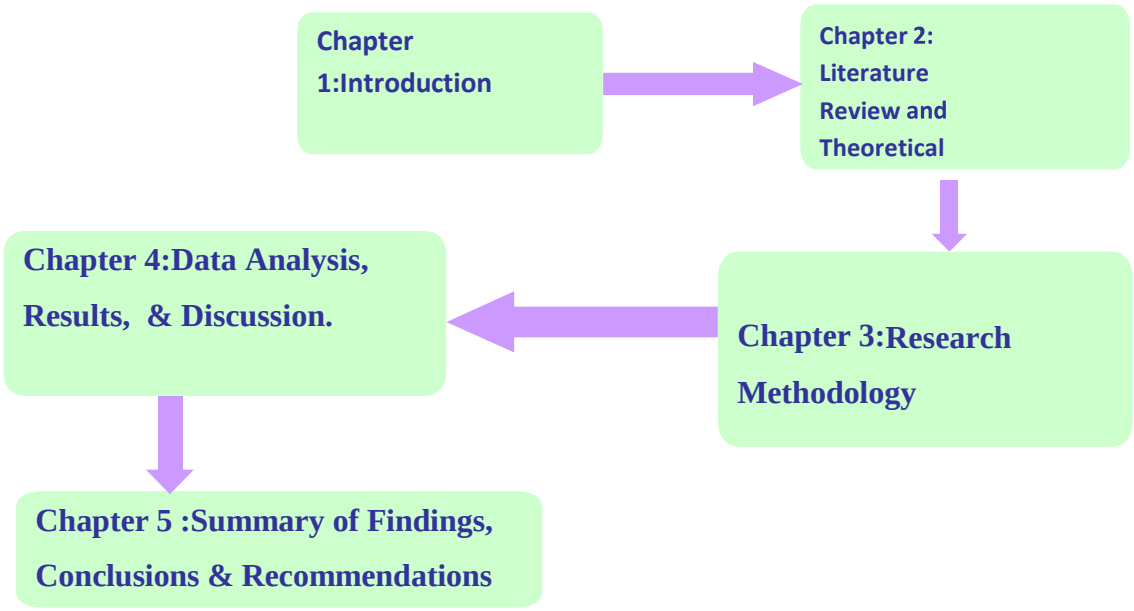


Figure 1 Flow chart of organization of the paper

Chapter 1 presents the background of this research, the objectives to be achieved, the scope and limitation of the study, and significance of the study.

Chapter 2 presents the literature review on the basic issues of competitiveness, including the competency models, Porter's three generic competitive strategies, levels of competency, construction firms' competency development strategies, ERA's qualification criteria and project performances. This comprehensive literature review leads to the formulation of conceptual model of competitive strategy for construction business. This conceptual model provides the framework of the research and its implications in the construction industry are also discussed in this chapter.

Chapter 3 introduces the research methodology to be used in this study. Accordingly, research design sampling procedures and sample size, data source and data collection methods, reliability test, measurement of variables, data analysis methods, and ethical considerations are discussed. Chapter 4 presents data analysis, results and discussion of the study.

Chapter 5 presents conclusion and recommendations. Also recommendations for future research are included in the last chapter.

CHAPTER 2: LITERATURE REVIEW AND THE CRITICAL FRAME WORK

2.1 Introduction

In order to have clear understanding of the study, efforts have made to organize concepts, models and principles that are related to the subject matter of the study. In the meantime, review on competitiveness, competence , competency, core competence, performance, and other important issues are also addressed to increase level of understanding and avoid confusions. Models are discussed and efforts are made to relate the subject of the research with various literatures written in relation to construction industry. The literature review leads to the development of a theoretical framework of the thesis and further application in the construction industry.

The level of growth and performance of many Local Construction Companies (LCC) are still very low and it affected their competitiveness in the construction industry. One can notice that the current level cannot offer them good opportunity to compete and equally manage the associated risk at a global scale. The LCC are still experiencing constraints that have continued to limit their growth. If this problem persists for a long time, the industry may fail to have in place a sustainable civil works contracting capacity to construct and maintain civil infrastructure and yet continue relying on foreign companies (Samson. Henry. and Dan., 2010).

2.2 Objectives of Construction Industry

Improving the capacity and effectiveness of the construction industry to meet the national economic demand for buildings and other physical infrastructure facilities and to support sustainable national economic and social development are the major construction industry objectives. To meet these objectives: (a) there has to be increased value for money to industry clients as well as environmental responsibility in the delivery process; (b) the viability and competitiveness of domestic construction enterprises should be ensured; and (c) optimization of the roles of all participants and stakeholders through process, technological, institutional enhancement and strategic human resource development should be also taken into account. The development and then execution of a project is both a mission and an adventure. A project task has to be accomplished within a scheduled time, specified quality, and defined budget (Hailemeskel, 2013).

2.3 Road Construction Industry in Ethiopia

In 17th and 18th centuries that there were a number of small roads trails and foot paths, in addition to the traditional shoulder routes, animals like mules, donkeys and horses and camels were used as a means of transportation in Ethiopia. It was believed that planned road construction efforts were made in the 18th century during the reign of Emperor Tewodros although the technology was primitive. Emperor Yohannnes IV, who succeeded Tewodros, was engaged in road building but due to the danger of invasion by Egyptians, Derbush and Turkish the Emperor was not able to achieve his desires *(ERA, 2013*).

A great success was made in road construction prior to the second Italian occupation i.e. between the years 1896 and 1936 and Emperor Menilik was said to be a successful road builder. In 1903 the road from Eritrea to Addis Ababa and the road from Addis to Addis Alem were built and it was during this time that the first Asphalt roads appeared in Addis. During the Italian occupation roads were built by them and they were established to meet the requirements of the Military control rather than to promote the overall development of the country‟s economy. In addition, the roads lacked most of the modern location, design and construction features desirable for present day high speed traffic. The roads and trails built and improved during the 5 years Italian occupation were about 6000km (Abubeker, 2015).

In Ethiopia a number of highway programs have been implemented which, of course, completed a construction of several roads during all programs which includes construction of highways , rehabilitation and maintenance of roads during six highway programs.

The programs were:

a) First highway program (1951-1957)

b) Second Highway Program (1957-1966)

c) Third Highway Program (1965-1968) d) Fourth Highway Program (1968-1973) e) Fifth Highway Program (1974-1976

f) Sixth Highway Program (1976-1978)

ERA was established in 1967 by proclamation No 256/67 to provide for the control and regulation of travel and transport on the road. Since its commencement the Ethiopian Roads Authority (ERA) has administered four Road Sector Development Programs (RSDP) as shown below:

- RSDP I – Period from July 1997 to June 2002 (5 year plan)
- RSDP II – Period July 2002 to June 2007 (5 year plan)
- RSDP III – Period July 2007 to June 2010 (3 year plan)
- RSDP IV – Period July 2010 to June 2015 (5 year plan)

Road sector construction in Ethiopia has been playing a major role toward the achievement of national strategic objective in terms of providing access to major markets for agricultural products through facilitating transport roots. Moreover, the road sector construction attracts very large number of manpower as source of providing employment opportunities.

2.4 Features of Construction Industry

Unlike other industry, construction industry has special features that are not usually encountered in others. Construction field turn out to be more complex than what was anticipated in the planning and design phase, additional costs and time are needed in many cases. These affect productivity level, damage materials and work in place. The industry is custom oriented as it is difficult to use mass production techniques due to the variability of the construction sites. As a result of these factors, it is difficult to predict accurately how much money will be necessary to complete construction projects. Creating a large facility takes a longtime and usually involves a large capital investment. Cost overruns, delays and other problems tend to be proportionally massive (Abubeker, 2015).

2.5 Parties and Their Roles in Construction Industry

Construction companies are involved in complex relationship with different parties such as client, government department, professional consultants, creditors, subcontractors, and suppliers. Client offers contractors construction contracts; Government departments make relevant regulation; consultants conduct professional services for clients; creditors facilitate and

provide financial supports to contractors; subcontractors help contractors finish the construction works partially or specially; and suppliers provide necessary materials and equipment for executing the construction works. Establishing good relationship with these parties helps contractor to have more opportunities to obtain and improve the efficiency of construction works. In order to achieve project objectives three main project participants are involved in most infrastructure projects. These are sometimes referred as 3Cs: (a) Client (b) Consultant and (c) Contractor (Chitkara, 2002).

2.6 Meaning of Competitiveness and Competitiveness Indicators

The meaning and uses of the word are as varied and numerous as the contexts in which these words are employed. There is no hard-and-fast rule in the definition of such word as long as its application relies on the subjectivity of the matter under discussion. However, we must note that every player in a sector as regulators, industry authorities, and companies have their own definitions, according to their own reference-frames and purposes. (Ketels.2016)

Competitiveness - refers to its ability to provide products and services in a more effective and efficient way than its competitors. It refers to achieving and sustaining superior performance in the industry. Emphasizes are given on tender price and less attention has been given to evaluating a contractor's performance attributes in a traditional research on contractor competitiveness. Competitiveness is a comparative concept reflecting the ability and performance of a firm, an industry, or a country and it has been the concern of many entities (Tan, 2008).

The subject of contractor competitiveness has been covered extensively in the literature.

Competitiveness Indicators (CCI)-These are indicators that show aspects on which contractors have competitiveness. Other proposed competitiveness indicators under five groups: contractor‟s organization, financial considerations, management resource, past experience, and past performance. Hatush and Skitmore (2001) suggest a set of alternative criteria classified into five categories for assessing contractor competitiveness: financial soundness, technical ability, management capability, health and safety, and reputation.

2.7 Competitiveness and Its Application to Industry

It is important to note the cause• and• outcome• relationship between the measurement of competitiveness and the understanding of key indicators. One of major criticism of the model used by the World Economic Forum (WEF) in their Global Competitiveness Report, is that the model does not clearly differentiate between the factors which determine competitiveness of a nation (i.e. causes of competitiveness) and indicators that are used to measure its competitiveness frameworks that have been developed with the main objective to produce an ultimate competitiveness score and the score would then enable an assessment of on company's competitiveness in comparison with another.

Furthermore, as most construction projects are so massive and pervasive that no single individual can possess the competencies required to see them through to successful completion. It is, therefore, imperative for organizations, albeit construction organizations, to identify, develop and manage organizational competitiveness that tends to drive large enterprise wide critical projects.

This argument is based on the assumption that work place competencies tend to focus on individuals instead of the organization, and they vary by job positions versus enterprise endeavors. Consequently, it can be argued that core competencies relevance is organizational, strategic, useful for business units and processes, and global in nature. For firms to be more competent and perform better they need to improve their competitiveness. Knowing what makes them competent helps contractors to formulate competitive strategies through better utilization of their resources.

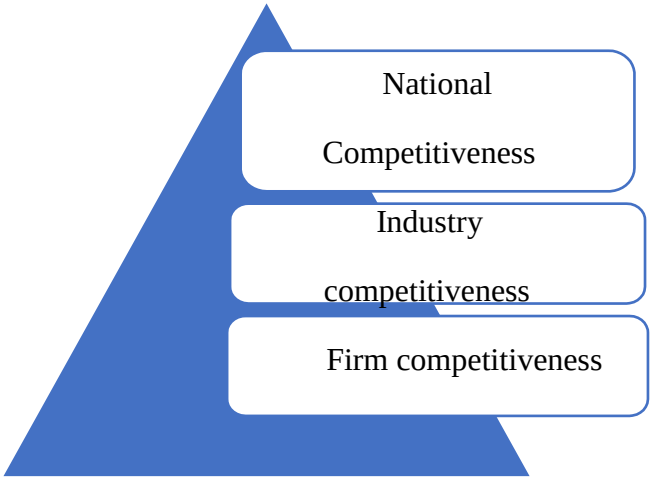
Understanding of competitiveness and indicators enable contractors to maintain a sustainable development in the dynamic environment since competitiveness is a dynamic ability to any business organization, which enables sustainable development in business. It is a dynamic driving force, by which firms can make quick response to the new changes in the environment (Porter, 1980). For construction firms to take effective action to maintain or improve their competitiveness, consequently obtain sustainable superior performance it is important to understanding their competitiveness.

2.8 Level of competency

The concept of competitiveness is important in discussion of construction project performance at three levels, that is, national, industry and firm. The word competitiveness has become one of the central preoccupations of government and industry in every nation. All nations, industries, and firms need competitiveness to ensure their survival and efforts to meet missions for their existence.

Above and beyond national competitiveness, the concepts of industrial competitiveness and firm competitiveness have also been adopted in different contexts. Industry bodies and firms are keen to understand and improve their competitiveness, as competitiveness is the key to the success or failure in a market economy (Porter, 1980). And competitiveness can be viewed from three levels, national competitiveness, industry competitiveness, and firm competitiveness as shown in Figure 2.1

Figure 2 Competitiveness in three levels, Tan Yongtao (2008)



Source: Tan Yongtao (2008)

2.9 Construction Firms' Performance and Competitiveness

The term performance denotes the degree to which an operation fulfills primary measures in order to meet the needs of the customers. Units of performance describe the actual fulfillment of the goods and services relating to performance and are measured in terms of the features of production, quality, quantity and / or time. Performance in competency terms as the behavioral competencies that is relevant to achieving the goals of project-based organizations.

The key themes in the review for this paper on definitions of performance describe the concept in terms of the achievement and fulfillment arising from an operation in relation to set of goals, however, each definition uses different measures. Performance can be also stated as a continuous and flexible process that involves managers and those whom they manage acting as partners within a framework that sets out how they can best work together to achieve the required results. It includes the actual outcomes of the strategic management process and it is the end result of activities (Ofori-Kuragu et al., 2016).

Basically most project activities experience time delays, cost overruns, or quality failures during the course of construction. Although the project team applies all of the tools and techniques available to them, most projects will still be derailed somewhere along the way. Hence controlling project time and costs requires a heads-up kind of attitude. Successful construction manager has the ability to anticipate and ward off potential project disruptions (Hailemeskel, 2013).

There is a model which incorporates contractor competitiveness indicators classified under six categories, namely, social influence, technical ability, financing ability and accounting status, marketing ability, management skills, and organizational structure and operations. It is believed that more competitiveness of firms on such factors enable firms to meet client need by meeting schedule, cost and specification requirements. A study by Tan (2008) presents a more comprehensive set of contractor competitiveness indicators in the development of a model for calculating a contractor's Total Competitiveness Value (TCV) as summarized in Table 1 . The researcher has taken these listed items as preliminary list upon which further study has been carried out.

Table 1 Preliminary List of Indicators for Measuring Contractors' Competitiveness

Section I : Indicators Measuring Corporate Image			
Code		**Code**	
I -1	Organization's credibility	I -6	Project environment and hygiene performance records
I-2	Recognized grading for company	I-7	Market share
I -3	Project safety performance records	I -8	Compatibility with the local culture
I-5	Project quality awards	I-9	Social conscience and responsibility
Section II : Indicators Measuring Technology , Innovation, and Learning Factors			
I-10	Contractors' ability to adopt to new methods of work	I-14	Proportion of advanced construction equipment and plant
I-11	Utilization efficiency of equipment and plant	I-15	The rate of applying the new technology developed internally
I-12	Number of technical staff	I-16	Extent of applying information technology
I-13	Capacity of construction equipment and plant	I-17	Establishment of research unit and strength of research staff
Section III : Indicators Measuring Financial Capability			
I-18	Payment to subcontractors / suppliers on time	I-23	Organizational profit status
I-19	Credibility of the firm considered by relevant financial bodies	I-24	Capability of loan repayment
I-20	Escalation of material prices	I-25	Effectiveness of communication with banker and financial institutions
I-21	Liquidity of organization	I-26	Organizational assets status
I-22	Organizational debt status	I-27	The value of annual loans obtained
Section IV : Indicators Measuring Marketing Ability			
I-28	Geographical regions of business activities	I-35	Membership in contractors association
I-29	Ability and facilities for managing market information	I-36	Relationship with governmental departments
I-30	Ability to forecast the changes of market conditions	I-37	On the tender list for governmental works
I-31	Past success rate in pre-qualification exercises	I-38	Relationship with news media
I-32	Past success rate in the final bidding stage	I-39	Relationship with subcontractors and suppliers
I-33	Value of annual contract works	I-40	Relationship with the public
I-34	Payment to subcontractors / suppliers on time		
Section V : Indicators Measuring Organization Management Skills			
I-41	Leadership skills for project manager	I-49	Availability and competence of contracts manager
I-42	Effectiveness of site management	I-50	Knowledge about the local construction law
I-43	Effectiveness of coordination with subcontractors	I-51	Availability and effectiveness of quality management system
I-44	Effectiveness of cost control methods	I-52	Availability and effectiveness of risk management system
I-45	Effectiveness of time management	I-53	Ratio of successfully committed contracts
I-46	Effectiveness of site safety management	I-54	Contractors' ability to restore operations after an emergency
I-47	Effectiveness of financial management	I-55	Contractors' ability to work as team players
I-48	Effectiveness in adapting changes and meet client needs	I-56	Effectiveness in settling contract dispute through negotiation
Section VI : Indicators Measuring Human Resources Management Strength			
I-57	Career prospect within organization	I-61	Staff salary scale relative to that of other organizations within the industry
I-58	Ratio of technical and professional staff in the organization	I-62	Mechanism of distributing benefits and reward
I-59	Appropriateness of organizational structure	I-63	Human resources development strategy
I-60	Employees enhancement , training and education	I-64	Mechanism for staff recruitment

2.10 Selections of Contractors and Project Performances

a) Selection of Contractors

Assessment methods of contractors for public work on the tender price appear to be the main criterion used by the clients for awarding contracts. However, this procurement practice has been increasingly blamed for the continuous existence of the non–compliant construction performance. A report by the Construction Industry Review Committee (CIRC, 2001) suggests that the local tendency toward contrast at the lowest price has resulted in low profit margins and contractors have little rooms to exceed the minimum requirements. And the report suggests that public sector procurement for contractors should pay critical attention to quality oriented which is believed to improve performance than only low price methods. This method of assessment for contractor's competitiveness looks at a wider spectrum by collectively consider tender price and performance attributes in contractors' bids evaluation **(**Wernerfelt,1984).

Although bid evaluation and selection of appropriate contractors are some of the major challenges that owners and consultants face in public work projects, there are factors that have been created to evaluate contractors' bids and select the most appropriate one. The cost consideration framework has for a long time been the main evaluation criteria which has the potential to include unreasonable low bids either accidentally or deliberately or unqualified contractor which cause extensive delay, cost overrun, quality problems and increased number of disputes. Weakness in the above qualification method opened door for the prequalification method to ensure the quality of contractors (Ramsay, 1989).

It is done beforehand and owner's scrutiny regarding contractor's competency to handle the business aspects of the operation during prequalification allows the contractor to focus on the specifics of the construction project once it has passed through prequalification and been short-listed. Bid evaluation team only focuses on the specific elements of the project without being distracted by the other business considerations. Despite its benefits of early registration, these methods have defects since time will necessarily pass between when the contractor is qualified and when it submits its bid. So in practice, prequalification is a form of "registering" the contractors capable of completing given tasks (Enshassi et al., 2009).

Construction management at risk as a project delivery method was created to provide input to the designer to increase constructability of designs and to decrease schedule duration through overlapping of the design and construction phases. It is emphasized that contractors usually have a significant input in the design process. It creates a collaborative and non-adversarial environment that uses the wisdom, experience, and creativity of the architect .The procedure is more interactive with all key project players than the low-bid system ((Hailemeskel, 2013).

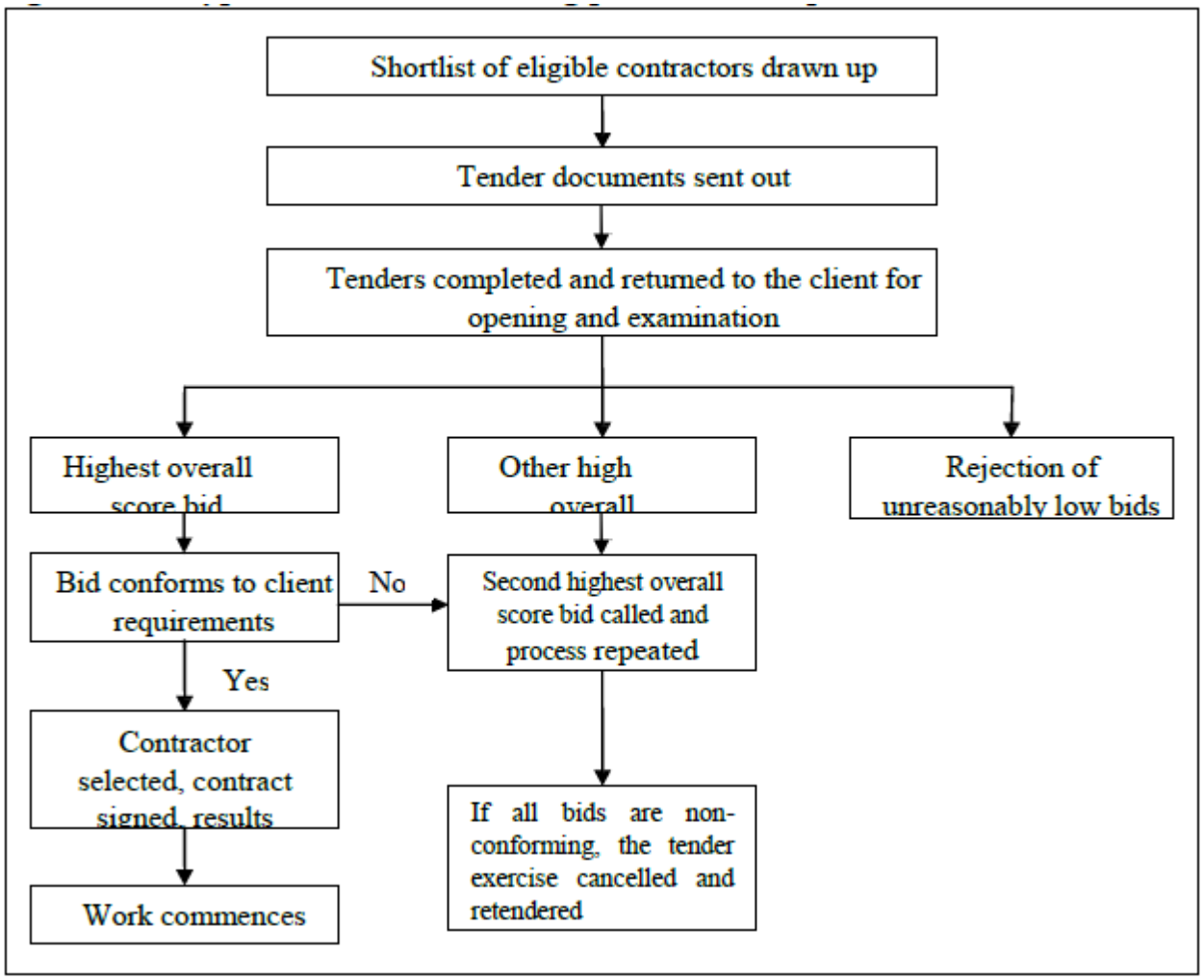
Construction Management at Risk or CMAR is gaining popularity, especially in the construction of the large projects. The CMAR method aims to reduce the risk of cost overrun and schedule creep and to expedite the construction process without compromising quality. This method has some advantages to the owner, for example: (a) Low level of risk to the architect and owner. (b) Produce a more manageable and predictable project cost and schedule outcomes. (c) Centralizes responsibilities. (d) The owner benefits from the construction manager's experience both during design and construction. (e) Allow for an early start to construction by phasing the work. (f) Results in better quality construction (Teece, 1997).

Sonmez et al., (2001) investigated assessment of construction firms and contractors evaluation problems in a Multi Criteria Bidding System which considers not only the cost as the awarding reason, but also considers other important attributes. Bid price or cost, time, quality, managerial safety accountability, competence and sufficiency of contractors are the key of multi attributes system is the selection process of the contractors (Liu et al., 2000). The model takes into account the most important characteristics of the contractors and projects that influence project performance such as contractor organization chart, contractor resources, project location, project type, and others. Russell (1996) created another model where valuation is done in two steps. Step one is contractor screening using the dimension – wide strategy method, while the second step is evaluating the remaining contractors using the dimensional weighting method. Also prequalification formulas are used to determine a contractor's capabilities based on certain variables or characteristics such as contractor previous experience in similar projects, contractor financial standing, and others.

Both competition and negotiation are the two major methods for selecting a contractor to undertake a project in Hong Kong construction industry. Contractors can obtain tender notice from various media to submit tenders for a project contract. They will examine documents in

detail in order to prepare the tender and this task includes tender price estimation and technical proposal preparation. Finally, they will submit the tender to clients prior to its close date. The process of preparing and submitting a tender is also known in the business as bidding or tendering (Tan, 2008) on Figure 2.2 shows the selective tendering procedure for public works in Hong Kong.

Figure 3 A typical selective tendering procedures for public works.



Source: Tan, 2008

b) Project Performances

The inability to complete projects on time and within budget continues to be a chronic problem worldwide. How to minimize or eliminate delays and cost overruns still remain debatable issues among professionals, clients and/or end users, and policy makers in the construction industry.

As the construction industry continues to grow in size, there are associated problems in terms of capability to meet the challenging demands of meeting requirements and executing projects (Abubeker., 2015).

The construction industry is the most exposed industry to risk because of the nature of the construction business, its activities, processes, environment and organizations. And acknowledged to use risk management in terms of individual intuition, judgment and experience gained from previous contracts instead of the prescriptive approaches widely acknowledged in the Risk Management Concept. The effect of such risks on construction projects demands competent contractors that can perform better in the construction industry.

2.11 Empirical Literature

Previous studies have extensively examined and identified contractors' competitiveness indicators For instance, Shen (2003) investigated the Contractor Key Competitiveness Indicators. Wong (2004) developed a contractor performance prediction Model for the United Kingdom construction contractors. Another research in this domain is the Contractor Selection for Design/Build Projects which focused on developing a model for contractor prequalification and bid evaluation in design/build projects. It presents a comparative overview of some international practices in the design/build contractor selection process (Nassar.2015).

A contractor selection system that incorporates the contractor's performance prediction was proposed by (Tan, 2008). A modeling framework developed in previous researches was used to develop a conceptual model of a project that depicts a causal structure of the variables, risks, and interactions that affect a contractor's performance for a specific project from the owner's point of view. They showed that it is likely that the non-price criteria support the alignment of owner and contractor interests, and that bidder behavior should be affected by the likelihood of repeated contracts, and by the transparency of owners' evaluation procedures. Describing and explaining how public owners use multiple criteria for the award of construction contracts was the purpose of their research (Nassar, 2015).

Moreover, the study by Tan (2008) categorizes competitiveness indicators under five major groups, namely, contractor's organization, financial considerations, management resource, past experience, and past performance. Each group includes various specific indicators. Hatush and

Skitmore (1997); Tan (2008) proposed a set of alternative criteria classified into five categories for assessing contractor competitiveness, including financial soundness, technical ability, management capability, health and safety, and reputation. These works are criticized, for example, for lacking consistency. Nevertheless, Tan (2008) after examining various studies he leads to the formulation of an alternative list of competitiveness indicators for the Hong Kong construction industry as presented the Table 2.1.

Based on these list of indicators for construction firms competitiveness the researcher made efforts to identify major or key indicators in relation to road sector for highway projects in Ethiopia by approaching staff of ERA since the list by Tan (2008) is so comprehensive and provides no chance to miss indicators of competitiveness.

2.12 summary of literature review

The involvement of large numbers of parties as owners (clients), contractors, consultants, stakeholders, and regulators makes construction industry complex in its nature. Despite this complexity, the industry plays a major role in the development and achievement of society's goals. It is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialized countries (Enshassi et al., 2009).

Completion of a project is considered as the most important factors of successful projects, which help to decrease problems for all parties and give new chances to construct other related projects.

It also helps to increase the profits and development of construction industry. The accomplishment of the first 10 years ERA's Road Sector Development Program reveals that the execution of most of the Federal road projects resulted in cost and time overruns have also ascertained that the projects were not completed on time, within budget, and desired quality causing loss of project's profit, increasing cost and leading to technical and managerial problems between projects' parties (Abubeker, 2015).

Predicting the performance of the contractor is highly important for both the contractor and the owner. The level of work and quality of projects delivered to clients defines contractor performance and it has been a common practice however to select the least cost bidder among

competing contractors to perform the job. Nevertheless, this may not ensure quality which is an indispensable measure in project delivery (Enshassi et al., 2009). Especially, with the increasing sophistication and complexity of construction projects, there is need for improved organization and management structure to overcome the technical complexity and unprecedented scope of works. Increase in globalization has made competitiveness a key factor in the present competitive world (Samson.et. al 2010).

Moreover, construction sector has unique features which are not usually observed in other businesses. Each project are unique in terms of location, soil condition, specification, or any other condition which can also affect its success rate in terms of quality, cost , and schedule. More competent firms can easily manage construction project challenges and meet requirements of their client. Studies have shown that firms have Key Competitiveness Indicators (KCI) that could influence performance of firms. The key indicators are; social influence, technical ability, financing ability and accounting status, marketing ability, management skills, and organizational structure and operations.

2.13 Research Gap

Many studies have been carried out on identifying Key Competitiveness Indicators in construction industry. For instance, Shen et al (2006) investigated the Contractor Key Competitiveness Indicators. In the other domain of Contractor Selection for Design/Build

Projects (Tan,2008) which focused on developing a model for contractor prequalification and bid evaluation in design/build projects.

The researcher made attempts to go over various literatures including the above, nevertheless, studies are not done to understand local context of the industry. And yet studies by many local researchers focus mainly on performances of contractors in terms of quality, cost, and project schedule. For example, a study made by Abubeker (2015) focuses road construction project performance in relation to schedule, low quality work and cost overrun.

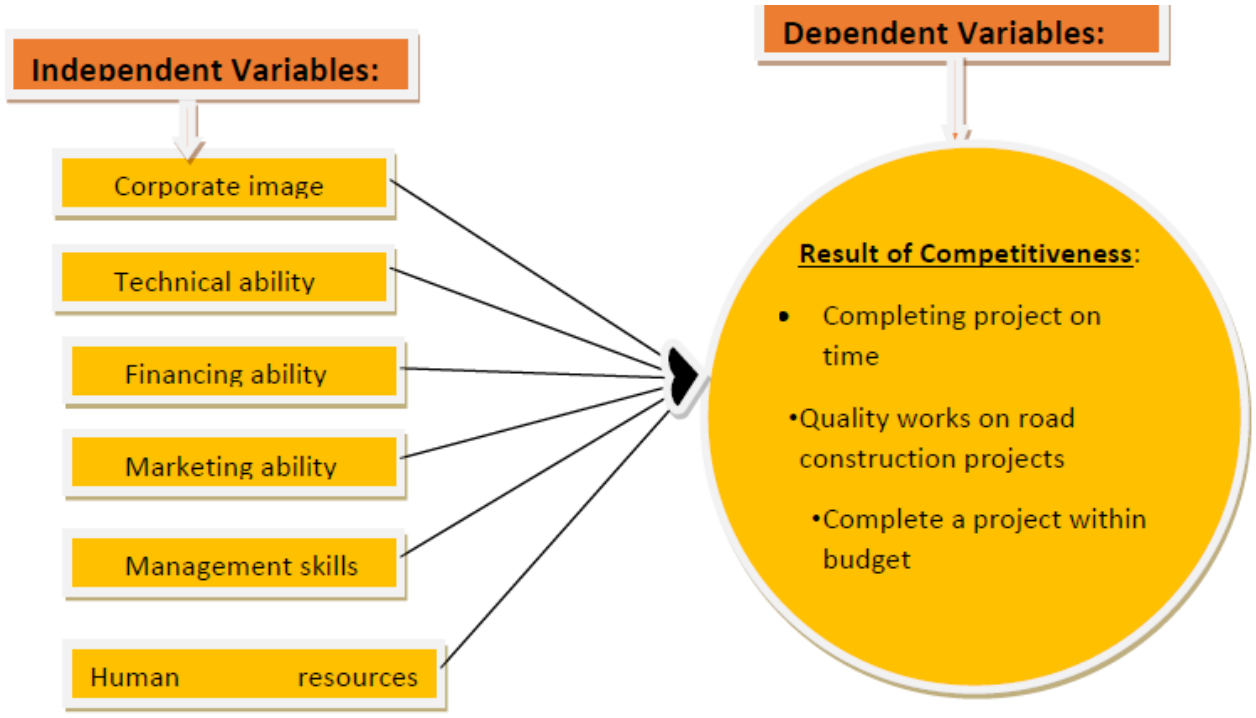
Other researchers have also observed that time and cost overruns are common in the construction industry worldwide. These studies do not give any attention on identification and analysis firms Key Competitiveness Indicators. Hailemeske (2015) arrived at a recommendation

of improving the capacity and competitiveness of local enterprises (contractors, consultants, and informal sectors) without due attention to those indicators of competitiveness in the local market.

2.14 Conceptual Frame Work for the Research

For this study, the conceptual framework shown in Figure 2.3 was developed based on reviewed literatures. In this study the dependent variables comprises completing project on time , quality works on road construction projects, complete a project within budget, and raising client‟s satisfaction, while the independent variables are those indicators measuring corporate image, technical ability, financing ability, marketing ability, management skills, and human resources strength.

Figure 4 Conceptual Frame work



Source: Organized from different literature

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The methods to collect data will be the self-rating questionnaire complemented by a semi-structured interview. According to Leedy & Ormrod (2010) this method is time consuming to administer and collate. In this research, participants were provided with a questionnaire that has descriptive statements. The respondents were expected to rank the statements on a Likert scale of 1 to 5. One (1) represents a statement that does not describe the respondent well, whereas 5 describe the respondent very well. The interview was done using the competency framework developed by Man and Lau (2010). The process involved probing the participant on the situation, task, action and results. This was done in order to complement and corroborate the data extracted from the self-rating questionnaire.

3.2 Research Design

This research seeks to explore construction firms competiveness of local construction firms or companies that have been engaged in the execution of Federal Road Construction (FRC) projects. The study employed a descriptive survey research design because it involved an investigation of people's opinion or perception of the subject matter under the study.

3.3 Sampling Procedures and Sample Size

At the time of this study, a total of 110 ERA's staff members who are believed to have sufficient work exposure and qualifications were drawn by simple random sampling technique. These staff serves in procurement, contract administration, planning, and quality control of road construction projects in ERA. The selection of the respondents was carried out in consultation with the managers of work unit/department of the Authority.

3.4 Data Sources and Data Collection Methods

Survey, experiment, archival analysis, histories, and case studies are some of common methods applied in the social science research methods. The selection of appropriate method depends on the type of research operation (what, how, why, etc), the degree of researcher's control over

variables, and the research focus. Logical analysis of the link between data collection and analysis, as well as the main questions to be addressed and conclusion are some of key issues taken into account in the selection of research method (Tan, 2008).

The questionnaire was developed based on the literature review and sought to obtain the respondents‟ opinion on the construction firms six major KCIs such as corporate image, technical ability, financing ability, marketing ability, management skills, and human resources strength for the achievement of the three major project objectives. The questionnaires were pretested to check their appropriateness for gathering all the required information by demonstrating pilot data collection on five respondents before conducting formal data collection from proposed sources.

The respondents were asked to indicate their perception, based on their local experience of the identified indicators of measure of competitiveness on a five likert scale as: extremely important, important, average, less important and negligible and their responses were collected from such primary sources through questionnaires. Perceptions of the ERA's relevant work units' staff, namely, procurement, contract administration, planning, and quality assurance work units toward those indicators of competitiveness were gathered.

3.5 Reliability Test

Cronbach's alpha was used to evaluate the reliability of the questionnaire. The coefficient was calculated taking into consideration all the research questions of the dependent and independent variables which are 67 questions. Table 3.1 shows analysis of the reliability statistics. Note that all observations were valid (valid cases =102) and cronbac's alpha coefficient was 0.952 which is above the minimum coefficient acceptable in the literature, i.e. 0.7. So the result suggests evidences of reliability in the research instruments used in this study.

Table 2: Analysis of reliability of the questionnaire through Cronbach's alpha

		Number of Respondents	**%**
Cases	Valid	102	92.73
	Excluded	8	7.37
	Total	110	100.0
Cronbach's Alpha		Number of items	
0.952		67	

3.5 Measurement of variables

Four results of competitiveness , namely, completing project on time; quality works on road construction projects; complete a project within budget; and raising client satisfaction were assumed as dependent variables. Other variables are taken into account to be analyzed as independent variable that affects project results or objectives. These variables are categorized into six main categories under which details of sub variables are listed exhaustively to understand construction firms' measure of competitiveness indicators. The main ones are: indicators of measuring corporate image, technical ability, financing ability, marketing ability, management skills; and human resources strengths.

A 5 point likert scale with respondents‟ answers ranging from "Extremely Important" to "Not Important" was used to collect information so as to measure variables. The measurement of each variable is explained as below.

Dependent Variables-are measured by the response of perception responded for the each questionnaire by participants of the survey. These variables are: (i) completing project on time- this is when projects schedule or deadlines are met by the contractor; (ii) quality works on road construction projects- specification requirements of the client on road projects; (iii) complete a project within budget- completing a project on budget earmarked by the client; and (iv) raising client satisfaction-the level of satisfaction growing as the project proceed for completion. **Independent Variables** as stated by (Tan, 2008) are those variables on which response by participants were gathered through the questionnaire and affects competitiveness. Namely, these variables are:

(i) Corporate image- organizational credibility that is invisible resources which help organizations to gain trust from client, public, or partners. It increases contractors' opportunities to win contracts.

(ii) Technical ability- this the ability of local construction firms to compete with others through technical competency, innovation, and learning. For example, it comprises contractors' ability to adapt to new methods of work; utilization efficiency of equipment and plant; number of technical staff; capacity of construction equipment and plant; proportion of advanced construction equipment and plant; the rate of applying the new technology developed internally; extent of applying information technology; and establishment of research unit and strength of research staff.

(iii) financing ability - is the ability of effecting payments to subcontractors / suppliers on time; credibility of the firm considered by relevant financial bodies; managing escalation of material prices; liquidity and debt status of organization; profit and loan repayment capability; Organizational debt status; and others

(iv) marketing ability- this holds region of business activities; ability and facilities for managing market information; ability to forecast the changes of market conditions; past success rate in pre- qualification exercises ; past success rate in the final bidding stage; value of annual contract works; and relation with different bodies.

(v) Management skills- it is leadership skills for project manager; effectiveness of managing site, subcontracts, cost control methods, time and finance. It is also about having skills on adapting changes and meet client needs; knowledge about the local construction law; availability and competence of contracts manager; availability and effectiveness of quality management system; availability and effectiveness of risk management system; ratio of successfully committed contracts; and contractors' ability to restore operations after an emergency

(vi) human resources strengths - career prospect within organization ; ratio of technical and professional staff in the organization; appropriateness of organizational structure; employees enhancement , training and education; staff salary scale relative to that of other organizations within the industry ; mechanism of distributing benefits and reward; human resources

development strategy; and mechanism for staff recruitment.

Table 3: Operationalization of Variables

Independent Variable	**Definition**	**Measurement**	**Expected sign on Dependent variable**
Human Resource Management Strength	It deals with staff careers, staff combination, organization structure, employee careers, salary, benefits, and human resource strategy.	Likert scale using five points 1=Negligible(N) to 5= Extremely important(EI)	+
Management Skills	Refers to effectiveness in managing organizational resource, presence of system for project work control, leadership skills. Moreover, it is about having knowledge of local construction law and availability and competence of contracts manager, ability to restore operations after an emergency.	Likert scale using five points 1=Negligible(N) to 5= Extremely important(EI)	+
Marketing Ability	Refers to region of business activities, managing market information and ability to forecast the changes of market conditions, shows level of fulfilling pre-qualification and past success rate in the final bidding stage; work value executed in previous projects.	Likert scale using five points 1=Negligible(N) to 5= Extremely important(EI)	+
Financial Capability	This is capability of settle payments, to credibility by relevant financial bodies;	Likert scale using five points	+
	managing escalation of material prices; liquidity and debt status of organization ;profit and loan repayment capability; and organizational debt status; and others	1=Negligible(N) to 5= Extremely important(EI)	
Technology, Innovation, and Leaning Factors	Deals with technical competency, innovation, learning. , new methods of work, resource utilization capacity, and, rate of applying the new technology and strength of research staff.	Likert scale using five points 1=Negligible(N) to 5= Extremely important(EI)	+
Corporate Image	Refers to credibility of firms as invisible resources which help organizations to gain trust from client, public, or partners and hence increases contractors‟ opportunities to win contracts.	Likert scale using five points 1=Negligible(N) to 5= Extremely important(EI)	+

3.6 Ethical Considerations

The study has been conducted with highest level of ethical considerations throughout the research. Prior to the study and data collection participants were informed about the purpose of the study. Data collection was carried out after securing the respondent's full consent for voluntary participation. Respondents were told not to disclose their names. They were also informed that data collected for the study in this regard would never be used for any purpose other than for academic purpose.

CHAPTER 4: DATA ANALYSIS, RESULTS AND DISUNION

4.1 Introduction

The chapter presents the result of the survey organizing into five sections. The first section presents introduction; the second section presents the response rate of the respondents; the third section discusses the descriptive information about respondents‟ profile; the fourth section discusses about perception of respondents about Competitiveness of Local Construction Firms; and the fifth section presents descriptive and inferential analysis competitiveness with indicators.

4.2 Survey Response Rate

A questionnaire (as contained in Annex 1 of this study) was developed and distributed to all 110 targeted respondents identified from the ERA‟s most relevant work units. Those who filled and returned the questionnaire were 102 respondents making a response rate of 91.2% as shown in the table below. Table 4.1 given below shows survey response rate.

Table 4: Survey response rate

Unit	Study Sample Size	Questionnaire distributed	Completed and Returned questionnaire	Distributed but not returned questionnaire
NO	**110**	**110**	**102**	**8**
%		**100%**	**92.73%**	**7.30%**

Source: Primary data, 2018

4.3 Profile of Respondents

To describe the demographic profile of the respondents participated in this study; cross tabulations were run to capture their age, gender, academic level, how long have you worked for the organization, and position in the organization. The findings are indicated in Table 4.2 below.

Table 5: Characteristics of respondents

Description		Frequency	Percent	Valid Percent	Cumulative Percent
Age	20 to 29 Years old	29	28.4	28.4	28.4
	30 to 39 Years of old	50	49	49	77.5
	40 to 49 Years old	13	12.7	12.7	90.2
	50 to 59 Years of old	8	7.8	7.8	98
	60 and over 60 Years old	2	2	2	100
Gender	Male	80	78.4	78.4	78.4
	Female	22	21.6	21.6	100
	Certificate	1	1	1	1
Academic Level	Diploma	4	3.9	3.9	4.9
	Bachelor‟s Degree	60	58.8	58.8	63.7
	Master‟s /PhD	37	36.3	36.3	100
Years of experience	Less than 3 years	25	24.5	24.5	24.5
	3 to 5 years	14	13.7	13.7	38.2
	5 to 10 years	32	31.4	31.4	69.6
	Over 10 years	31	30.4	30.4	100
Position	Junior Officer	13	12.7	12.7	12.7
	Supervisory	9	8.8	8.8	21.6
	Middle Mgt	26	25.5	25.5	47.1
	Top Mgt	17	16.7	16.7	63.7
	Other	37	36.3	36.3	100

Source: Primary data, 2018

A) Age of the respondent

As shown in the above table 4.2 majority of respondents are in the age of between 30 and 39 years which are 49%, followed by age between 20 and 29 years old which constitute 28.4 % and between 40 and 49 years old that are 12.7%.

B) Gender of the respondent

From table 4.2, 78.1 percent of the respondents were male while the rest are female.

C) Academic level of respondents

As shown in Table 4.2 above, a significant part of the respondents who answered the questionnaire were holders of Bachelor‟s degree (58.8%), followed by MSc /PhD holders (36.3%) , Diploma (3.9%) and one respondent was holder of attended certificate level (1%). The academic level of the respondents shows that most of the respondents were highly qualified.

D) Number of years served in the Organization

As indicated in Table 4.2 above, 31.4 % of the respondents have served ERA between 5 and 10 years, 30% of respondents served for more than 10 years. Moreover 13.7% % of the respondents as indicated above worked in the Authority between 3 and 5 years while the remaining respondents 24.5% served below three years. This implies that the majority of the respondents have been working in the Authority for a considerable number of years to understand construction firms‟ competitiveness.

E) Position in the Organization

From the result of Table 4.2 above, majority of the respondents are engaged in middle level management (25.5%), followed by top management (16.7%), junior officer (12.7%), and supervisory level (8.8%). It is assumed that the middle and top level management of ERA has direct linkage in terms of construction service procurement, quality control, and contract administration. Such respondents form these work units in the ERA have vast knowledge and experience on the understanding and identifying key construction firms‟ competitiveness.

4.4 Perception of Construction Firms Competitiveness Indicators

This section analyses the assessing perception of construction firms' competitiveness indicators in line with the specific objectives of this study. First, analyses indicators measuring corporate image while the second indicators measuring technology, innovation, and learning factors. The third factor assesses or measuring financial capability and the fourth focuses on the indicator of measuring marketing ability. The fifth addresses about the assessment of indicators of measuring organization management skills while indicators of measuring human resources management strength are the sixth. Finally, an attempt was done to assess the overall assessment of construction firms' competitiveness.

Relative importance value (RIV)

The level of importance among individual competitiveness indicators listed in Table 2.1 can only be measured relatively; thus, an index value called the relative importance value (RIV) is adopted. Relative index technique has been used extensively in research particularly for analyzing the data collected from structured questionnaire survey based on individual judgments. For example, Tan Yongtao. (2008) established relative index rankings different factors of indicators.

The value RIV for each individual competitiveness indicator is obtained from calculating a weighted average using the surveyed data through the following formula:

$$RIV = 100 * \frac{\sum aX}{5N}$$

Where,

X: the frequency of the responses for a specific grade;

a: the weighting value (ranging from 1 to 5, where 1 is negligible and 5 is extremely important) corresponding to a specific grade;

N: total number of responses.

An indicator with a higher RIV value suggests that the indicator has a higher effect on contractors' competitiveness. The rankings of individual indicators were established according to their RIV. Using the data collected from the survey, calculations were done according to formula given above. The full results are presented in the next section under each category of indicators listed.

4.4.1. Indicators Measuring Corporate Image

In this section the study was about assessment of indicators to measure corporate image perception of construction firm competitiveness. Table 4.3 shows rate of distribution of values of indicators measuring corporate image.

Table 6: RIV of Indicators Measuring Corporate Image

Indicators	Distribution between different grades (%)			
	≥4	3	≤2	**RIV**
Section I : Indicators Measuring Corporate Image				
I -1 Organization's credibility	0.93	0.07	0.00	90.39
I-2 Recognized grading for company	0.89	0.11	0.00	87.25
I -3 Project safety performance records	0.72	0.25	0.04	80.98
I-5 Project quality awards	0.85	0.12	0.03	87.25
I -6 Project environment and hygiene performance records	0.77	0.19	0.04	80.00
I-7 Market share	0.57	0.32	0.11	71.57
I -8 Compatibility with the local culture	0.61	0.35	0.04	75.49
I-9 Social conscience and responsibility	0.66	0.33	0.01	78.04
Section Average				**81.37**

Source: Survey result, 2018

From the findings in the Table 4.3 above, one of the major indicators measuring corporate image is organizational credibility with RIV of 90.39 %, recognized grading for company and Project quality awards have the same RIV of 87.25 %. From the assessment of indicators project environment hygiene performance records has RIV of 80% , project safety performance records has RIV of 80.98 % while other indicators are below the average RIV. Here the analysis indicates that corporate image is organizational credibility , recognized

grading for company and project quality awards have higher RIV than that of the average RIV.

4.4.2. Indicators measuring technology, innovation, and learning factors

The study about the assessment of indicators to measure technology, innovation, and learning perception of construction firm competitiveness is shown below in Table 4.4 with a rate of distribution indicators measuring factors.

Table 7: Indicators Measuring Technology, Innovation, and Learning factors

Indicators	Distribution between different grades (%)			
Section II: Indicators Measuring Technology, Innovation, and Learning factors	≥4	3	≤2	**RIV**
I-10 Contractors' ability to adopt to new methods of work	0.85	0.12	0.03	85.69
I-11 Utilization efficiency of equipment and plant	0.85	0.13	0.02	88.43
I-12 Number of technical staff	0.88	0.10	0.02	85.49
I-13 Capacity of construction equipment and plant	0.93	0.06	0.01	88.63
I-14 Proportion of advanced construction equipment and plant	0.85	0.12	0.03	82.78
I-15 The rate of applying the new technology developed internally	0.77	0.18	0.05	82.40
I-16 Extent of applying information technology	0.79	0.14	0.07	83.01
I-17 Establishment of research unit and strength of research staff	0.79	0.14	0.07	83.40
Section Average				**84.98**

Source: Survey result, 2018

One can observe the findings in the Table 4.4 above, contractors' ability to adopt to new methods of work (85.69 %), utilization efficiency of equipment and plant (88.43 %) , Number

of technical staff (with RIV 85.49 %) , and Capacity of construction equipment and plant (with RIV 88.63 %) have higher RIV than that of section average RIV of 84.98 %.

However, proportion of advanced construction equipment and plant (82.78 %), the rate of applying the new technology developed internally (with RIV 82.40 %), extent of applying information technology (with RIV 83.01 %), and establishment of research unit and strength of research staff (with RIV 83.40 %) have lower percentage of RIV compared with the section average RIV of 84.98 %.

4.4.3. Indicators measuring financial capability

Indicators measuring financial capability are assessed in this section of study and details of frequency distribution are shown those indicators to measure them in Table 4.5 below.

Table 8: Indicators Measuring Financial Capability

Indicators	Distribution between different grades (%)			
Section III : Indicators Measuring Financial Capability	≥4	3	≤2	RIV
I-18 Payment to subcontractors / suppliers on time	0.83	0.13	0.04	84.31
I-19 Credibility of the firm considered by relevant financial bodies	0.93	0.06	0.01	87.45
I-20 Escalation of material prices	0.47	0.49	0.04	72.35
I-21 Liquidity of organization	0.60	0.35	0.05	75.69
I-22 Organizational debt status	0.74	0.20	0.07	79.02
I-23 Organizational profit status	0.77	0.18	0.05	82.94
I-24 Capability of loan repayment	0.77	0.21	0.02	80.98
I-25 Effectiveness of communication with banker and financial institutions	0.82	0.16	0.02	81.76
I-25 Organizational assets status	0.82	0.16	0.02	83.92
I-27 The value of annual loans obtained	0.64	0.30	0.06	72.75
Section Average				**80.12**

Source: Survey result, 2018

The finding indicated in Table 4.5 shows that credibility of the firm considered by relevant financial bodies (with RIV 87.45 %), payment to subcontractors / suppliers on time (with RIV 84.31 %), organizational assets status (with RIV 83.92 %), organizational profit status (82.94 %), and capability of loan repayment (with RIV 80.89%) have higher RIV as compared to section's RIV of 80.12 %.

But factors such as escalation of material prices (with RIV 72.35 %), liquidity of organization (with RIV 75.69 %) , organizational debt status (with RIV 79.02 %) and the value of annual loans obtained (with RIV 72.75 %) show lesser RIV of section's average.

4.4.4. Indicators measuring marketing ability

This section of the study indicates about the assessment of indicators to measure marketing ability as indicator of construction firm competitiveness. And figure Table 4.6 shows rate of distribution of indicators measuring marketing ability.

Table 9: Indicators Measuring Marketing Ability

Indicators	Distribution between different grades (%)			
Section IV : Indicators Measuring Marketing Ability	≥4	3	≤2	**RIV**
I-28 Geographical regions of business activities	0.66	0.22	0.13	73.14
I-29 Ability and facilities for managing market information	0.75	0.22	0.04	79.41
I-30 Ability to forecast the changes of market conditions	0.83	0.14	0.03	83.73
I-31 Past success rate in pre-qualification exercises	0.80	0.17	0.03	80.78
I-32 Past success rate in the final bidding stage	0.75	0.23	0.02	79.80
I-33 Value of annual contract works	0.80	0.19	0.01	84.51
I-34 Payment to subcontractors / suppliers on time	0.70	0.25	0.05	80.00
I-35 Membership in contractors association	0.32	0.44	0.24	62.75
I-36 Relationship with governmental departments	0.59	0.30	0.11	74.51
I-37 On the tender list for governmental works	0.69	0.22	0.10	77.06
I-38 Relationship with news media	0.26	0.50	0.24	59.02
I-39 Relationship with subcontractors and suppliers	0.70	0.23	0.08	76.86
I-40 Relationship with the public	0.75	0.19	0.06	78.43
Section Average				**76.15**

Source: Survey result, 2018

Attempt was made to assess findings regarding those indicators measuring marketing ability in the Table 4.6 above. Value of annual contract works (with RIV 84.51 %), ability to forecast the changes of market conditions (with RIV 83.73 %), past success rate in pre-qualification exercises (with RIV 80.78%) and payment to subcontractors / suppliers on time (with RIV 8%) and other indicators have higher RIV.

However, indicators such as Relationship with news media, Membership in contractors association, Geographical regions of business activities, and Relationship with governmental departments shows lower RIV than the average section.

4.4.5. Indicators measuring organization management skills

Indicators measuring organization management skills are assed in this section and presented on Table 4.7.with distribution between different grades and showing indicators' RIV.

Table 10: Indicators Measuring Organization Management Skills

Indicators	Distribution between different grades (%)			
Section V : Indicators Measuring Organization Management Skills	≥4	3	≤2	**RIV**
I-41 Leadership skills for project manager	0.97	0.03	0.00	94.31
I-42 Effectiveness of site management	0.95	0.05	0.00	92.94
I-43 Effectiveness of coordination with subcontractors	0.91	0.08	0.01	87.65
I-44 Effectiveness of cost control methods	0.91	0.08	0.01	91.57
I-45 Effectiveness of time management	0.92	0.07	0.01	93.14
I-46 Effectiveness of site safety management	0.86	0.12	0.02	84.12
I-47 Effectiveness of financial management	0.94	0.05	0.01	91.57
I-48 Effectiveness in adapting changes and meet client needs	0.58	0.41	0.01	78.04
I-49 Availability and competence of contracts manager	0.96	0.02	0.02	89.61
I-50 Knowledge about the local construction law	0.88	0.10	0.02	85.49
I-51 Availability and effectiveness of quality management system	0.97	0.02	0.01	91.18
I-52 Availability and effectiveness of risk management system	0.92	0.07	0.01	87.84
I-53 Ratio of successfully committed contracts	0.86	0.11	0.03	84.31
I-54 Contractors' ability to restore operations after an emergency	0.59	0.36	0.05	73.14
I-55 Contractors' ability to work as team players	0.68	0.29	0.03	78.43
I-56 Effectiveness in settling contract dispute through negotiation	0.85	0.14	0.01	81.76
Section Average				**86.57**

Source: Survey result, 2018

From survey result shown on Table 4.7 indicators measuring organization management skills respondents reply that Leadership skills for project manager (with RIV 94.31%), effectiveness of time management(with RIV 93.14%), effectiveness of site management (with RIV 92.94%), effectiveness of cost control methods(with RIV 91.57%), effectiveness of financial management(with RIV 91.57%), availability and effectiveness of quality management system(with RIV 91.18%), availability and competence of contracts manager(with RIV 89.61%), availability and effectiveness of risk management system (with RIV87.84%), and effectiveness of coordination with subcontractors (with RIV87.65 %) have greater RIV than the average RIV (86.57 %) of this section.

Other indicators in this section such as effectiveness of site safety management (with RIV 84.12%), effectiveness in adapting changes and meet client needs (with RIV 78.04%), knowledge about the local construction law (with RIV 85.49 %), ratio of successfully committed contracts (with RIV 84.31%), contractors' ability to restore operations after an emergency (with RIV 73.14%), contractors' ability to work as team players (with RIV 78.43%), and effectiveness in settling contract dispute through negotiation (with RIV 81.76%) have lower RIV as compared to the section average RIV (86.57%).

4.4.6. Indicators Measuring Human Resource Management Strength

In this section of the study indicators measuring human resource management strength are assessed on Table 4.7.with their distribution between different grades.

Table 11: Indicators Measuring Human Resource Management Strength

Indicators	Distribution between different grades (%)			
Section VI : Indicators Measuring Human Resources Management Strength	≥4	3	≤2	**RIV**
I-57 Career prospect within organization	0.82	0.18	0.00	81.96
I-58 Ratio of technical and professional staff in the organization	0.81	0.18	0.01	83.14
I-59 Appropriateness of organizational structure	0.93	0.07	0.00	86.67
I-60 Employees enhancement , training and education	0.81	0.15	0.04	83.33
I-61 Staff salary scale relative to that of other organizations within the industry	0.72	0.24	0.05	77.06
I-62 Mechanism of distributing benefits and reward	0.66	0.29	0.05	76.08
I-63 Human resources development strategy	0.73	0.24	0.04	79.22
I-64 Mechanism for staff recruitment	0.78	0.21	0.01	80.78
Section Average				**81.03**

Source: Survey result, 2018

Appropriateness of organizational structure (with 86.67RIV %), employees enhancement, training and education (with RIV 83.33%), career prospect within organization (with RIV 81.96%), and ratio of technical and professional staff in the organization (with RIV 83.14%) are showing that their RIV values are larger than that of average section RIV (81.03 %).

Nevertheless, other factor like Mechanism for staff recruitment (with RIV 80.78%), Human resources development strategy (with RIV 79.22%), Staff salary scale relative to that of other organizations within the industry (with RIV 77.06%), and Mechanism of distributing benefits and reward (with RIV 76.08%) show lower RIV than section average result.

4.4.7 . Summary & Overall Construction Firm's Competitiveness

Summary of KCIs

The indicators in **Table 2. 1** are again summarized based on their RIV calculated values from Table 4.1 to Table 4.6. As there are no standard selection criteria, the KCIs are selected as those with RIV values above the section average value, and they are scored with a grade of 4 or 5 by more than 50 percent of respondents. The selection criteria ensure the important indicators will be included and there will be enough indicators in each section. As a result, a list of key competitiveness indicators are selected as shown in Table 4.9.

Table 12: Selected key competitiveness indicators

Indicators	Distribution between different grades (%)			
	≥4	3	≤2	**RIV**
Section I : Indicators Measuring Corporate Image				
I -1 Organization's credibility	0.93	0.07	0.00	90.39
I-2 Recognized grading for company	0.89	0.11	0.00	87.25
I-5 Project quality awards	0.85	0.12	0.03	87.25
Section II: Indicators Measuring Technology, Innovation, and Learning factors				
I-10 Contractors' ability to adopt to new methods of work	0.85	0.12	0.03	85.69
I-11 Utilization efficiency of equipment and plant	0.85	0.13	0.02	88.43
I-12 Number of technical staff	0.88	0.10	0.02	85.49
I-13 Capacity of construction equipment and plant	0.93	0.06	0.01	88.63
Section III : Indicators Measuring Financial Capability				
I-18 Payment to subcontractors / suppliers on time	0.83	0.13	0.04	84.31
I-19 Credibility of the firm considered by relevant financial bodies	0.93	0.06	0.01	87.45
I-23 Organizational profit status	0.77	0.18	0.05	82.94
I-24 Capability of loan repayment	0.77	0.21	0.02	80.98
I-25 Effectiveness of communication with banker and financial institutions	0.82	0.16	0.02	81.76
I-25 Organizational assets status	0.82	0.16	0.02	83.92
Section IV : Indicators Measuring Marketing Ability				
I-29 Ability and facilities for managing market information	0.75	0.22	0.04	79.41
I-30 Ability to forecast the changes of market	0.83	0.14	0.03	83.73

conditions				
I-31 Past success rate in pre-qualification exercises	0.80	0.17	0.03	80.78
I-32 Past success rate in the final bidding stage	0.75	0.23	0.02	79.80
I-33 Value of annual contract works	0.80	0.19	0.01	84.51
I-34 Payment to subcontractors / suppliers on time	0.70	0.25	0.05	80.00
I-37 On the tender list for governmental works	0.69	0.22	0.10	77.06
I-39 Relationship with subcontractors and suppliers	0.70	0.23	0.08	76.86
I-40 Relationship with the public	0.75	0.19	0.06	78.43
Section V : Indicators Measuring Organization Management Skills				
I-41 Leadership skills for project manager	0.97	0.03	0.00	94.31
I-42 Effectiveness of site management	0.95	0.05	0.00	92.94
I-43 Effectiveness of coordination with subcontractors	0.91	0.08	0.01	87.65
I-44 Effectiveness of cost control methods	0.91	0.08	0.01	91.57
I-45 Effectiveness of time management	0.92	0.07	0.01	93.14
I-47 Effectiveness of financial management	0.94	0.05	0.01	91.57
I-49 Availability and competence of contracts manager	0.96	0.02	0.02	89.61
I-51 Availability and effectiveness of quality management system	0.97	0.02	0.01	91.18
I-52 Availability and effectiveness of risk management system	0.92	0.07	0.01	87.84
Section VI : Indicators Measuring Human Resources Management Strength				
I-57 Career prospect within organization	0.82	0.18	0.00	81.96
I-58 Ratio of technical and professional staff in the organization	0.81	0.18	0.01	83.14
I-59 Appropriateness of organizational structure	0.93	0.07	0.00	86.67
I-60 Employees enhancement , training and education	0.81	0.15	0.04	83.33

Source: Survey result, 2018

Overall about construction firm's competitiveness

In order to understand the result of indicators in terms of result Table 4.10 is prepared based on data analysis of reposes gathered.

Table 13: Overall about construction firm's competitiveness

Result of Competitiveness Indicators	≥4	3	≤2	RIV
Completing Project on Time shows firms' competitiveness	0.92	0.07	0.01	92.16
Quality works on asphalt road construction projects are ensured through firms' competitiveness	0.93	0.07	0.00	93.53
Construction firms competitiveness helps firms' to complete a project within budget	0.92	0.07	0.01	87.84
Client Satisfaction can be raised by firms' competitiveness	0.95	0.05	0.00	87.45
Average				90.25

Source: Survey result, 2018

It can be concluded that quality works on asphalt road construction projects are ensured through firms' competitiveness (with RIV 93.53 %) and completing project on Time shows firms' competitiveness (with RIV 92.16%) are above the average value RIV. But client satisfaction can be raised by firms' competitiveness (with RIV 87.45 %) and construction firm's competitiveness helps firms' to complete a project within budget (with RIV 87.84%) indicate lower RIV values which are less than section's average RIV (90.25%).

4.5 analysis of competitiveness with indicators

In this section we will discussed about the relationship between comparative analysis of construction firms with the indicators of corporate image, indicators of measuring technology, innovation, and learning factors, indicators of measuring financial capability, indicators measuring marketing ability, indicators measuring organization management skills, indicators measuring human resources management strength, and construction firms‟ competitiveness are ensured.

4.5.1 Spearman's rank – order correlation analysis

Spearman‟s rank-order correlation analysis were employed for the study to determine to measure the relationship between the independent and dependent variables since the data for both variables are ordinal level of measurement.

Table 14: Spearman rank correlation analysis

	Construction firm's competetiveness	Human Resource Management	Organizational Management	Marketing Ability	Financial Capability	Technology, Innovation, and Leaning	Corporate Image
Construction firm's competitiveness	1.00						
Human Resource Management	.391*	1.00					
	.000						
Organizational Management Skills	.456*	.214*	1.00				
	.000	.031					
Marketing Ability	.261*	.257*	.497*	1.00			
	.008	.009	.000				
Financial Capability	.294*	.292*	.466*	.524*	1.00		
	.003	.003	.000	.00			
Technology, Innovation,	.279*	.232*	.435*	.522*	.424*	1.00	
	.005	.019	.000	.00	.00		
Corporate Image	.253	.012	.429*	.480*	.270*	.358*	1.00
	.010	.903	.000	.00	.00	.000	

Source: SPSS correlation results 2018

Table 4.11 above shows the results of Spearman‟s rank-order correlation analysis among the variables. As shown in the above table, there is a significant correlation between the six independent variables namely, indicators of corporate image, indicators of measuring technology,

Innovation, and Learning factors, indicators of measuring financial capability, indicators measuring marketing ability, indicators measuring organization management skills, indicators measuring human resources management strength and the dependent variable i.e. construction firms competitiveness in federal highway projects. The correlations between dependent and independent variables and between each independent variable are statically significant and positive as indicated by double asterisk (**) for two-tailed test, at p value < 1%.

- There is a strong positive correlation between the human resources management strength and construction firms‟ competitiveness in federal highway projects with a correlation coefficient of 0.391 at 99% confidence level. The correlation is statistically significant since it has a p- value < 1%.

- There is a strong positive correlation between organizational management skill and construction firms‟ competitiveness in federal highway projects with a correlation coefficient of 0.456 at 99% confidence level. The correlation is statistically significant since it has a p- value < 1%.

- There is also a strong positive correlation between marketing ability and construction firms‟ competitiveness in federal highway projects with a correlation coefficient of 0.456 at 99% confidence level. The correlation is statistically significant since it has a p-value < 1%.

-There is also a strong positive correlation between financial capability and construction firms‟ competitiveness in federal highway projects with a correlation coefficient of 0.294 at 99% confidence level. The correlation is statistically significant since it has a p-value < 1%.

- In addition to this there is also a strong positive correlation between technology, Innovation, and Learning factors and construction firms‟ competitiveness in federal highway projects with a correlation coefficient of 0.279 at 99% confidence level. The correlation is statistically significant since it has a p-value < 1%.

- There is a moderate positive correlation between the corporate image and construction firms‟ competitiveness in federal highway projects with a correlation coefficient of 0.253 at a precision level of 99%. The correlation is statistically significant since it has a p-value < 1%.

4.5.2 . Chi- Square Test Results

Chi-Square test was made for each independent variable against dependent variable by combining items under each variable and the result is shown in the Table 4.12 below.

Table 15: Chi-Square test results

Indicators	Chi-Square test results		Accept/Reject
	Value	Sig.(2-sided)	
Construction firm's competitiveness * Human Resource Management Strength	23.341a	0.000	**Accept**
Construction firm's competitiveness * Organizational Management Skills	25.136a	0.000	**Accept**
Construction firm's competitiveness * Marketing Ability	10.329a	0.035	**Accept**
Construction firm's competitiveness * Financial Capability	12.763a	0.047	**Accept**
Construction firm's competitiveness * Technology, Innovation, and Leaning Factors	22.248a	0.001	**Accept**
Construction firm's competitiveness * Corporate Image	8.301a	0.081	**Reject**

Source: SPSS Chi-Square test results 2018

From the results presented in Table 4.12 above:

- There is a significant association between construction firm's competitiveness in federal highway project and Human Resource Management Strength since the Chi-Square value has a corresponding *p*- value less than 5% (p=0.000). This result implies that the appropriate implementation of human resource management Strength sustainable in Ethiopian highway projects has a significant effect on the construction firm's competitiveness.

- There is a significant association between Construction firm's competitiveness and Organizational Management Skills since the Chi-Square value has a corresponding *p*- value less than 5% (p=0.000). This result implies that the organizational management skill as measure of construction firms‟ competitiveness in Ethiopian road authority in highway projects has a significant effect on the construction firm's competitiveness.

- There is a significant association between Construction firm's competitiveness and Marketing Ability since the Chi-Square value has a corresponding p- value less than 5% (p=0.000). This result implies that the marketing ability in Ethiopian road authority in

highway projects has a significant effect on the construction firm's competitiveness. Like, ability and facilities for managing market information, ability to forecast the changes of market condition, value of annual contract works, relationship with the public, etc..

- There is a significant association between Construction firm's competitiveness and Financial Capability since the Chi-Square value has a corresponding p- value less than 5% (p=0.000). This result implies that the financial capability in Ethiopian road authority in highway projects has a significant effect on the construction firm's competitiveness. Corresponding, payment for contractors on time, credibility of the firms considered by relevant financial bodies, assess organizational assets status, capability of loan repayment of the firms, assessing the liquidity of the firms, etc.

- There is a significant association between Construction firm's competitiveness and measuring Technology, Innovation, and Leaning Factors since the Chi-Square value has a corresponding p- value less than 5% (p=0.000). This result implies that technology, innovation, and learning factors in Ethiopian road authority in highway projects has a significant effect on the construction firm's competitiveness. Like, checking contractor‟s ability to adopt to new methods work, monitor efficiency of equipment and plant, check appropriate number of staffs in the firms, ability to apply the new technology, extent of applying information technology, etc.

- There is no significant association between the Construction firm's competitiveness and Corporate Image since the Chi-Square value has a corresponding p- value greater than 5%, which is 8.1%. Thus, measuring corporate image has no significant effect on construction firms‟ competitiveness.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1Conclusions

These days construction industry is becoming more complex and dynamic as contractors face increasing competitions locally and globally. Traditional ways of doing things, project management philosophies and principles have become questionable for construction companies. Hence companies develop interests to new demands for quality, productivity, and performance.

Construction market favors those contractors who have real competitiveness to achieve the ultimate objectives of construction projects such as meeting quality specifications, deliver projects on time, and finish projects with earmarked project budget. Recognizing the benefits of identifying competitiveness indicators in construction industry the researcher carried out this study to help the client understand and recognize them in their effort of recruiting local contractors that are competitive enough to carry out federal Highway projects. It gives chance for the client on what bases those Key Contactors‟ Competitiveness Indicators (KCCIs) are identified.

In this research attempts have been made to assess and identify six aspects of KCCIs, namely, corporate image, technology and innovation, marketing capability, financing capability, organizational management skills, and human resources strength. ERA as a client of federal Highway projects in the local market can use these aspects of KCCIs to assess contractors‟ competitiveness in prequalifying or short-listing process.

Local construction firms engaged in road construction projects also get opportunity to know what those Key Indicators that add value for their competitiveness in the local market. They would gain proper understanding on the practice of how their competitiveness is assessed in such specific construction market. Furthermore, it helps them to make strategic decisions in their efforts for further improvement to get the required level of competitiveness by analyzing their strengths and weaknesses.

Firms can make quick response to the new changes if they are able to understand dynamic driving forces in construction industry and think about exploring new markets to maintain their competitiveness even when the industry enters declining period. Gaining awareness and

understanding of competitiveness will assists them to take effective actions to improve their competitiveness and ultimately obtain sustainable performance in a dynamic construction business environment.

5.2 Recommendations

- ✓ Local road construction companies are involved in complex business environment. It is very important to establish good relationship with different parties such as clients, government regulatory bodies, consultants, financial institutions, subcontractors, and suppliers. Having good relationships with these parties enable contractors to have more opportunities to obtain construction contracts and improve their efficiency of the construction work.
- ✓ In order to enhance their competitiveness Local Construction Firms (LCFs) need to understand and realize external factors which affect their competitiveness. This helps them to improve their competitiveness and formulate competitive strategic dimensions to meet the demands of changing business environment and their client.
- ✓ It is recommended to build firms capabilities to utilize internal resources such as human resource, finance, equipment and plant, marketing information, technologies, and others as they provides a competitive edge to contractors. Allocation and effective utilization of such resources enable them meeting client‟s multiple objectives like finishing projects on time, with given quality requirements, and allocated budget.
- ✓ For parties to gain mutual advantages assessing and building up the key competitiveness are the major part of strategic management for construction businesses. By doing this, parties work on win-win business relation bases. For example, failure of local contractors meeting project objectives leads to failure of client to meet its obligations expected by other stakeholders or beneficiaries.

5.3 Recommendations for Further Study

Several studies exist on assessing contractors‟ competitiveness in foreign context to identify proper contractors or help contractors maximize their competitiveness in the industry, however, most of studies by local researchers focus mainly on the performance of firms with no or little attention on assessing and identifying competitiveness indicators in road construction firms. This study as compared to others, made efforts to asses and identify KCIs

in the local context for firms engaged in federal highway projects.

Hence, the following areas need further research endeavors:

- ✓ Carrying out firm level study on competitiveness which involves three core parties, namely, client, consultant, and contractors.
- ✓ It is advisable also if future researches focus on industry level by considering other construction sectors such as building, water works, hydropower, irrigation, and others to have complete picture of industrial level competitiveness and come up with strategic recommendations.
- ✓ Comparison of contractors' competitiveness and competitive strategies between local contractors and other countries or regions can be other area for further research. By doing this, its findings will be useful for contractors to design strategies that enable them to enter different regional markets.

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Letter of Invitation to Participate in Survey

Dear Participant,

The aim of this questionnaire is to seek information regarding Construction Firms‟ Competiveness on Asphalt Construction Projects. The questionnaire is distributed randomly to professionals who are from construction firms, project client, and consultants. The information you provide in response to the items in the questionnaire will be used as part of the data needed for a study on **Comparative Analysis of Construction Firms Competitiveness: Federal Highway Projects.**

I would like to assure you that the information you provide will be accessible only to the academic purpose and not be exposed to any other purposes. Your involvement is regarded as a great contribution to the quality of the research. Hence, I believe that you will extend your assistance by participating in the study.

Your honest and thoughtful response is appreciated. Many thanks in advance.

Ahmed Abubeker aucgt@yahoo.com

0911-232253/ 0913-107747

Questionnaire

A Survey on A Comparative Analysis of Competitiveness of Construction Firms: The Case Federal Highway Projects

Part One: Profile of Respondents (Mark ✓ *only one):*

1. Age:

18 to 20 years old [ ] 20 to 29 years old [ ] 30 to 39 years old [ ]

40 to 49 years old [ ] 50 to 59 years old [ ]

60 and over 60 years old [ ]

2. Gender:

Male [ ] Female [ ]

3. Academic Level

Certificate [ ] Diploma [ ] Bachelor‟s Degree [ ]

Master‟s /PhD [ ] other [ ] specify, _____

4. How long have you worked in the construction sector?

Less than 3 years [ ] 3 to 5 years [ ] 5 to 10 years [ ] Over 10 years [ ]

5. How long have you worked in road construction?

Less than 3 years [ ] 3 to 5 years [ ] 5 to 10 years [ ]

Over 10 years [ ]

6. How long have you worked for the organization?

Less than 3 years [ ] 3 to 5 years [ ] 5 to 10 years [ ]

Over 10 years [ ]

Part Two: General Information

7. Name of the firm _____

8. Your organization engaged in:

Road Construction [ ] Client (ERA) [ ]

Road Construction Consultant [ ]

Others [ ] specify_____

9. Your position in the organization

Junior Officer [ ] Supervisory [ ] Middle Mgt [ ]

Top Mgt [ ]

10. How old is your organization in the construction industry? _____

Part Three: Perception of Construction Firms Competitiveness

A preliminary list of indicators is included in this questionnaire for assessing contractors‟ competitiveness with particular reference to the asphalt road construction of Federal Highway projects. We are going to identify the Key Competitiveness Indicators (KCIs) based on professional opinion. Please identify and circle the degree of importance of each indicator measuring contractors‟ competitiveness by selecting **only one** of the five alternatives indicated on the following page. Once again we appreciate your genuine and honest response to each question as your information contributes to quality of the research.

5-Extremelyimportant (EI); 4-Important (I); 3-Average (A); 2-Less important (LI) ; 1-Negligible (N)

Code	Description	Degree of Importance				
	Section I : Indicators Measuring Corporate Image	**EI (5)**	**I (4)**	**A (3)**	**LI (2)**	**N (1)**
I -1	Organization‟s credibility	5	4	3	2	1
I-2	Recognized grading for company	5	4	3	2	1
I -3	Project safety performance records	5	4	3	2	1
I-5	Project quality awards	5	4	3	2	1
I -6	Project environment and hygiene performance records	5	4	3	2	1
I-7	Market share	5	4	3	2	1

I -8	Compatibility with the local culture	5	4	3	2	1
I-9	Social conscience and responsibility	5	4	3	2	1
Code	**Section II : Indicators Measuring Technology , Innovation, and**	**EI (5)**	**I (4)**	**A (3)**	**LI (2)**	**N (1)**
I-10	Contractors‟" ability to adopt to new methods of work	5	4	3	2	1
I-11	Utilization efficiency of equipment and plant	5	4	3	2	1
I-12	Number of technical staff	5	4	3	2	1
I-13	Capacity of construction equipment and plant	5	4	3	2	1
I-14	Proportion of advanced construction equipment and plant	5	4	3	2	1
I-15	The rate of applying the new technology developed internally	5	4	3	2	1
I-16	Extent of applying information technology	5	4	3	2	1
I-17	Establishment of research unit and strength of research staff	5	4	3	2	1
Code	**Section III : Indicators Measuring Financial Capability**	**EI (5)**	**I (4)**	**A (3)**	**LI (2)**	**N (1)**
I-18	Payment to subcontractors / suppliers on time	5	4	3	2	1
I-19	Credibility of the firm considered by relevant financial bodies	5	4	3	2	1
I-20	Escalation of material prices	5	4	3	2	1
I-21	Liquidity of organization	5	4	3	2	1
I-22	Organizational debt status	5	4	3	2	1
I-23	Organizational profit status	5	4	3	2	1
I-24	Capability of loan repayment	5	4	3	2	1
I-25	Effectiveness of communication with banker and financial institutions	5	4	3	2	1
I-26	Organizational assets status	5	4	3	2	1
I-27	The value of annual loans obtained	5	4	3	2	1

5-Extremelyimportant (EI); 4-Important (I); 3-Average (A); 2-Less important (LI) ;

1-Negligible (N)

Code	***Section IV : Indicators Measuring Marketing Ability***	**EI (5)**	**I (4)**	**A (3)**	**LI (2)**	**N (1)**
I-28	Geographical regions of business activities	5	4	3	2	1
I-29	Ability and facilities for managing market information	5	4	3	2	1

I-30	Ability to forecast the changes of market conditions	5	4	3	2	1
I-31	Past success rate in pre-qualification exercises	5	4	3	2	1
I-32	Past success rate in the final bidding stage	5	4	3	2	1
I-33	Value of annual contract works	5	4	3	2	1
I-34	Payment to subcontractors / suppliers on time	5	4	3	2	1
I-35	Membership in contractors association	5	4	3	2	1
I-36	Relationship with governmental departments	5	4	3	2	1
I-37	On the tender list for governmental works	5	4	3	2	1
I-38	Relationship with news media	5	4	3	2	1
I-39	Relationship with subcontractors and suppliers	5	4	3	2	1
I-40	Relationship with the public	5	4	3	2	1
Code	**Section V : Indicators Measuring Management Skills**	**EI (5)**	**I (4)**	**A (3)**	**LI (2)**	**N (1)**
I-41	Leadership skills for project manager	5	4	3	2	1
I-42	Effectiveness of site management	5	4	3	2	1
I-43	Effectiveness of coordination with subcontractors	5	4	3	2	1
I-44	Effectiveness of cost control methods	5	4	3	2	1
I-45	Effectiveness of time management	5	4	3	2	1
I-46	Effectiveness of site safety management	5	4	3	2	1
I-47	Effectiveness of financial management	5	4	3	2	1
I-48	Effectiveness in adapting changes and meet client needs					
I-49	Availability and competence of contracts manager	5	4	3	2	1
I-50	Knowledge about the local construction law	5	4	3	2	1
I-51	Availability and effectiveness of quality management system	5	4	3	2	1
I-52	Availability and effectiveness of risk management system	5	4	3	2	1
I-53	Ratio of successfully committed contracts	5	4	3	2	1
I-54	Contractors' ability to restore operations after an emergency	5	4	3	2	1

I-55	Contractors' ability to work as team players	5	4	3	2	1
I-56	Effectiveness in settling contract dispute through negotiation	5	4	3	2	1

5-Extremelyimportant (EI); 4-Important (I); 3-Average (A); 2-Less important (LI) ;

1-Negligible (N)

Code	Section VI : Indicators Measuring Human Resources Management Strength	EI (5)	I (4)	A (3)	LI (2)	N (1)
I-57	Career prospect within organization	5	4	3	2	1
I-58	Ratio of technical and professional staff in the organization	5	4	3	2	1
I-59	Appropriateness of organizational structure	5	4	3	2	1
I-60	Employees enhancement , training and education	5	4	3	2	1
I-61	Staff salary scale relative to that of other organizations within the industry	5	4	3	2	1
I-62	Mechanism of distributing benefits and reward	5	4	3	2	1
I-63	Human resources development strategy	5	4	3	2	1
I-64	Mechanism for staff recruitment	5	4	3	2	1

Part Four:

I-65 To what extent or degree you agree to the following points that construction firms‟ competitiveness are ensured? **Use the scale 5 to 1**

5-Extremelyimportant (EI); 4-Important (I); 3-Average (A); 2-Less important (LI) ;

1-Negligible (N)

Result of Competitiveness	EI (5)	I (4)	A (3)	LI (2)	N (1)
Completing Project on Time shows firms' competitiveness	5	4	3	2	1
Quality works on asphalt road construction projects are ensured through firms' competitiveness	5	4	3	2	1
Construction firms competitiveness helps firms' to complete a project within budget	5	4	3	2	1
Client Satisfaction can be raised by firms' competitiveness	5	4	3	2	1

I-66 Please , kindly state any other results (if any) that can be achieved as a result of construction firms‟ competitiveness in asphalt road project**.**

I-67 In your opinion, to what extent road contractors in asphalt projects are competent enough to perform their job as agreed?

Excellent [ ] Very Good [ ] Good [ ] Fair [ ] Poor [ ]

I-68 Please, state anything that you feel appropriate to raise construction firms competitiveness for higher project performance in terms of cost , quality, time, and employers satisfaction.

THANK YOU FOR YOUR PARTICPATION!!!