A COMPARATIVE STUDY OF BUILDING CONSTRUCTION PROJECTS MANAGEMENT OF FOREIGN AND LOCAL CONTRACTORS: THE CASE OF COMMERCIAL BANK OF ETHIOPIA

By: Ephrata Leulseged

Advisor: Dakito Alemu (PhD)

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Statement of Declaration

I hereby declare that the project work presented in this document is my original work and that it has not been submitted partially; or in full for any educational qualification in any other university/institution. All sources of materials used for the thesis have been acknowledged accordingly

Signature: _____

Date: _____

Addis Ababa, Ethiopia

Certification

This is to certify that Ephrata Leulseged has carried out this project work on the topic entitled 'A Comparative Study of Building Construction Project Management of Foreign and Local Contractors: The Case of Commercial Bank of Ethiopia' under my supervision.

This work is original in nature and it is sufficient for submission for the partial fulfillment for the award of Degree of Masters of Arts in Project Management

Dakito Alemu (Dr.)

Signature: _____

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BY
Ephrata Leulseged
APPROVED BY BOARD OF EXAMINERS:

Dr. Dakito Alemu	_____	_____
Advisor	**Signature**	**Date**
Internal Examiner	_____	_____
	Signature	**Date**
External Examiner	_____	_____
	Signature	**Date**

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Abstract

Construction projects have played a major role in Ethiopia's economy. But construction projects in Ethiopia are riddled with delay, cost overruns and mediocre quality of work. The main objective of the research is to determine and compare the project management parameters of foreign and local contractors to determine how they are related to each other and determine on which parameters local contractors might be experiencing problems than others. Building projects owned CBE that were undertaken by local contractors were analyzed with their foreign contractor counterparts on the basis of cost, schedule and quality. Data was collected using a questionnaire and interviews. The results showed that cost performance and schedule performance of the local and foreign contractors are negatively related. Finally recommendations have been made in order to advance the local contractors. Mainly local contractors have to readapt how they manage cost in a way it incorporates the schedule, human and material resources in order which can be aided with various software. Improvements in schedule performance can be made with getting ahead of obstacles like late delivery by ordering pre-emptively a creating a culture of productivity. To improve quality performance companies should put safety and employee development as priorities.

Key Words: Local Contractors, Foreign Contractors, Schedule Performance, Cost Performance, Quality Performance

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List of Abbreviations and Acronyms

BIM - Building Information Modelling

CBE – Commercial Bank of Ethiopia

CCF- China Construction Firms

CFS- Critical Success Factors

CICs'- Chinese international contractors

CSCEC – China State Construction Engineering Corporation

EQA - Ethiopian Quality Award

HRM- Human Recourse Management

IFC- Industry Foundation Classes

RMB- Ren Min Bi (Yuan)

SWOT- Strengths, Weaknesses, Opportunities, and Threat

WBS- Work Breakdown Structure

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Construction projects have played a major role in Ethiopia's economy. A report by the National Bank of Ethiopia (NBE) states the construction industry accounts for half of the nation's industry. Even though it accounts for much of the economy, the construction industry is plagued with delays, cost overruns and don't hold up to the standards prohibiting the benefactors form collecting the benefits on the intended time.

Numerous researches have shown the difficulties local contractors in developing countries face to deliver projects on time, within the agreed upon budget and quality. In addition to that local contractors lack financial and technological capabilities to undertake large projects. For those reasons high profile construction projects are being awarded to foreign contractors.

Most local contractors display complaints since external suppliers receive a high-priority build. There is no disagreement that the profit will assist the country internally. However, local entrepreneurs are known to struggle with a successful enterprise. The degrees of advancement of the above initiatives are obvious. When finished on schedule and on the agreed budget, the definition of a successful construction project will be the highest quality and most safe under the specifications and to the satisfaction of the stakeholders. Such milestones are hardly met. Despite the importance of building for Ethiopia's economy, the delay remains the industry's main obstacle. Study demonstrates that just 8.25% of projects in Ethiopia were completed by the initially intended deadline. The other 91,75 percent of contracts were delayed by 352 % Werku and K. N, (2016). When it came to cost Belachew et al., (2017) found 21.5% of an average cost overrun within their scope of the research.

Correspondingly a study conducted around local and foreign contractors of developing countries states that call for more engagement of local contractors has been gaining support by construction stakeholders. However, due to the increasing complexity of the construction industry and technological advancement, the influx and engagement of foreign contractors has been on the increase and their contribution is also germane to the economy development of the country. The authors examined the strengths, weaknesses, opportunities and threats of indigenous and foreign contractors in the country with a view to understanding their

differences in the quest of improving their service delivery. The authors ultimately found foreign contractors have better strengths than their indigenous counterparts, and this has made them gain better expertise. Also, they enjoyed more opportunities than the threats they are faced with, but the reverse is the case for indigenous contractors. (Oke et al., 2018)

One of the top foreign contractors working with Ethiopia is China. China is seizing the chance to meet the much-needed infrastructure in most African nations particularly Ethiopia as part of its engagement plan. And they're not coming cheap. And they are not. Chinese contractors are given high-priority projects because of the financing granted to them under a loan arrangement. Because of the country's bilateral links, Ethiopia has received numerous loans. Some of these Chinese government loans are concessional lenders of 500 million dollars, telecom infrastructure investments of 1,5 billion dollar, and short-term commercial credits of 1.5 billion dollars Gamora, (2009). This is the case with the construction projects owned by the Commercial Bank of Ethiopia who has several construction projects awarded to both foreign and local contractors.

The commercial bank of Ethiopia (CBE) is a bank established in 1942 that is one of the most important banks in Ethiopia. The bank has over 800 branches domestically across the nation. The bank is working towards becoming a world-class bank. To get the necessary space for the growing business the bank undertook construction projects to serve as head quarter and district offices in different cities. One of the instances discussed is the Chinese State Construction Engineering Corporation (CSCEC), a state-owned construction business, of the commercial bank of Ethiopia headquarters. This triumphant 48-story structure is situated on 150,000 square meters of land in the center of Addis Ababa costing $266.5m and is the highest structure in East Africa at a height of 200m. The project, which is a further landmark edifice contracted by the CSCEC, will be a milestone in Ethiopia's activities following the African Union Conference Center. The bank’s decision to award this project to a foreign company was made because while there is an observable progress in the capabilities of local contractors in recent years, they simply are not able to handle such large projects. Even in the instances they are awarded high capacity projects local contractors can be seen struggling to cope with the various requirements needed to undertake such projects. The following projects undertaken by local and foreign contractors are under consideration

CBE Addis Ababa Head Office Project the Commercial Bank of Ethiopia Headquarters is a skyscraper being built in Addis Ababa, Ethiopia. When completed, it will be Ethiopia's tallest

structure. The project occupies a total land area of 18,308 m2, its total floor area is 147,692 m2. The main high rise tower is 200 meters high. The building has 4basements underground and G+48 floors above ground. Will house the offices of the country's largest bank, the state-owned Commercial Bank of Ethiopia. The building will accommodate parking, a branch, banking office and leasing office, podiums to accommodate staff facilities like gym, cafeteria and training rooms, conference center, refugee floors built with fire-resistant capabilities in case of an emergency, the largest convention hall in the country that can hold up to 2000 people and another that can hold up to 300 people. There are two other buildings aside from the skyscraper which are commercial centers accommodating shops, restaurants, and recreational areas. These buildings will be 4B+G+6 (4basements ground floor +5 floors) and 4B+G+8(4basements ground floor +5 floors).

Construction began in 2015 as part of a 5,300,000,000 Ethiopian birr agreement with the China State Construction Engineering Corporation as the consulting party Addis Ababa university. On June 27, 2015, the foundation stone was laid. The structure was then completed in the second half of 2019. The structure was supposed to be finished on January 19, 2019. But since then there have been several changes in the scope of the project. For instance, the now G+48 building was initially designed to be G+46. The commercial centers which are G+6 and G+8 were initially planned to be G+5 and G+7 respectively. Due to this, the initial project time was extended and the project was intended to be conducted on January 2020. Cost adjustments were made accordingly. The project is now set to be opened in May 2021, the project has been delayed by from the predetermined schedule. One of the major problems faced by the contractors is the immediate occurrence and aftermath of the COVID - 19

CBE Hawassa District Office Project has a main building and a separate Bank branch, with different functions like Hall, District Offices, Training Rooms, Different size Meeting halls, 200person capacity main hall, Library, Basement parking's in both buildings. The Main Building has 2B+1SB+ G+ 11F (2 basements +1sub basement+ ground floor + 11 floors) and a 2B+1SB+G+2F (2 basements +1sub basement+ ground floor + 2 floors) Branch Bank Buildings respectively to be constructed on a total plot area of 4000 m2. Among them, 18,665.00 ㎡ is the upper floors and 9,925.00 ㎡ Basement floor area. The total built-up area is 28,590.00 m2. The contract between CBE and ZAMRA Construction PLC which is one of the local Grade one Contractor was signed on January 17, 2018, G.C. with a total

contract amount of Birr 895,641,880.36 including 15% VAT. The Design Review, Supervision & Contract Administration Consultant is Addis Mebratu Consulting Architects & Engineers. The total contractual period was 900 days making the time for completion to be on 05 July 2020. The overall progress of the project is poor which 25.37% as of March 2021 is. The time elapsed is 97.55%. That is due to the time extensions given. The project shows a delay of 108% as of May.

CBE Mekelle District Office Project is a building project that has a main building with different functions like bank branch with a vault, Hall, District Offices, Training Rooms, Different size Meeting halls, Library, and Basement parking. The Main Building has 2B+ G+ 17F (2 basements + ground floor + 17 floors). The contract between CBE and Yotek Construction PLC which is one of the local Grade one Contractor was signed on June 20, 2018, G.C. with a total contract amount of 900 calendar dates. The original completion date was set for March 7, 2021. But due to project revisions, and change in the design a time extension of 189.71 days was permitted pushing the completion date to September 12, 2021. The consulting party for the project is Addis Mebratu Consulting Architects and Engineers. Although the original contract date has not passed, the planned work as of November 2020 was 41.23% but the executed work is 17.01%. This shows a delay of 41.26%.

CBE Bahirdar District Office Project is a building project with different functions like bank branch with a vault, Hall, District Offices, Training Rooms, Different size Meeting halls, Library, Basement parking. The building has a height of 1B+1SB+G+12 (1 basement +1sub basement+ ground floor + 12 floors). The contract between CBE and RAMA Construction PLC which is one of the local Grade one Contractor was signed on January 10, 2018, G.C. with a total contract amount of Birr 888,410,773.19. The site was handed over on March 19, 2018, and the original completion date was set for September 26, 2020, or 900 calendar dates. As of May 2021, the time elapsed was 691 days or 76.78%. The project has been delayed by 120%.

Foreign contractors, especially ones originally from china have a strong integrated top down management contributing to their performance. In order to elevate local contractors and bring them up to par with foreign contractors it is imperative to understand what factors are anchoring them. That is where this study comes in. In this paper; it is intended to compare the

performance of foreign and local contractors by using three key project management variables. These variables are time/schedule, cost/budget and quality.

1.2. Statement of the Problem

The construction industry is a high investment-profit industry that is bulky and multi-faceted. Even though construction could revolutionize economies in developing countries like Ethiopia, problems like schedule delay, cost overrun, safety and quality issues hinders it from doing so. There are different reasons for this brought forward by different researches. In many instances, these reasons are directory or indirectly related to the project management. Most researches related to construction project inadequate performance indicate that the three bodies, i.e. Management of time, schedule and quality.

There is no doubt a diplomatic relationship can be established when doing business with foreign companies. However, not easy for domestic firms to succeed by competing with foreign firms who have extensive international experience and capacity. The ultimate goal should be to develop the knowledge and capabilities of local contractors. But currently there is little to none transfer of knowledge form foreign to local contractors. If the trend continues local contractors will continue to fall behind and the country will not be able to stand on two feet in the domestic construction industry let alone the international one.

There have been numerous researches, reviewed in the second chapter conducted on the individual topics of time performance, schedule performance and quality performance on the success of construction industry in Ethiopia. There is a gap in the current research that has been conducted in Ethiopia. There are abundant researches that were reviewed which studied the problems being faced by local contractors. The intention of this research is to compare the iron triangle variables of time, cost, and quality performance for foreign and local contractors.

The purpose The *Iron Triangle*, also called the *Triple Constraint*, is to clarify the concepts of project management. It acts like a central concept to project management research and practice, representing the relationship between key performance criteria. However, there is disagreement about which criteria should be represented on the vertices of this triangle. Projects tend to practice trade-off of one variable for the others. Understanding how trade-offs should be implemented is essential to performance. By studying all three and in

comparison with the performance of foreign contractors will further the existing knowledge and put a spot light on which particular area i.e. time performance, cost performance or quality performance has more anchoring weight on the success of the construction industry in Ethiopia. Comparison can be made to other existing studies like the one conducted by Nakhleh, (2019) which found a significant linear relationship was found of time estimation and cost estimation to the project performance.

1.3. Research Questions

I. What relationship exists between the cost performance of local and foreign contractors?
II. What relationship exists between the schedule performance of local and foreign contractors?
III. What relationship exists between the quality performance of local and foreign contractors?

1.4. Research Objectives

1.4.1. General Objective

The main objective of the research is to determine the relationship between the project management of foreign and local contractors in the contest of cost schedule and quality performance, and recommend areas of improvement for local contractors.

1.4.2. Specific Objective

I. To examine the relationship between the schedule management in local and foreign contractors based on the criticality and causes of time extensions
II. To assess the relationship between the cost management in local and foreign contractors based on value management and integrated management

III. To assess the relationship between the quality in local and foreign contractors based on material quality, quality of workmanship, safety and employee development
IV. To explore how the performance of local contractors can be boosted based on findings
V. To examine how mediator variables like the pandemic or cultural barriers have affected performance of foreign contractors

1.5. Significance of the Study

The Construction enterprise performs a critical position for growing nations such as Ethiopia as they are extensively dependent on the growth and improvement of infrastructures: furthermore, its relation to each financial and social sector may be very big.

While there are numerous researches conducted on the issues of schedule performance, cost performance and quality performance independently in the context of construction in Ethiopia, a study with this type of combination is the first of its kind.

1.6. Scope of the Study

The research will be bounded to construction projects that are owned by CBE. The parties involved will be limited to the teams that are currently involved in the headquarter project and the one involved in the previous projects undertaken by local contractors.

1.7. Definition of Key Terms

Foreign Contractors **–** this is referring to the CSCCC contractor company, in this case, it will be used to study what factors separate the different progress.

Local Contractors **–** these are the contractors that were initiated and operate in Ethiopia.

Time/schedule performance **–** this is to mean the degree to which the contractor was adjacent to the primarily stated contractual schedule. Success in time or schedule performance will be determined by weather time extensions were critical or non-critical. Factors that contribute to delay will be studied to determine if these causes were initiated due failure to manage the project or due to external factors. In light of recent events, for the impact to COVID 19 will be assessed to determine the impacts it might have.

Cost performance **–** this is to mean the degree to which the contractor was adjacent to the primarily stated contractual budget. Success in cost performance will be determined on the practice of value management and integrated management.

Quality performance **–** this is to mean the degree to which the contractor was adjacent to the primarily stated contractual quality. This will be determined by material, quality of workmanship, safety and environmental protection.

1.8. Limitations of the Study

Although great time and resources are dedicated to get the most accurate outcome for this research, no study is not without its constraints. The major limitations of this study are the small amount of related literature for projects with foreign contractors in Ethiopia. Literature of different countries had to be used to build the frame of reference. Availability of vast related literature in the context of Ethiopia would help gain a stronger skeleton for the research. Although many attempts were made, it was also difficult to thoroughly communicate with contractors located outside of Addis Ababa making room for other sources of information to be used. There was also a time constraint and small amount of respondents due to inconvenience.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1. Theoretical Review

Time cost and quality are vital organs in building construction project management. A successful project has an optimum equilibrium between all three, relatively low costs, high productivity (time) and successful outcomes (quality) appraised or evaluated in relation to sustainability. In the research conducted by Demirkesen and Ozorhon, (2017), the authors theorized the success of a construction project is dependent on integration management. Integration management is crucial among these because effective project management begins with the integration of processes and people inside a building project. The study aimed to evaluate the impact of various integration management components on construction project management performance and to quantify the link between those components and integration management. The suggested integration management components include project charter development, knowledge integration, process integration, personnel integration, supply chain integration, and change integration. The researchers hypothesized that the effectiveness of *"integration management"* had a positive and direct impact on *"project management performance"* when project nature and project magnitude were controlled for, and they sought to uncover unique features particular to the construction sector and depict the link between integration and performance by quantifying the impacts.

Most authors define success in project management as based on efficiency and effectiveness. Silva and B. N. F, in 2016 stated that construction project success can be divided into two dimensions. That is the efficiency and effectiveness dimensions. Under the efficiency dimension, in ascending order of short term perspectives, cost flow management, meeting safety requirements, meeting quality requirements and meeting time objectives meeting cost objectives. Under the effectiveness dimension, in ascending order of long term perspectives, environmental performance, client satisfaction, employee satisfaction, profitability, learning and development.

2.1.1. Cost/Budget Management

PMBOK guide, (2017) denotes that the primary focus of project cost management is the cost of the resources required to fulfill project operations. Project Cost Management should assess

the impact of project decisions on the recurrent costs of consuming, maintaining, and supporting the project's product, service, or outcome.

Limiting the amount of design reviews, for example, can save project expenses but raise the running expenses of the resultant product. Another component of cost management is to recognize that the project expenses are measured differently and in different periods by various stakeholders.

in the words of Ritz, (1994), the well-managed costs/budget supports and promotes cost awareness at all stages of the process and Provision of accurate and timely data on cost and prospects and the emphasis on any unfavorable cost or trends, fast and effective action to address problems and offer positive feedback to further evaluate these areas. Cost Control has four aspects, according to the book. The broad term *cost engineering* involves the estimation, budgeting and control of costs. It is too common to utilize for containing actual costs. *Cost reporting* involves collecting cost information and reporting on actual and projected results. *Value engineering* examines methods in which certain goods or activities are cost-saving. However, it does not examine the overall project image or monitor the day to day performance; it mainly focuses on individual things in design, procurement or building areas. The decrease in costs is also closer to cost checks and may include reporting costs.

2.1.2. Schedule Performance

A effectively managed program should give a thorough plan outline of how and when the project will deliver the goods, services and results established within the scope of this project and act as a medium of communication and as a base for reporting on performance and regulating stakeholder expectations (PMBOK guide, 2017).

The immediate and long-term goals do not match when a project is delayed. However, there is no difference between all delays and short-term objectives. There are critical delays vs. non-critical delays and excusable vs. non-excusable delays, according to Ahmed, (2015). The critical path technique defines critical and noncritical delays and how the delay can influence this critical/control task. If a project is delayed to any degree without harming the most sensitive work on the critical route that might influence the whole project, it is called non-

critical. And if delay impacts the critical path beyond the amount the project may crash or prolong, it is a critical delay. On the other hand, the reasons for the delay rely on the excuses and no excuses. Time outside project team control such as work strikes, accidents, deeds of God, change by owners, errors and omissions in plans and specs, different site conditions or covered conditions, usually heavy weather conditions, external agencies interventions, the failure of government agencies to act, for example, the inspection of buildings, are considered excusable. Non-excusable delays are late subcontractors' submissions, inappropriate supply performances; faulty job performance by the contractor and subcontractors, a project-specific work strike caused by a contractor's refusal or unfair work practices.

2.1.3. Quality Management

In the industry worldwide, international rivalry made quality control a major priority, with capital projects no exception. The impact of design and construction-quality proceedings has also increased in addition to sustaining the reputation of a corporation. There is no reason for the quality control in the company to be complacent! The main quality control areas in the arena of the capital projects are: design, engineering, construction of equipment and construction materials, final inspection and acceptance of the projects. (Ritz, 1994)

Another variable that has been reviewed under the quality variable is safety. Safety is an important issue in the building business and even in developed countries deaths and injuries caused by labor are causing significant costs for individuals, organizations and companies in general. The impression of security and danger in China and Australia was examined through a research by (Zou and Zhang, 2009).

2.2. Empirical Review

2.2.1. Cost/Budget Management

Even though cost is a vital component cost overruns may, nonetheless, be seen as one of the most common problems in building projects globally. In order to ease the problem further, additional research is needed. In underdeveloped nations this trend is worse, as these overruns can surpass 100% of expected project costs. (Memon et al., 2011)

In the conference paper titled identifying construction performance in the global industry by Rivera et al., (2017), authors collected research from around the world and composed data on cost overrun and schedule postponement. When it comes to projects being over budget, there was a 29% over the budget amount for 69% of projects over budget in Africa; there was a 28% over the budget amount for 98% of projects over budget in North America; there was a 16% over the budget amount for 59% of projects over budget in Asia; there was a 29% over the budget amount for 50% of projects over budget in Europe; there was a 15% over the budget amount for 65% of projects over budget in the Middle East.

Mesároš et al., (2015) study alleged production and execution of products and services are the basic costs of the enterprise. We differentiate two key cost groupings in terms of short-term management when we define causes for cost. Unit costs that are mostly handled by the production line and overhead expenses that are mostly managed for divisions. Especially early calculations are the basic instrument of cost control. Different types of calculations and corresponding methods of cost calculations are used with respect to functions for calculating costs. Today, the new trend looks for and creates standard management approaches and sustainable cost management decision-making. Management standardization may be applied in any company. This strategy will assist us to design more effective methods to meet consumer requirements.

Models that follow the key areas of company and so define priorities for decision making are modern management concepts. Those models, while they are based on common elements: processes and a correct vision of them are important to successfully manage (process management), customer orientation and satisfaction of their needs is essential to the management and decision-making (client quality management) and measurement processes. To implement modern management principles, a supportive measurement and assessment approach is necessary. The management of processes is becoming an essential requirement for understanding the customer's wants. Globalization and managerial discipline are progressing around the world toward integration. Management of processes may be implemented in several ways. In developing relatively discreet management areas like as quality management, cost management and cost control, consumer pressure is also obvious. These formerly discrete disciplines have now become interconnected systems with visible business information through the tracking procedure. Determined how companies utilize the cost management module which must be properly linked to the information system of the

company. In reality, ongoing supervision of the anticipated values with respect to actual values can discover deficiencies in the corporate cost management process in due course. Cost control is one of the most advanced control domains. Currently there are hidden elements which succeed, because cost containment gives the highest rate to good management and that is where profit is made. All this is, obviously, true if the firm has a good orientation for a long time and tries simply to do the right thing to check cost. Given that the present business conditions, it is vital to have information on the cost of corporate performance and the change from old to contemporary calculation techniques that allow assignment of costs according to real performance of their causes, activities.

Memon et al., (2011), studied the factors related to cost overruns due to the serious necessity to deal with Malaysia's severe issue of excess building costs. Many issues are facing the sector, including as delays in completing the project on schedule, expenses which exceed the budget, structural flaws and over related to foreign employees.

The eventual impact of a delay in the project also increases costs. Results demonstrate that bad design and delays of design, unrealistic contract duration & requirements, lack of experience, delay in materials and equipment delivery, management/work relationship, delay in drawing preparation & consent, inadequate planning and timing, poor management & supervision and errors in construction.

By the same token a similar research was conducted by Azhar et al., (2008) in Pakistan where construction is the major contributor to the country's economic growth. Prices of raw materials volatility, unpredictable costs of the manufactured products, high machinery costs, and lowest procurement processes for bidding, poor project management, delayed delivery and procurement phases, inadequate cost estimating techniques, extra labor, unsustainable planning and unstained policies of the government. Another result is that, because medium-sized building companies have tended to incur higher risk in order to establish businesses, the cost of overruns is larger.

By performing an in-depth analysis of the roles and responsibilities of these key stakeholders, Doloi, (2013) intended to unfold the industrywide perception of cost performance being heavily reliant on the contractor's performance alone. Confirmatory factor analysis on the combined responses across all three groups suggests that robust control procedures and adequate programming, along with efficient design and effective site management, are the

most critical factors. These factors are primarily associated with the responsibilities of contractors and consultants for managing cost overruns in projects. However, the client's responsibility in facilitating effective management of these factors within the project environment is crucial.

When it comes to Ethiopia under the management of local contractors the cost overrun rate for specific projects might be up to 126% of the contract price. The research conducted by Nega, (2008) found the that as the contract amount grew, the overrun decreased. The study found that in Ethiopia inflation or increase in building materials, inadequate planning and coordination, changes in orders because of customers' need for improvements, extra quantities throughout the construction process were the most major factors behind costs overrun. similarly in a study conducted by Belachew et al., (2017), the overrun cost of the projects examined ranged from 4.16% to 83.2%. While the average cost overrun was around 21.52%, which is a substantial amount.

The reason might be because the cost management in Ethiopia is somewhat primitive. Elements of the project like time, cost and quality. Countries that are known for large construction are employing various systems to aid in the integrated management of construction. Liu et al., 2018, suggested attaining cost control in construction project management, we need to control and manage the work throughout the whole construction process. This not only concerns firms' market competitiveness, it also analyses some management weaknesses and simplifies the administration of certain problems. Scientific and appropriate administration and monitoring are nonetheless necessary. In order to assure reasonability and accuracy of costs in order to increase the economic advantages of the entire project the overall quality and capability of cost review personnel must be continually improved. Simultaneously, cost control and the overall quality and ability should continually be increased.

For instance in the study by Zhao and Wang, (2014), where they compare traditional and modern cost management methods, the authors state the construction sector has been supplied with a more advanced project information share tool in developing the Building Information Modelling (BIM). Standardized industry foundation classes (IFC) formats, central storage of information and a consistent flow of information may possibly aid building professionals, especially quantity inspectors. Even in china's case despite BIM being generally known for a very long time, In addition, BIM is still under examination to achieve a cost management

aim. It might be because Ethiopia doesn't employ such tactics that cost overrun occurs due to Material fluctuations in price, underestimations of costs, delayed delivery of raw materials, insufficient examination of contract papers, the absence of coordination during the design phase and the absence of costs during and after the contract phase have the largest influence on project cost performance from the perspective of the client, consultants or contractor.

Another factor that influences cost performance is cost estimation. Vast number of studies and research initiatives has discovered individual elements that lead to increased project cost. Therefore, if any project exceeds its budget other projects are deleted from the program or the scope is decreased to give the cash necessary to cover the cost increases. The study conducted by Elinwa and Buba, (1993) demonstrates that Bias is the systematic propensity over-optimistic of key project parameters. The accuracy of the cost estimate might be influence. The aim of the project cost to guarantee a project continues in the building program is sometimes perceived as the deliberate understatement. The expenses might be underestimated by the estimators' identification with the Agency or company's objectives for the maintenance of a building program. It can also be the consequence of our pride and the idea that our agency is smarter than others with problems and will not succumb to difficulties of changes in scope, a sluggish scope, bad estimates or any other variables.

2.2.2. Schedule Management

The efficacy of schedule management can be measured with the degree of delay and the criticality of it. Delay is a global phenomenon that affects construction around the world even in developed countries. Previous research that was conducted on delay in construction projects in Ethiopia by (Werku and K. N, 2016) 51% of their respondents said that not one project within their preliminary timetable has been finished, 15.68% of respondents reported a 5% preliminary schedule project completion, 9.8% reported a 10% preliminary schedule completion, 7,8% reported a 25% preliminary schedule completion and 7.8% reported a 50% revision schedule, 7.8% 50% of projects to be completed on preliminary schedule, 7.8% of the respondents retorted only 75% of projects to be completed on preliminary schedule. Their study demonstrates that in Ethiopia just 8.25% of projects have been finalized to the originally targeted completion date. The remaining 91.75% of projects were delayed by 352% of the contractual time.

Literature on causes of delay in construction projects by A. Assaf and Al-Hejji, (2016) has highlighted that in Saudi Arabia, of the 23 contractors and 19 consultants that participated in the study, 76% and 53% respectively reported on witnessing time extensions of 10% to 30% of the original time. 30% to 50% time extension was reported by 25% of the participating consultants. another study by Mohammad et al., (2010) examined the trend in delay in Iran. From the data gathered by the authors in Iranian construction, there were about 30%, 74.5%, and 75% in the years 2001, 2002, and 2003, respectively.

Rivera et al., (2017), stated for projects that have shifted from the original schedule, in Africa 75% of projects that were delayed, were delayed by 53% from the preliminary schedule; in North America, 98% of projects that were delayed, were delayed by 37% from the preliminary schedule; in Asia, 68% of projects that were delayed, were delayed by 37% from the preliminary schedule; in Europe, 53% of projects that were delayed, were delayed by 55% from the preliminary schedule; in the Middle East 79% of projects that were delayed, were delayed by 30% from the preliminary schedule.

Parvaneh et al., (2018), the article entitled Causes of construction industry delays and comparative examination of delays revealed a serious challenge. The authors found that the cause of delay recurred in many of the studies, such as design, customer, contractual, labor and equipment, material, external and consulting causes, with the contractual obligation of delay the most important. The study also identified a number of factors, including delay-related causes. Furthermore, the authors admitted that a contractual duty for the delay is one of the most prevalent reasons of dispute in construction. The same as the previously mentioned research Avoiding building claims and disputes necessitates an appreciation of contractual terms and claim reasons. This paper's twofold underlying focus is to explore the reasons of delays on 130 public projects in Jordan and to help construction managers in deciding proper evaluation before contract award using quantitative data. Residential, office and administrative structures, school buildings, medical centers, and communication facilities were among the projects reviewed in this research. According to the conclusions of this analysis, the primary reasons of delays in the building of public projects include planners, user changes, weather, site circumstances, late deliveries, economic situations, and other variables. (Al-Momani, 2000)

Abdurezak and Neway, 2019, conducted a study about the causes of delay in construction projects of public projects under the Addis Ababa administration. This study was deemed

important by the authors because of the impacts of time overrun in construction projects. The study found 42 factors that contributed to construction project delay. The authors stated that the leading causes from the 42 factors were found to be the following Difficulty in project financing ; Poor Project management system; Delay in issuance of designs and working drawings; Shortage of availability of imported construction materials and goods on market; Late start & resource mobilization to the site; Inaccurate Site investigation Report; Price Inflation.

The research conducted by A. Assaf and Al-Hejji, (2016) states the most recurrent causes of delay on the word of owners are related to both contractor and labors. Outcomes specify that owners and consultants comprehend that awarding projects to the lowest bidder is one of the highest frequent factors of delay. Generally, the lowermost bidders are unqualified contractors with scarce assets and little capabilities, which lead to low performance and which cause a delay in completion of the work. This is closely related to another study conducted by Andualem Endris, (2019), showed similar results. In the research about critical risks in the construction industry in Ethiopia, the author found the most occurring risk to be inadequate scheduling by an unqualified contractor. Aside from that the research found that the critical risks were mainly unforeseen site conditions, improper design, incomplete contract documents, inflation, and lack of timely decision making, scope change, and political instability, and payment delay, lack of approvals, corruption, and poor contract administration.

Solís-Carcaño et al., (2015) aimed to show the use of project time management processes and its relation with project schedule performance that is timely completion. The authors state that delays is one of the causes for conflicts between different parties involved in construction projects. The research title is more than appropriate to say the least; it simply sums up the entirety of the research. The main objective of the study reported in this paper is aimed (intended) at assessing the use of PTM processes and its relation with project schedule performance (i.e., timely completion). Seven PTM processes and seventy-seven tasks associated with them were identified from the literature that is globally relevant to project management. The extent to which PTM tools and techniques were used measured by using the PMBOK Guide. The guide recommends the use of seven processes during planning and execution to ascertain timely completion of projects. These are activity definition, activity sequencing, activity resource estimating, activity duration estimating, schedule development,

schedule monitoring and, schedule control. The authors conclude results of study reported in the paper indicate a significant effect of the use of processes related to Project Time Management on project performance, especially for completing the construction phase within the original schedule.

2.2.3. Quality Management

In the construction global market, competitiveness is gaining momentum. Total quality management is becoming increasingly important in order to maximize customer engagement and so win the market in the long run. However, as the study by Beshah and Kitaw, (2014), the quality of services in developing economies such as Ethiopia is challenged. The Quality Management Practices are researched in the Ethiopian production and services industry, based on the Ethiopian Quality Award (EQA) self-assessment methodology and the winning people in 2009. In general, quality control procedures in Ethiopia have been determined to be inadequate in all aspects, including leadership, policies and strategy, resource management process management, customer satisfaction, business performance and impact on society through a study of the EQA self-assessment reports. Policy and strategy are, in spite of the lowest weight assigned by the EQA, the most essential problem area. By comparison, the quality control practice in the service sectors is poorer than in all the quality metrics examined in the manufacturing sectors. Quality proponents, especially the government, should thus pay special attention to the quality of the service industries. Both the manufacturing industry and the services industry should, however, be encouraged to determine a long-term strategy for their daily activities as well as to solve the core causes of poor quality management.

The research Luai Jraisat et al., (2016), has shown the proportional value of quality elements. This is crucial when huge time, money and resources are spent every year because of inadequate or non-existent levels of quality. A method of exploration is used. The conclusions reveal that the most essential quality variables are: management of human resources, client satisfaction and construction specific elements for the contractor and architects in combination.

One of the major factors under quality which seems to be lacking in the construction industry in Ethiopia are safety and environmental protection issues. Not only does inadequate practice

of safety and environmental protection cause irreparable harm to individuals and the community, it causes litigation and loss of reputation for the owner, consultant and contractor.

The safety risk elements were evaluated by means of a risk importance index based on the probability of incidents and the safety performance implications. The survey findings indicate that the major view of safety threats was in China from concerns connected to people and/or processes with the primary focus of 'poor / no security education' followed by 'insufficient fire prevention, and electrical prevention,' etc. Government collective law and procedures to provide safety protection and the enforcement of safety education and training for all the participants should be developed to reduce construction safety hazards. The Australian building sector has often taken on risks relating to environment and site circumstances, which in China have not been widely recognized. In this sense, the Chinese Government might also receive impending attention.

But safety is paid little to no attention in Ethiopia. So it says in the study conducted In south-western Ethiopia by Lette et al., (2018), a research assessed the incidence of injuries and related risks by construction workers. Institutional cross-sectional research among construction employees in Jimma City was undertaken. The research participants were selected using a stratified multi-stage sample followed by simple random selection. For the collection of data, a pre-tested and organized survey was employed. The research individuals were physically examined to supplement self-reported job injury information.

Chinese contractors are observed utilizing resources in order to cope with quality and schedule expectations. Proper management processes were generally seen as the most significant aspects determining building quality, while the availability of cash, and labor were taken for granted and the desires of property users were always overlooked. The availability of resources might be highly essential to building quality. By employing regression models to assess 550 robust provincial level data from 1993 to 2001, this research will give an insight into the hard elements determining building quality. It is observed that greater power of machinery per worker, the use of more equipment per m^2 of floor space, properties with greater unit areas, the better productivity tender to be connected with greater quality.(Yung and Yip, 2010)

Another parameter considered as frame of reference for quality performance is employee development. in a conference paper prepared by Mohyin et al., (2012) it is stated in order to achieve the required commitment among employees, the correct combination of human resources management practices and strategies is crucial for organizations to develop and apply properly, but these strategies have received little attention in the literature for construction management. The creation and maintenance of staff commitment towards the fulfillment of organizational goals is one of the primary challenges in their management.

There is doubt that small business owners-managers may not have a consistent human resource management approach designed to foster employee engagement. In the period between the end of 2006 and 2010, when the UK economy was devastated by global recession, this research was also undertaken for a period of 4 months. The results emphasize the relevance of HRM in developing the commitment of employees. Capacity design, performance and career management, training and development, reward management and employee participation are the five key strategy of HRM to affect commitment.

2.3. Foreign contractors

The research by (Werku and K. N, 2016) examined findings from throughout Africa and was able to uncover comparable reasons of delay in various nations. For instance, in countries like Ethiopia and Tanzania, the most frequent cause was determined to be a delay in payment to contractors is the most, however, late in progress payment for final product was the greatest cause in Egypt and inappropriate planning was the cause in Nigeria.

Different writers have proposed the development of the building industries of host countries through technology transfer from international contractors to local contractors. Several developing countries benefit from the ability to have diplomatic contacts with foreign governments.

In Africa, foreign nations in particular, China, take the chance to locate previously imported subjects. When it comes to infrastructure it helps African countries take advantage of the wide range of technology comparatively cheaper prices offered by Chinese state companies. as demonstrated by the study carried out by Chen et al., (2009) The success of the Chinese Construction Units (CCFs) has contributed significantly to the development of CCFs in Africa by giving access to cheap money, moderately priced labor, reasonable materials and

diplomatic contacts funneled through excellent communications. Even CCFs compete because of the enormous market share with them other for these chances. The financial and technical divisions of indigenous building enterprises that do not represent a robust provision of resistance are considered weak. China has supported various development projects in Ethiopia, including with the Gotera flyover project in Addis Ababa which is under construction with 60 million RMBY and the building of Maganagna-Kebena-Menelik Hospital and Kebena Bridge-Arat Killo Road Project with 40 million RMBY. Zero–tariff commodities in export to China rose from 130 to over 440. In exchange, more than 60% of the total has also been played by China in important works such as highways, dams and industries. Gamora, (2009) stated infrastructure is the focus of Chinese development assistance. Energy supply and generation, as well as transportation and storage and storage, account for 68.3 precent of Chinese official financial flows to Ethiopia. China's official flows have been directed to energy generation and supply, accounting for 46% of total flows.

This section of the review is also intended to shine a light on how different the situations could be for local and foreign contractors. For foreign contractors like CSCEC, communication has to be had by a mix of Amharic, mandarin, and English languages. There is also a cultural barrier that could result in numerous disputes. In his book ‘’tales of hope, taste of bitterness’’, the author Driessen, (2019) has dove into this issue. For instance the during road construction in Alamata, the Chinese construction company did not close the site on the religious holiday epiphany which caused conflicts on and off the construction site. The Chinese construction managers expected both workers and the authorities to act in the name of productivity and thereby focus on the greater good of development but were met with the supposed unwillingness of the Ethiopians to submit to this which ideal was taken to testify to their lack of willingness to develop as a result.

Even when facing such adversities, the Chinese contractors in Ethiopia came out prominent with outstanding performance. Even though they have substantial capital and technology when compared to their local counterparts, research that looked at how Chinese contractors achieved or retained a competitive advantage considered it was based on a variety of factors. The identification of critical success factors (CSFs) helps one to condense a large number of variables into a manageable number of important ones. Contractors' limited resources, such as money and manpower, should be distributed and matched accordingly based on the CSFs, resulting in the best overall competitiveness outcome. The authors categorized the key CFSs

into project management skills, organizational structure, finances, competitive strategy, partnerships, bidding, marketing, and technology. (Lu et al., 2008).

On the other hand Zhao et al., (2009) attributed this international success to the implementation of the strengths, weaknesses, opportunities, and threats (SWOT) approach which was adopted to analyze Chinese international contractors (CICs') strengths, weaknesses, opportunities, and threats in international construction markets. After reviewing these sources it is intended to develop a better understanding of the challenges faced by foreign contractors and how it might contribute to delay. Also as the foreign contractors are striving and prospering despite these challenges the study will observe what possible skills might be gained by local contractors.

2.4. Knowledge Gap

There are not many researches that explore the relationship between local and foreign contractors in Ethiopia. Even the researches that explore the topic don't investigate the three key variables of cost, schedule and quality together. Mostly researches focus on one particular area of project management. There are also new topics included in this research like the effect of the type of tendering, the inclusion of learning and development and impact of the pandemic.

2.5. Conceptual Framework

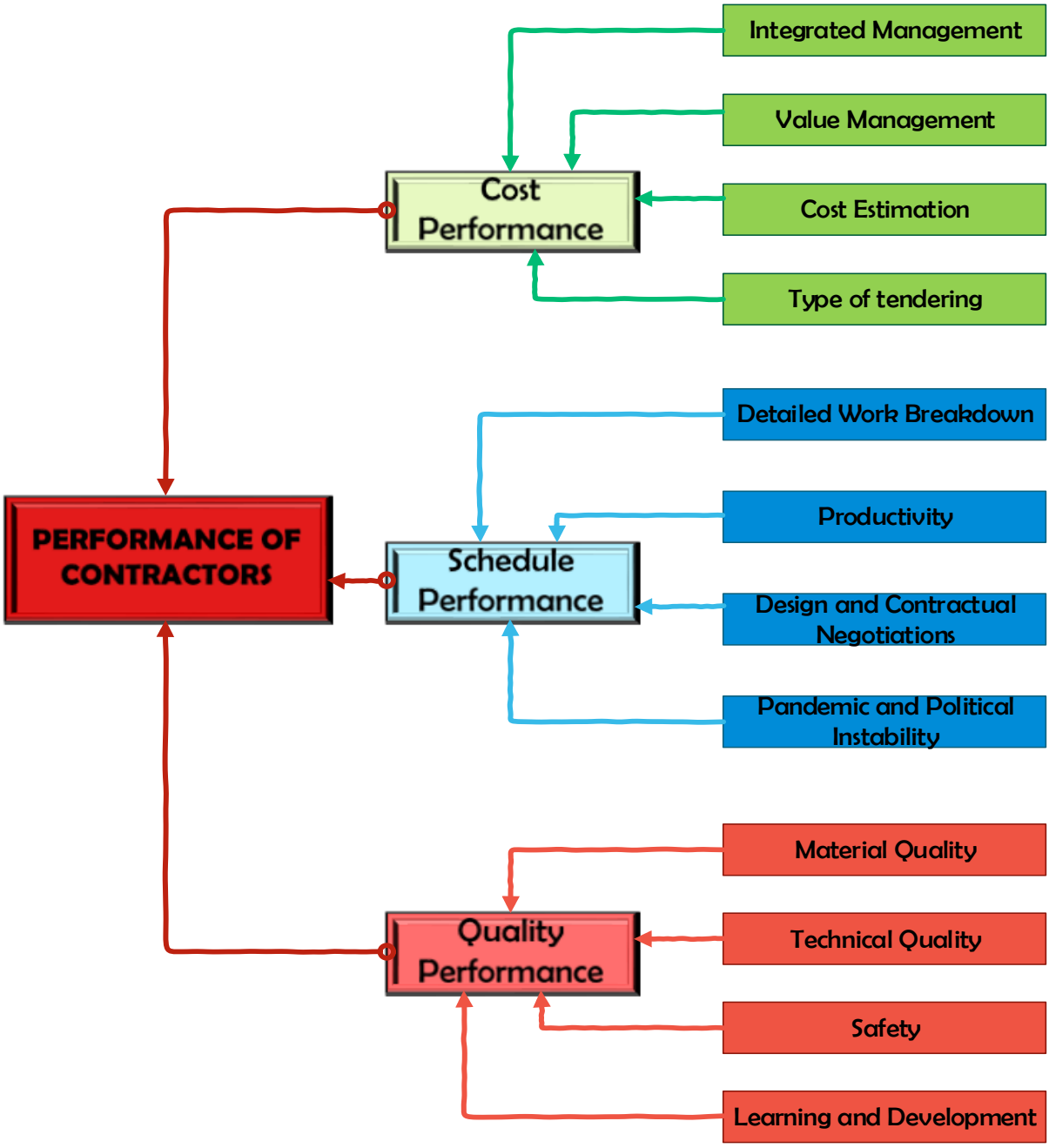


Figure 1: Conceptual Framework of the Relationship between Dependent and Independent Variables

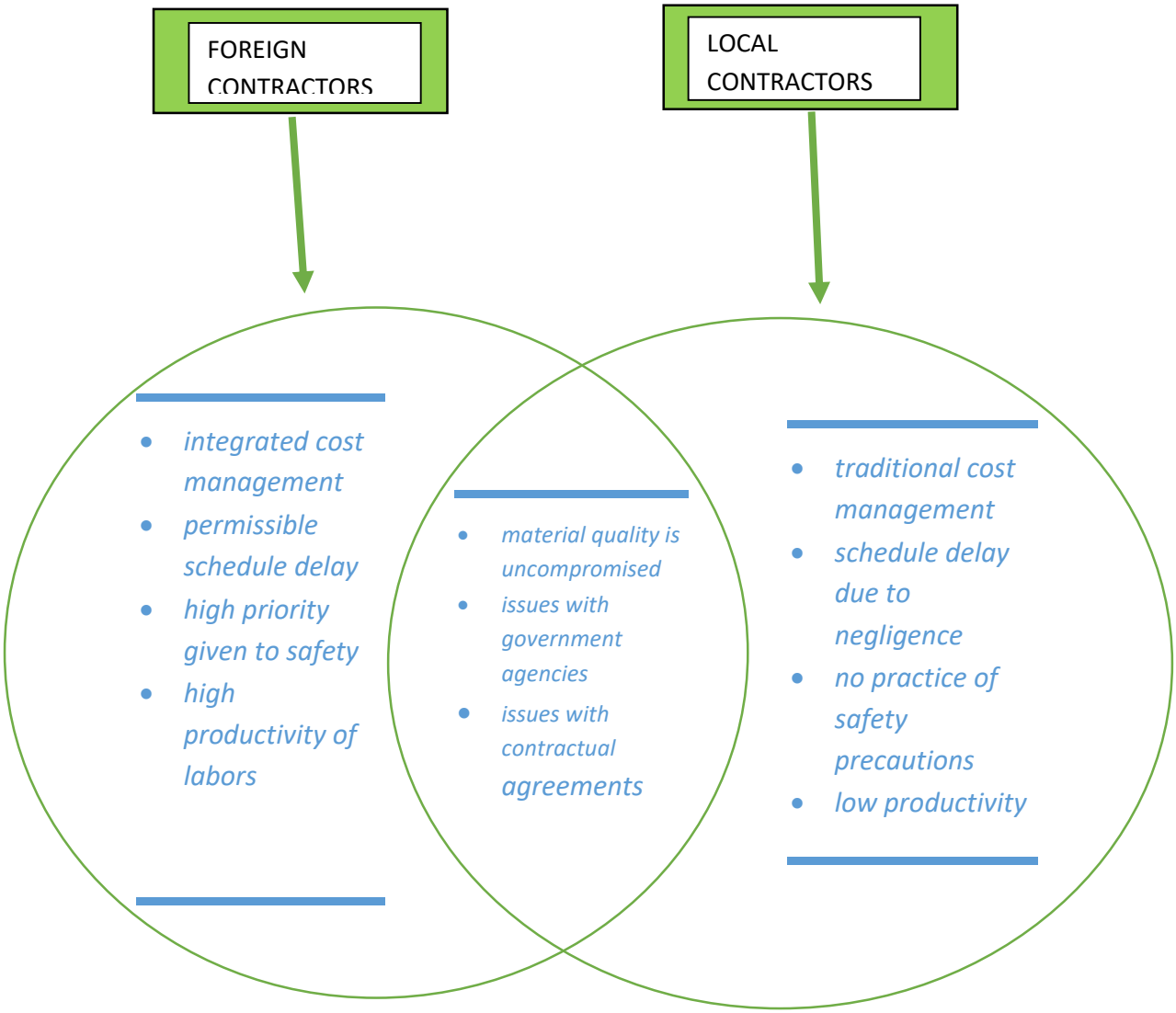


Figure 2: Conceptual Framework of Correlation between Foreign and Local Contractors

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

The aim of this research was to examine the relationships between the cost performance, schedule performance and quality performance of local and foreign contractors taking up projects in this section the research design and choices of fata collection and analysis have been justified.

3.2. Research Design

The research design is an exploratory sequential mixed. This method employs both qualitative and quantitative methods of data collection. The initial method of data collection is qualitative and quantitative data would be used to further establish the information gathered from the qualitative data. For the qualitative in depth interviews have been employed alongside reports submitted form contractors. For the quantitative report questionnaires distributed for respondents to help triangulate the information.

3.3. Research Type

The research itself is an explanatory which provides an insight in to the relationship and type of relationship that exists between the performances of local and foreign variables. This type of research best fits the intentions of this research and is an efficient way of testing the objectives stated in the first chapter.

3.4. Sampling

Their proximity to the projects and experts in development, awareness and involvement has led them to choose participants for the research. Representatives are selected using a quota sampling method. A quota sample is a sort of convenience survey. However, the only means of ensuring that all categories of participants are gathered in specific numbers is to choose respondents based exclusively on availability concerns. The research decides in advance that a minimal precent of particular individuals will be included in the survey.

3.5. Data Collection

Both interviews and questionnaires will be utilized to gather primary data in study. In order to enhance the outcome of this research, the interviews are being done with senior engineers from the construction management department of the bank. In a number of methods secondary data were acquired. CBE project management projects reporting the history and status of projects, project management reporting, different investigations, book conferences, journals and the literature review and framework for research were also employed in this context.

3.5.1. Questionnaire

Questionnaires have the advantage of being simple to administer, lessons may be conducted, research experience is not needed and privacy guaranteed. Questionnaires are a significant instrument for data collecting since they enable a large number of people to collect data. A permission agreement is provided to preserve the anonymity of the responders.

The questions were based on Kumara and Warnakulasuriya, (2016) definition of success. The authors defined success based on efficiency and effectiveness. Under the efficiency dimension, in ascending order of short term perspectives, cost flow management, meeting safety requirements, meeting quality requirements and meeting time objectives meeting cost objectives. Under the effectiveness dimension, in ascending order of long term perspectives, environmental performance, client satisfaction, employee satisfaction, profitability, learning and development.

Both open and closed questions will be raised. The questionnaire will be structured using a Symmetric Likert scale. according to (Joshi et al., 2015) symmetric Likert scale is one in which the position of neutrality (neutral/don't know) lies exactly in between two extremes of strongly disagree (SD to strongly agree (SA), it provides independence to a participant to choose any response in a balanced and symmetric way in either direction. Likert scale is a two-stage scale. The first stage asks whether there is agreement or disagreement with the statement. The second stage then asks how strongly the person feels about the answer

provided in the first stage. For these reasons Likert scale is considered to be one of the best analysis methods for a questionnaire. There are 5 scale and 7 scale Likert scales. The scales can be used based on the need of the research. For this research, a 5 scale Likert scale will be used. Two types will be used, i.e. One indicating frequency and the other severity.

Table 1: Likert scale for frequency

Category	Rarely	Sometimes	Never	Often	Always
Rating	1	2	3	4	5

Table 2: Likert scale for severity

Category	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	1	2	3	4	5

3.5.2. Interview

An interview is an excellent technique for collecting data; because it assures that the respondents answer questions, permit the further examination of tough themes and allows more detailed study.

The interview takes place in a halved format. The stage for the interview consists of many pre-set questions. This interview style does not depend totally on precise compliance with the agenda.

The questions contained in the schedule are usually open to allow responders to remark on the subject. The interview will be conducted from experts that have worked in construction project department at CBE. The projects chosen for the interview are ones undertaken by both foreign and local contractors. As stated in the introduction, there are several construction projects owned by CBE. The headquarter building is being constructed by the Chinese company CSCEC and the construction of the other buildings is being undertaken by local

contractors. For projects under local contractors since there are no ongoing projects in Addis Ababa, the Geda building that has been concluded has been selected along with the Hawasa district, Mekelle district and Bahirdar district projects which are ongoing. While the ongoing projects depict the difficulties faced by contractors at current state, the completed projects will aid in identifying the degree of issues from start to finish. What these projects have in common is that they all have been extended the time and resources beyond their initially planned schedule. Although it is important to remark that the degree of the delay is vastly different.

3.5.3. Secondary Data

Another source of information that will be used is secondary data. This will be used to strengthen the information gathered by the interview. The secondary data to be collected will be in the form of reports, claims issued about encountered problems, time extension requests and meeting minutes. Along with the interview the information conducted form the secondary data will be coded to convert in to quantitative data.

3.6. Data Analysis

3.6.1. Analysis of Interview- Relative Importance Index

Relative Importance Index (RII) is used to determine the relative importance of quality factors involved. The points of Likert scale used are equal to the value of W, weighting given to each factor by the respondent.

$$\textbf{Relative Importance Index} = \frac{5\,n_5 + 4\,n_4 + 3\,n_3 + 2\,n_2 + 1\,n_1}{A * N}$$

n_5 = number of respondents for strongly agree

n_4 = number of respondents for agree

n_3 = number of respondents for neutral

n_2 = number of respondents for disagree

n_1 = number of respondents for strongly disagree

A= Highest Weight

N= Total Number of Respondents

3.6.2. Spearman's Correlation Analysis

Aside from that a ***superman's correlation*** will be used to study the relationship of delay factors. The Spearman's rank correlation coefficient is used to measure the degree of agreement or disagreement between performance of foreign and local contractors.

$$r_k = 1 - \frac{6\sum d^2}{n^3 - n}$$

d= the difference between ranks

n= number of results

N.B the ranks will be issued in accordance with the severity of the factors

3.6.3. Analysis of Interview- Coding

To analyse the interview ***Coding*** will be used. In grounded theory research, coding is extensively employed but may also be employed in other quality approaches including text data interpretation. For quantitative or qualitative analysis, the retrieved codes may be employed. Open coding is a procedure for identification, revealing and labelling ideas, which may then be utilized to describe a phenomenon, buried inside text data. The research will analyse the textual data line by line to discover distinct incidences, thoughts, actions, perceptions and relevant exchanges that are classified as in vivo codes. For further confirmation each notion is connected to certain parts of the text (coding unit). Next, similar concepts are grouped into higher-order **categories**. While concepts may be context-specific, categories tend to be broad and generalizable, and ultimately evolve into *constructs* in a grounded theory.

1. Listen or read transcripts and form the initial impressions
2. Re-read in-depth transcripts and code words for sentences or phrases.
   - Something related to other literature can be found in material coded

- Relevant knowledge-based information
- Information expressly identified by the interviewee as relevant

3. Decide whether codes are appropriate and by combining codes create categories
4. Label and determine which categories to maintain and how they are interrelated. 4.
5. In this phase, if necessary, categories can be classified into a hierarchy
6. Write out the results and discussions

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1. Introduction

The results and discussion below is devised in two parts corresponding to the interview the results will be discussed along with the secondary data by using block by block comparison method. The discussion will include the responses with regards the previously stated variables in addition with regards to the research questions and also the sections of the questionnaire. These divisions can help tackle one question at a time.

4.2. Response Rate and Experience

The respondents consist primarily of engineers from the CBE project department whom have supervised multiple cases both undertaken by foreign contractor i.e. the head quarter building, and office buildings undertaken by Grade – 1 local contractors. To get a rounded out information the consultants and contractors from the headquarter project were also provided with questionnaires.

Table 3: Response rate

NUMBER OF DISTRIBUTED QUESTIONAIRE	RETURENDED QUESTIONAIRE	RESPONSE RATE
30	20	66.67%

Table 4: Experience of Respondents

Experience	Number	Percentage
0-5	12	60.00%
6-10	4	20.00%
11-15	2	10.00%
> 16	2	10.00%

4.3. Results

4.3.1. Cost Performance

When it comes to cost management/ cost performance of the foreign contractors in the head quarter case, the performance was exemplary. The interviewees mention how effectively the contactors have handled the budget, especially on the initial stages of the project. The interviews did admit the contractors have faced financial issues particularly after the pandemic occurred. These issues resulted from the escalation of the exchange rate and the closing of the borders. Since the contractual agreement does not allow for any adjustments in price/ exchange rate unless there is scope change in the project, the contractors were faced with making ends meet with what they had. The success of the cost performance can be attributed to the integrated way the contractor company manages it. The cost schedule is highly detailed and show all cost that is related to each task, material and personnel. Each penny in the budget has a value and the purpose of it is known from the get go. The use of integrated management software BIM is also a large contributor to this success as stated by the interviewees.

On the contrary, the cost performance of local contractors is sub-par and unsatisfactory. Local contractors which worked with the bank faced financial difficulties. If financial problems are not solved preemptively, since the contracts forbid any cost adjustments, the contractors face risking their profits. On the worst case contracts have been terminated before the project was concluded. The cause of this in the opinion of the interviewees is the negligence in the part if the contractors. Budget is not scheduled initial to its disbursement which causes finance to be misplaced or shifted to other projects. In one or the cases the contractor admitted to using the payment issued for the bank's project to a government project that was concluded because they didn't receive the payment for the latter project on time.

This outcome is echoed with the result of the questionnaire. The result from the questionnaire shows that the cost performance of foreign and local contractors is negatively correlated. The hypothesis was tested using the spearman's correlation coefficient which resulted in -0.35. The highest ranking differences were implicated on use of integrated cost management (Ranking of 3 for foreign and 7 for local contractors), BIM or other computerized cost management software are applied (Ranking of 5 for foreign and 11 for local contractors) and financial problems occurrence due to material.

Another factor emphasized in the interviews is faulty estimation of costs. The reason for this could be awarding of contracts to the lowest bidder in the case of local contractors. On the other hand the contract type for the foreign contractors CSCEC is Design and Build Project. The administered contract was an open one and foreign contractors were invited to submit their designs. The contractor was selected based on the fulfillment of criteria on the contact like the capacity to undertake such a project. A contractor that has previously worked in the country was favored to reduce the difficulties of working in a new environment.

One thing that can be witnessed in both the foreign and local contractors is the efficient administration of claims. Unlike the research by Dessa, (2003)which showed that claim administration is not sufficiently conducted in local contractors, in this case claims were issued diligently by both foreign and local contractors.

The analysis for the interview was done based on codes developed from the interview. Important contributors to performance were identified based on literature review, project management knowledge and recommendations of interviewees. The for the cost parameters/codes was ranked based on the significance of the impact each factor makes on performance

The difference in ranking of questionnaire shows where the largest gap occurs due to management trends and where there is room for improvement. The questionnaire result also shows that both foreign and local contractors face financial difficulties, experience late delivery of materials due to cost mismanagement and there is not accurate cost estimation during bidding.

Table 5: Correlation of cost performance between foreign and local contractors

Cost performance indicators		FOREEIGN CONTRACTORS		LOCAL CONTRACTORS				SPEARMANS CORRELATION
		RII	RANKING	RII	RANKING	d	d^2	
1	Frequency of problems of cost performance	0.48	11	0.65	6	5	25	
2	Criticality of issues with cost management	0.63	7	0.75	5	2	4	
3	Issues leading to critical cost overrun	0.65	6	0.75	4	2	4	
4	Integrated cost management is practiced	0.80	3	0.48	10	-7	49	
5	BIM or other computerized cost management software are applied	0.68	5	0.40	11	-6	36	
6	Reduced financial difficulties faced by contractors	0.80	2	0.85	3	-1	1	-0.35
7	Supply chain management and warehousing management efficiently practiced	0.83	1	0.87	2	-1	1	
8	Sub-contractors are issued payment on time	0.73	4	0.60	8	-4	16	
9	Effective cost estimation during planning	0.55	9	0.62	7	2	4	
10	Accurate cost estimation during bidding	0.58	8	0.58	9	-1	1	
11	Financial problems occur due to material price escalation and inflation	0.53	10	0.88	1	9	81	
						∑d	222	

4.3.2. Schedule Performance

For this section both interview answers were used alongside secondary data in the form of reports. One thing both local and foreign and local contractors have in common is having been delayed from the contractual agreed up on period. But it is best to consider the degree of

delay, causes of delay and the criticality of it. The reports help backup the points raised in the data collection and observe the rationale of the contractors when requesting time extensions.

For instance the Hawassa district building had Total contractual period was 900 days. The project was planned to be finalized on 05 July 2020. The overall progress of the project is poor which 25.37% as of March 2021 is. The time elapsed is 97.55%. That is due to the time extensions given. The project shows a delay of 108% as of May.

According to the reports for March 2021 by the project department of CBE, the major reason/Challenges for the poor performance of the project are:-

- Shortage of Material (cement)
- Poor performance of the contractor
- Contractor's shortage of cash flow
- Lack of contractor's commitment

Major actions that were taken by the project department;

1. Instruction has been given to the contractor to enhance the project progress

2. Advance payment has been paid to the suppliers which slightly mitigates the contractor's cash flow Shortage

Mekelle District office is a building project that is another ongoing project that will be used for offices. Although the original contract date has not passed, the planned work as of November 2020 was 41.23% but the executed work is 17.01%. This shows a delay of 41.26%.

According to the reports for December 2020, the major reason/Challenges for the poor performance of the project are:-

- Overall delay of progress concerning the schedule
- The Project is ceased due to the current instability in the Tigray region starting from November 4th, 2020.
- Subsequently, the contractor has submitted intent to claim on November 07, 2020
- Communication barrier to gets updates from the project site due to the shutdown of internet and telephone & other means of communications.

Major actions that were taken by the owner;

1. A bilateral meeting with the consultant was conducted in November 2020 concerning the project's progress, delay, reason & mechanism to catch up with the schedule.

2. The proposal has been prepared and submitted for committee approval regarding the Pre-finance request in November 2020.

3. The additional project time request of the contractor was commented and he is ordered to submit detailed work & corresponding time break down accompanied with daily output and working methodology on November 10, 2020.

4. The LC request of the contractor was also commented and he is ordered to substantiate the request with eligible support documents on November 09, 2020.

CBE Bahirdar district office is a building project that is currently ongoing. The site was handed over on March 19, 2018, and the original completion date was set for September 26, 2020, or 900 calendar dates. As of May 2021, the time elapsed was 691 days or 76.78%. The project has been delayed by 120%.

The contractor has requested the following time extensions for problems encounters which are under revision

- Time Request for delay In granting obstruction-free access to and possession of site 170 days
- Time Request for Delay due to unforeseen ground conditions -104 days
- Delay in the provision of Design of Instruction -27 days

On the other hand the foreign contractor CSCEC who is undertaking the CBE headquarter project. The building has gone through scope change which has resulted in most of the delay faced by the contractors. The current G+48 building was initially designed to be G+46. The commercial centers which are G+6 and G+8 were initially planned to be G+5 and G+7 respectively. Due to this, the initial project time was extended and the project was intended to

be conducted on January 2020. Cost adjustments were made accordingly. The project is now set to be inaugurated in May 2021; the project has been delayed by from the predetermined schedule. Aside from that in the interview showed the foreign contractors perform tasks with accordance to the initially prepared and maintained a master work schedule and a crushed work schedule in detail and performed a helicopter management in order to encounter for various factors to elude late delivery of materials. One of these instances is the preemptive ordering of the external steel structure which accounts for the amount of steel that can be produced due to the environmental regulations of China.

But on the other hand the local contractors have problems scheduling ahead of time in a way material can be delivered when it is needed. They also have a problem accounting for various obstacles that might be encountered like problems with imported material and letter of currency. Along with this even though local contractors state adverse weather conditions to be cause of delay, the foreign contractors continue to work unless absolutely necessary.

Schedule performance of foreign and local contractors is negatively correlated as shown by the questionnaire results. The spearman's correlation coefficient was -0.55. The highest ranking differences on the indicators used to test schedule performance were productivity level of labourers and availability of skilled labour (ranking of 2 for foreign and 13 for local contractors), negotiations during construction (ranking of 8 for foreign and 2 for local contractors), delay related to the pandemic - COVID 19(ranking of 3 for foreign and 9 for local contractors).

The interview also shows another problem the foreign contractors faced is the immediate occurrence and aftermath of the COVID -19. Due to the pandemic the contractor encountered delay with material that were being imported, expert personnel scheduled to fly in from China around that time could not causing a shift in the schedule of work, enough people contracted the virus to shut down the project for two weeks.

Detailed master work schedule and crushed work schedule is one of the strength of the foreign contractors. The WBS is detailed to the smallest possible task. This type of a detailed work breakdown is a lacking factor on the part of local contractors.

Yet another factor that creates a difference in the schedule performance of local and foreign contractors is productivity. The site of the foreign contractors is a highly productive even in difficult weather and off days. Not only are the foreigners' productive, interviewees' state

that the local laborers working with them are inheriting that productivity. This is unlike the local contractors where there is low productivity and continuous supervision is required for continuity of work.

The interviewees state both local and foreign contractors experienced problems with their schedules due to encounters with public agencies. Both sides state even though steps were taken to go through with the various tasks involving government agencies. Other issue faced by local and foreign contractors alike is negotiations due to design changes disputes due to contractual agreement. In both cases these issues were time taking for all parties involved to resolve.

Table 6: Correlation of schedule performance between foreign and local contractors

Schedule performance		FOREEIGN CONTRACTORS		LOCAL CONTRACTORS				SPEARMANS CORRELATION
		RII	RANKING	RII	RANKING	d	d^2	
1	Change in project in scope (design changes/extras)	0.56	6	0.68	6	0	0	
2	Major contractual disputes	0.54	7	0.70	4	3	9	
3	Negotiations during construction	0.46	8	0.72	2	6	36	
4	Dispute with public agencies	0.44	10	0.58	10	0	0	
5	Changes with rules and regulations	0.40	11	0.55	11	0	0	
6	Limited access to the site (partially or totally) not ready for work to progress	0.32	13	0.65	8	5	25	
7	War and instability	0.30	14	0.57	12	2	4	
8	Delay related to the pandemic - COVID 19	0.64	3	0.63	9	-6	36	
9	Cultural or language barriers	0.40	12	0.40	14	-2	4	-0.55
10	Proper claim administration for any difficulties during construction	0.72	1	0.73	1	0	0	
11	Dispute between different members is swiftly and professionally solved	0.60	4	0.70	3	1	1	
12	There is high productivity level of labourers and availability of skilled labour	0.70	2	0.50	13	-11	121	
13	Clear line of communication is administered	0.46	9	0.70	5	4	16	
14	Appropriate organizational structure linking all parties involved in the project	0.60	5	0.68	7	-2	4	
						∑d	256	

4.3.3. Quality Performance

When it comes to the quality, the first topic on the quality performance issue is quality of material. As the interviewees confirmed this factor is uncompromised across all building projects owned by the bank. The first reason for this might be the strict directions on the contractual agreements. The consulting companies are also vigorous in attaining an equivalent material quality if not an exact one.

When it comes to quality of workmanship, the foreign contractors are exceeding in that area. The interviewees state the reason for CSCEC's speedy progress is while in the case of local contractors a lot of workers require constant supervision; the laborers of the foreign company know in full their responsibilities. There is no need for helicopter management in their case. The interviewees have stated even the Ethiopian laborers are absorbing the work ethic of the Chinese and equating their productivity.

Another factor that aides the performance of the foreign contractors is the existence of a subcontractor within the company. Due to that disputes are swiftly solved and there is sharing of resources across the project.

Along with that the foreign contractors hold a meeting twice a week to discuss any design changes or adjustments. The first meeting is held by each department individually to discuss within the scope of the department. The second one is a companywide to discuss overall matters. This helps get a clear view of what is to be done in the project to all whom are involved and improves quality of work.

When it comes to safety while it is paid little attention to with local contractors, it is of the highest importance with foreign contractors. In the site of the foreign contractors only a couple of accidents occurred none of which were fatal and were due to the negligence of the workers. But all the safety equipment is available on site. In light of recent events, the company has installed an automatic temperature measuring device to increase safety against COVID 19. On the other hand safety issues with local contractors are not given high priority. This might be because the country doesn't do much to reinforce the laws related to safety on the work site.

Finally when it comes to development of workers it's not exercised as often as it should on both sides. While for local contractors it can be said its equal to no training given, it was pointed out in the case of the foreign contractors, there is on job training for the unique

technology used by the contractors and there are trainings given for the laborers on how to take safety measures and use safety equipment.

Table 7: Correlation of quality performance between foreign and local contractors

Quality performance		FOREEIGN CONTRACTORS		LOCAL CONTRACTORS		d	d^2	SPEARMANS CORRELATION
		RII	RANKING	RII	RANKING			
1	Frequent issues with quality management	0.40	6	0.63	3	3	9	
2	Is material quality compromised	0.28	8	0.42	6	2	4	
3	Is workmanship/technical quality compromised	0.33	7	0.38	8	-1	1	
4	Frequent accidents occurring on the site due to poor administration of safety regulations	0.45	4	0.50	5	-1	1	
5	Frequent technical or management training given for project team	0.40	5	0.42	7	-2	4	0.83
6	Issue with management of quality of material or workmanship causing critical problems in the continuity of the project	0.50	3	0.75	1	2	4	
7	Issues of safety during construction are taken as the highest priority and all safety measures are strictly administered.	0.78	1	0.66	2	-1	1	
8	Issues of training and development for skilled and unskilled labour are taken seriously.	0.55	2	0.58	4	-2	4	
						∑d	28	

4.4. Discussion

The intention of this research is to compare the performances of local and foreign contractors. In order to do that the questions of how local contractors perform based on cost, schedule and quality in comparison with foreign contractors were enquired with the ultimate goal being to understand problem areas and recommend solutions. The results indicate that while the foreign contractors undoubtedly have issues they perform in the context of cost and schedule demonstrating a sufficient project progress and integrated management with a good maintenance of budget. The local contractors show poor performance show poor performance with continuous request for cost adjustments and much greater degree of delay. When it comes to quality performance, the results are not in line with the hypothesis. Both local and foreign and local contractors perform similarly. The quality of material is maintained throughout the projects owned by CBE. Although the foreign contractors pay much more attention to safety precautions than the local ones, neither prioritizes employee development.

4.4.1. Cost Performance

The results from the collected data fall in line with the hypothesis. Delving into the interpretations of the results, since the parameters were defined when asking the research questions it helps create an understanding on where the differences in performance are created. For instance cost performance was based on the use of integrated management, use of software, accurate estimations and how contractors avoid price escalations. The negative relation indicates that while one contractor falls on one end of the spectrum the other falls on the other. In this case the foreign contractors have a far better performance whereas the performance of the local contractors is mediocre based on these parameters.

as stated in the research conducted by Zhao and Wang, (2014) , a comparison between traditional and modern methods of cost management shoes a full exploitation of cost management software would dynamically change the construction industry. This is also mimicked in the case of this research, in how the use of integrated management and cost management software are increasing the efficiency of foreign contractors. Financial issues confronted local entrepreneurs working with the bank. If financial difficulties are not dealt with in a way that prevents any cost changes, contractors are faced with risks to their profitability. Contracts were cancelled in the worst scenario before the project was complete.

The interviewees mentioned that there is a culture of not giving high priority to schedule and cost that is embedded in the construction industry. For that reason value is not given to each and every cost that is issued. The problem for this might be due to the type of contract administered. Most contract in Ethiopia are design, bid, build contracts that are awarded to the lowest bidder. Such was the case for the local contractors. As stated by Deep et al., (2017) awarding contracts to the lowest bidder causes expenses to not be estimated accurately in hopes of winning the contract it is also related to risk factor.

4.4.2. Schedule Performance

The schedule performance was based on how schedule is conducted, level of productivity and supply/ resource chain management. The results answer the research questions by comparing how the presence of these parameters are affecting/promoting the performance of one contractor and how lack thereof is hindering the performance of the other. The parameters gathered from the literature review and used to indicate schedule performance are schedule estimation, productivity, resource management, the fluency of information and appropriateness of structure other factors related with delay such as change requests, contractual disputes and COVID 19. Schedule performance also fell in line with the hypothesis showing a negative relationship of local and foreign contractors based on the mentioned parameters.

The foreign contractors have a better performance by adopting detailed WBS structures the smallest task and material that is needed to complete a task. They also have by weekly meetings to discuss what works have been done up to now and what is the next step to be taken so every department knows where to go next. This creates a fluency of information and good communication throughout the company. There raking difference were productivity level of laborers and availability of skilled labor has a high rank indicating the presence of productivity on the part of the foreign contractors. But that indicator has a low rank for the local contractors showing the lack of laborer productivity.

There are also correlations as shown by the ranks, change in scope of project, changes with rules and regulations and disputes with public agencies cause delays for both local and foreign contractors. It also shows claims are administered effectively by local and foreign contractors alike.

4.4.3. Quality Performance

The quality performance was measured in maintenance of quality of material, quality of workmanship, safety and employee development. Unlike the other two the results for this did not fall in line with the hypothesis showing a positive relationship when it comes to quality performance. Unlike the other variables quality was proved against the hypothesis.

The tested quality performance for the foreign and local contractors was related positively. In fact the spearman's correlation value shows a strong positive correlation value of 0.83. This might be because even though safety measures were not equally practiced, other aspects like material quality and attention to training and development have similar outcomes for both local and foreign contractors.

The study provides a new insight into the relationship between the performance of local and foreign contractors. It is important to see not only the presence of a negative or positive correlation but the degree to which there is. But in addition to existing knowledge it shows there is not a culture of employee development in local contractors. Results also show there is lack of knowledge transference from foreign contractors.

In summary the performance of the local contractors with the successful projects by the definition of Kumara and Warnakulasuriya, (2016). As stated in the review, the authors defined project success strictly under the efficiency dimension, in ascending order of short term perspectives, cost flow management, meeting safety requirements, meeting quality requirements and meeting time objectives meeting cost objectives. Under the effectiveness dimension, in ascending order of long term perspectives, environmental performance, client satisfaction, employee satisfaction, profitability, learning and development.

4.5. Summary Results and Discussion

Figure 3: Summary of results and discussion of cost performance

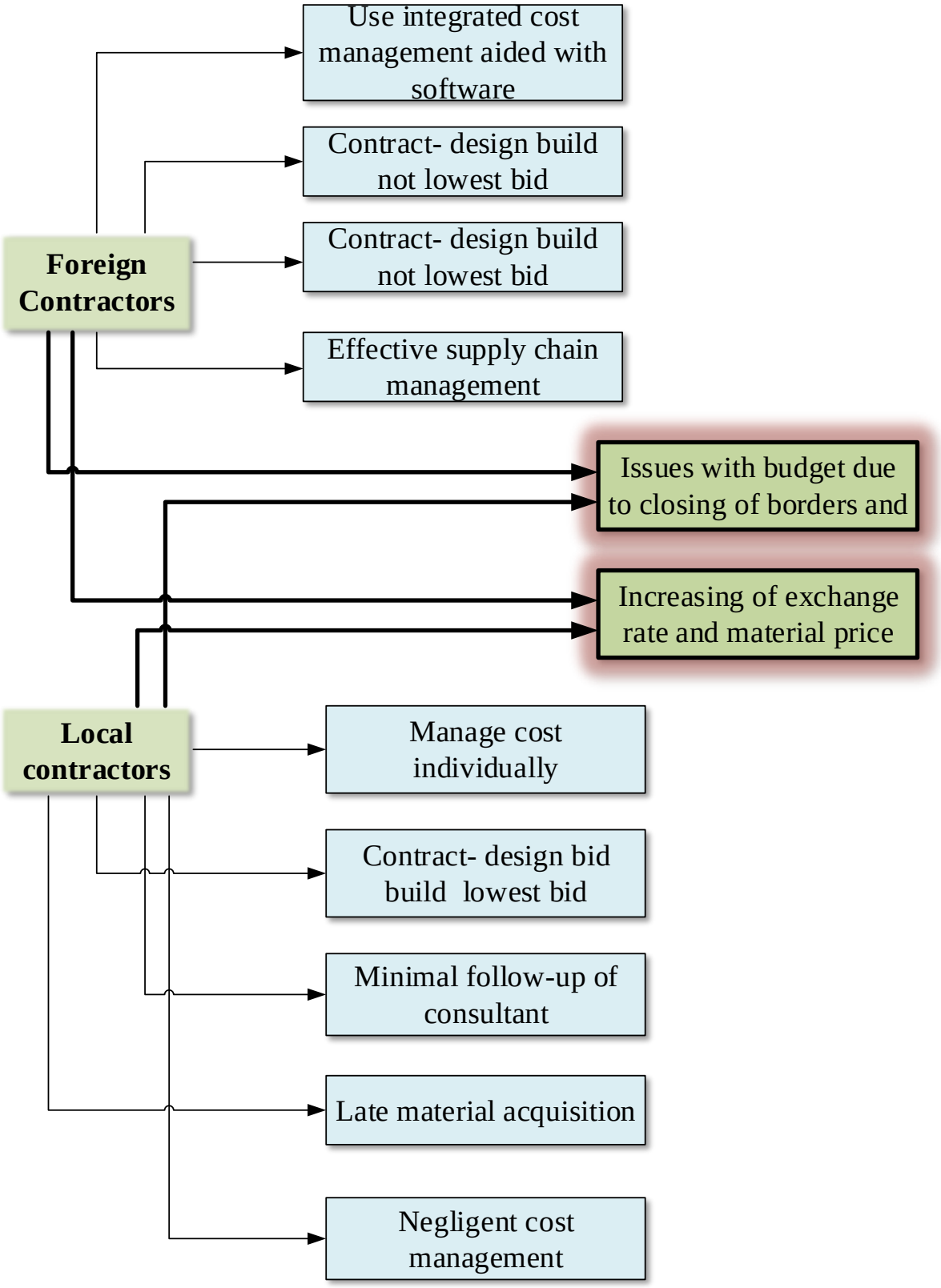


Figure 4: Summary of results and discussion of schedule performance

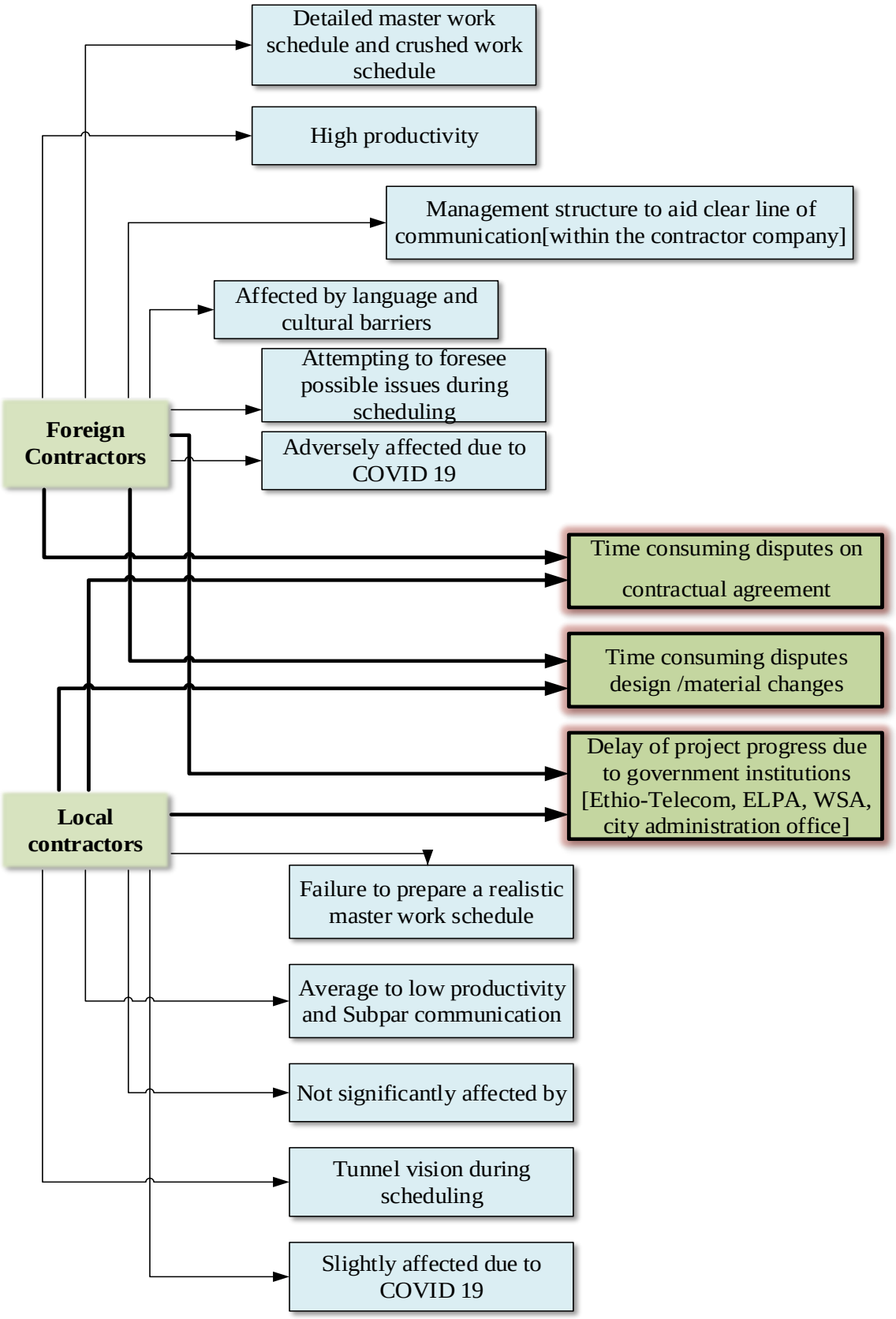
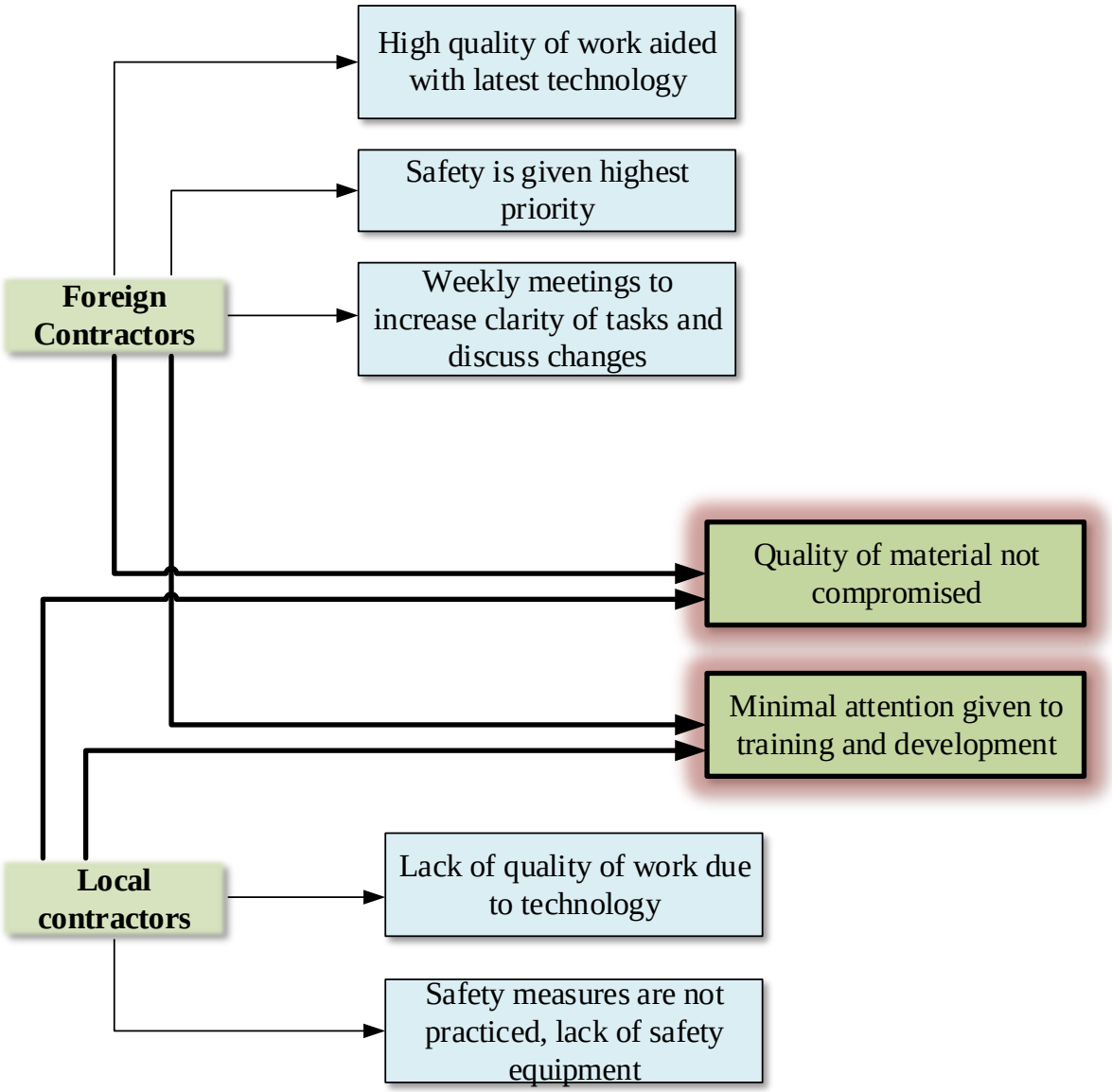


Figure 5: Summary of results and discussion of quality performance



4.6. Tradeoff in Project

In both the questionnaire and the respondents were asked to state in what order the particular project practiced tradeoffs between cost schedule and quality. This question was intended to get an analysis of how foreign and local contractors prioritize between cost, schedule and quality. In all cases most of the respondents gave an answer showing that both local and foreign contractors prioritize in the same order, which is

Quality → Cost → Schedule

This shows both foreign and local contractors trade off schedule in projects while prioritizing quality and cost.

The indicators like the how frequent workmanship/technical quality compromised, how often accidents occur on the site due to poor administration of safety regulations had similar ranks showing the indicators occur rarely.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Introduction

It is evident the construction industry have deep rooted problems. The projects are riddled with delays, cost overruns, disputes and contract terminations. Profit is being given a higher priority than the safety and wellbeing of the end users. To solve this there needs to be a reformation of the culture of construction industry in Ethiopia. In order to do so construction projects undertaken by local and foreign contractors were comparatively studied. Even though the foreign contractors have highly developed in operational and management technology, the reason for their success is not only attributed to that but also to attitude and management. The intention was to gather the strengths and weaknesses of the subjects and identify characteristics that can be adopted for local contractors to improve their work.

5.2. Conclusion

When it comes to time performance of local and foreign contractors, the result shows cost performance of the two is negatively related to each other. The major separator is the use of integrated management. While integrated management is contributing to effective cost maintenance, the lack there of is becoming an insignificance to the local contractors. It's also shown in the results that local contractors don't acquire supplies early on so it could be delivered on the time of use. Although the results indicate there are issued due to price escalation for both foreign and local contractors, for the main part local contractors it is associated with lack of budget management. The local contractors came out to be negligent in budget management.

Considering schedule performance, the results show that local and foreign contractors are negatively related in this context. While the foreign contractors are far better in the schedule performance the local contractors are lagging behind. There are some issues that are problematic to both. These are conflict when negotiating contract, changes to design or scope and dealing with government agencies. For local contractors separately, some difficulties arise in maintaining the schedule because the work schedule is not detailed enough to be able to manage the actual work. Another problem is productivity. In mist construction projects

labour and other skilled employees require supervision. Thus lack of a productive culture is highly impairing the progress for construction projects.

Lastly, quality performance resulted as being positively related. Both local and foreign contractors exhibited similar traits when it comes for the projects owned by CBE. In both cases material quality is maintained and little attention is paid to training and development. When it comes to safety the foreign contractors do pay more attention to it than the local contractors but not significant enough to create a negative correlation between local and foreign contractors.

5.3. Recommendation

The intention of the study is to understand what characteristics in terms of cost, schedule and quality of local contractors are affecting the performance. This study was conducted on local and foreign contractors to review the strengths and weaknesses in their performance. By comparing the methods of management to that of the foreign contractor's, the following recommendations can be made to enhance the performance of local contractors.

5.3.1. Cost Performance

To develop a high efficacy rate in cost performance, local contractors could make use of integrated management and software that aid through cost management to have the ability to administer not only the project but the organization. Along with the practice of ordering material and equipment in a predictive manner which avoids the obstacles of delivery and material can be onsite at the time of need. This will also avoid large price escalation. Having a partnership with sub-contractors or sub-contractor within the contractor company could also smooth the relationship and be able to share resources among projects

On the owners side of projects should practice other forms of bidding than open bid which award contract to lowest bidder; these types of contracts are related to faulty estimation of cost and risks because contractors tend to lower prices in hopes of being awarded the project.

5.3.2. Schedule Performance

To improve the schedule performance of local contractors preparing a detailed master schedule and crushed work schedule, detailing the WBS (work breakdown structure) to the smallest task as possible are the major contributors.

Contractors should also devote to creating a productive culture on the site and which allows workers to take responsibility so as to avoid employees requiring constant supervision. The contracting organization should reassure that the organizational structure that can link all parties involved on a project and allows all individual to understand their position and job descriptions and creating a clear line of communication.

Contractual negotiation can be hard as all parties are attempting to try to maintain a level head and understand that what is best is to reach to an agreement, when the issue is very sensitive and of high priority a mediator a consulting body should be present to bring the parties to a middle ground.

5.3.3. Quality Performance

For the enhancement of quality performance, contractors should adopt an organizational culture that permits employee training and development. Putting construction safety at the highest priority and assuring safety precautions are taken at all times otherwise the reputation of the contractors will be tarnished externally and create an unsafe internal environment.

on the part of the owner, to induce learning of technology and techniques form the foreign contractors some measures can be taken like requiring manuals to be translated to English, opening sites for institutions to visit and gain knowledge on up to date technology.

5.4. Recommendations for Future Studies

This research brings to mind some issues that can be investigated in order to find solutions for everyday problems that can occur in the construction industry in Ethiopia. It is recommended that future studies assess the impact of the major factors that contribute to the poor performance of local contractors. For instance, how much the actual application of integrated management and predictive scheduling can help improve performance of local contractors can be studied. Since this paper is mainly focused on how to avoid poor

performance of cost, schedule and quality; research on how to monitor and solve problems if and when they happen can be researched.

Another issue that can be studied is the lack of a cutlet of learning and development in the construction industry, it is recommended for future studies to evaluate the difference with firms that adopt employee development with those that don't.

Lastly the impacts and solutions of issues that cannot be foreseen might be dire it is recommended to study how local contractors can consider the risks and prepare for such events to prepare for the unidentified factors.

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APPENDIX A

Questionnaire

Dear Sir/Madam

My name is Ephrata Leulseged. I am currently doing my MA. In Project Management at Addis Ababa University, School of Commerce. I have finished my course work and now I am doing my MA. Project entitled: **A Comparative Study of Building Construction Projects Management of Foreign and Local Contractors: The Case of Commercial Bank of Ethiopia**

I feel that the outcome of my study will depend heavily on your expertise and education background. So I want you to complete this questionnaire with much respect. I assure you will keep your identity anonymous and that your information will only be used for academic reasons. Once this research is complete, I will be glad to share the findings. Thank you for taking your valuable time to fill up this form in advance. Try freely to answer every question because the results of the research will be influenced by your replies. Your 30 minutes or less will assist substantially to building knowledge growth and improvement. If you have any questions or comments, please don't hesitate to contact me.

You can reach me by;

➢ Mobile: 0913952928

➢ E-mail: Ephileul@gmail.com

With Regards,

Ephrata Leulseged

The answers you provide are used for academic purpose only.

Please check (X) in the boxes

SECTION ONE: - General Information

1.1) Gender

Female ☐ Male ☐

1.2) Type of company you are employed in

Owner ☐ Consultant ☐ Contractor ☐

1.3) Name of Building Project/s

_____

1.4) Respondent Designation in the Company

_____

1.5) Years of Work Experience (General)

0 to 5 years ☐ 6 to 10 years ☐ 11 to 15 years ☐ Above 16 years ☐

1.6) Type of contractor on the project you are working on

Foreign ☐ Local ☐

SECTION TWO: -

The questions below are related to construction cost performance

1) Are problems due to cost management experienced in the projects you work on

Yes ☐ No ☐

2) How often are problems with cost management experienced?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

3) Are the issues with cost management causing critical problems in the continuity of the project?

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

4) Are the issues with cost management causing critical cost overrun?

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

Please indicate how cost performance indicators stated under might be affected using the following criteria.

1. Never 2.Rarely 3.Sometimes 4. Often 5.Always

	Cost performance indicators	1	2	3	4	5
1	Integrated cost management is practiced					
2	BIM or other computerized cost management					

	software are applied					
3	Reduced financial difficulties faced by contractors					
4	There is delay in delivery of material due to cost management					
5	Sub-contractors are issued payment on time					
6	Effective cost estimation during planning					
7	Accurate cost estimation during bidding					
8	Financial problems occur due to material price escalation and inflation					

5) Name cost management practices positively contributing to project

_____

_____

_____

6) Mention any factors that are causing cost overrun that are not mentioned

_____

_____

_____

SECTION THREE: -

The questions below are related to construction time/schedule performance

1) Are problems due to schedule management experienced in the projects you work on

Yes ☐ No ☐

2) How often are problems with schedule management experienced?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

3) Are the issues with schedule management causing critical delays?

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agre ☐

Please indicate how often schedule performance indicators stated under might be affected

using the following criteria.

1. Never 2.Rarely 3.Sometimes 4. Often 5.Always

Please indicate how schedule performance indicators stated under might be affected using the following criteria.

1	Change in project in scope (design changes/extras)					
2	Major contractual disputes					
3	Negotiations during construction					
5	Dispute with public agencies					
6	Changes with rules and regulations					
7	Limited access to the site (partially or totally) not ready for work to progress					
8	War and instability					
9	Delay related to the pandemic - COVID 19					
10	Cultural or language barriers					

1. Strongly disagree 2. Disagree 3.Neutral 4. Agree 5. Strongly Agree

	Schedule performance	1	2	3	4	5
1	Proper claim administration for any difficulties during construction					
2	Dispute between different members is swiftly and professionally solved					
3	There is h productivity level of laborers and lack of skilled labor					
4	Clear line of communication is administered					
5	Appropriate organizational structure linking all parties involved in the project					

4) Name schedule management practices positively contributing to project if any

_____

_____

_____

5) Mention any factors that are causing schedule delay that are not mentioned if any

_____

_____

_____

SECTION FOUR: -

The questions below are related to construction quality performance

1) Are problems due to quality management experienced in the projects you work on

Yes☐ No☐

2) How often are problems with quality management experienced?

Never☐ Rarely☐ Sometimes☐ Often ☐ Always☐

3) Is material quality compromised in the project you are working on?

Never☐ Rarely☐ Sometimes☐ Often ☐ Always☐

4) Is workmanship/technical quality compromised in the project you are working on?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

5) Are issue with management of quality of material or workmanship causing critical problems in the continuity of the project?

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

6) Issues of safety during construction are taken as the highest priority and all safety measures are strictly administered.

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

7) How often do accidents occur on the site due to poor administration of safety regulations?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

8) Issues of training and development for skilled and unskilled labor are taken seriously.

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐

9) How often are technical or management training given for project team?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

10) Name quality management practices positively contributing to project if any

_____

_____

_____

11) Mention any factors that are contributing to poor quality of construction if any

_____

_____

_____

12) In your opinion, for the projects you are working on in what order are cost performance, schedule performance and quality performance given priority to?

_____

_____

_____

APPENDIX B

QUESTIONAIRE ANALYSIS

Table 8: Questionnaire responses and analysis of cost performance

Cost performance indicators								FOREEIGN CONTRACTORS		LOCAL CONTRACTORS		d	d	SPEARMANS CORRELATION
		1	2	3	4	5			RII	RANKING	RII	RANKING			
1	How often are problems with cost management experienced?	2	3	1	2		19		0.48	11	0.65	6	5	25	
2	Are the issues with cost management causing critical problems in the continuity of the project?	2	1		4	1	25		0.63	7	0.75	5	2	4	
3	Are the issues with cost management causing critical cost overrun?	1	1	2	3	1	26		0.65	6	0.75	4	2	4	
4	Integrated cost management is practiced			3	2	3	32		0.80	3	0.48	10	-7	49	-0.35
5	BIM or other computerized cost management software are applied	2		2	1	3	27		0.68	5	0.40	11	-6	36	
6	Reduced financial difficulties faced by contractors			2	4	2	32		0.80	2	0.85	3	-1	1	
7	There is delay in delivery of material due to cost management			4	4	1	33		0.83	1	0.87	2	-1	1	
8	Sub-contractors are issued payment on time			4	3	1	29		0.73	4	0.60	8	-4	16	

9	Effective cost estimation during planning		4	2	2		22		0.55	9	0.62	7	2	4		
10	Accurate cost estimation during bidding	1	3		4		23		0.58	8	0.58	9	-1	1		
11	Financial problems occur due to material price escalation and inflation	2	1	3	2		21		0.53	10	0.88	1	9	81		
													∑d	222		

	Cost performance indicators	1	2	3	4	5		RII
1	How often are problems with cost management experienced?	1	1	5	4	1	39	0.65

2	Are the issues with cost management causing critical problems in the continuity of the project?	1	1	1	6	3	45	0.75
3	Are the issues with cost management causing critical cost overrun?		2	1	7	2	45	0.75
4	Integrated cost management is practiced	3	2	6	1		29	0.48
5	BIM or other computerized cost management software are applied	5	2	5			24	0.40
6	Reduced financial difficulties faced by contractors			2	5	5	51	0.85
7	There is delay in delivery of material due to cost management	0	0	1	6	5	52	0.87
8	Sub-contractors are issued payment on time	3	0	4	4	1	36	0.60
9	Effective cost estimation during planning	3	2	1	3	3	37	0.62
10	Accurate cost estimation during bidding	2	4	1	3	2	35	0.58
11	Financial problems occur due to material price escalation and inflation		1	1	2	8	53	0.88

Table 9 : Questionnaire responses and analysis of schedule performance

Schedule performance		1	2	3	4	5		FOREEIGN CONTRACTORS		LOCAL CONTRACTORS				SPEARMANS CORRELATION
								RII	RANKING	RII	RANKING	d	d	
1	Change in project in scope (design changes/extras)	1		3	2	2	28	0.56	6	0.68	6	0	0	-0.55
2	Major contractual disputes	1		3	3	1	27	0.54	7	0.70	4	3	9	
3	Negotiations during construction	1	1	4	2		23	0.46	8	0.72	2	6	36	
4	Dispute with public agencies	1	1	5	1		22	0.44	10	0.58	10	0	0	
5	Changes with rules and regulations	1	3	3	1		20	0.40	11	0.55	11	0	0	
6	Limited access to the site (partially or totally) not ready for work to progress	3	2	3			16	0.32	13	0.65	8	5	25	
7	War and instability	3	3	2			15	0.30	14	0.57	12	2	4	
8	Delay related to the pandemic - COVID 19			2	4	2	32	0.64	3	0.63	9	-6	36	
9	Cultural or language barriers	2	2	3		1	20	0.40	12	0.40	14	-2	4	
10	Proper claim administration for any difficulties during construction				4	4	36	0.72	1	0.73	1	0	0	

11	Dispute between different members is swiftly and professionally solved		1	3	1	3	30	0.60	4	0.70	3	1	1		
12	There is high productivity level of laborers and lack of skilled labor			2	1	5	35	0.70	2	0.50	13	-11	121		
13	Clear line of communication is administered	3	1		2	2	23	0.46	9	0.70	5	4	16		
14	Appropriate organizational structure linking all parties involved in the project		2	1	2	3	30	0.60	5	0.68	7	-2	4		
												∑d	256		

	Schedule performance	1	2	3	4	5		RII
1	Change in project in scope (design changes/extras)		2	4	5	1	41	0.68
2	Major contractual disputes		2	4	4	2	42	0.70
3	Negotiations during construction		1	5	4	2	43	0.72
5	Dispute with public agencies	1	3	4	4		35	0.58
6	Changes with rules and regulations	2	4	5	2		33	0.55
7	Limited access to the site (partially or totally) not ready for work to progress		3	7	3		39	0.65
8	War and instability	1	4	3	4		34	0.57
9	Delay related to the pandemic - CC	1	1	6	3	1	38	0.63
10	Cultural or language barriers	4	5	2	1		24	0.40
								0.00

	Schedule performance	1	2	3	4	5		RII
1	Proper claim administration for any difficulties during construction	1		2	8	1	44	0.73
2	Dispute between different members is swiftly and professionally solved	1	2	2	4	3	42	0.70
3	There is high productivity level of laborers and lack of skilled labor	1	6	3	2		30	0.50
4	Clear line of communication is administered	1	2	2	4	3	42	0.70
5	Appropriate organizational structure linking all parties involved in the project		4	1	5	2	41	0.68

Table 10: Questionnaire responses and analysis of quality performance

	Quality performance							OREEIGN CONTRACTOR		LOCAL CONTRACTORS				SPEARMANS CORRELATION
		1	2	3	4	5		RII	RANKING	RII	RANKING	d	d	
1	How often are problems with quality management experienced?	1	4	2	1		19	0.48	6	0.63	3	3	9	
2	Is material quality compromised in the project you are working on?	5	2	2			15	0.38	8	0.42	6	2	4	
3	Is workmanship/technical quality compromised in the project you are working on?	3	2	3			16	0.40	7	0.38	8	-1	1	
4	How often do accidents occur on the site due to poor administration		4	3	1		21	0.53	4	0.50	5	-1	1	
5	How often are technical or management training given for	2	3	1	2		19	0.48	5	0.42	7	-2	4	
6	Issue with management of quality of material or workmanship causing critical problems in the continuity of the project?		3	2	2	1	25	0.63	3	0.75	1	2	4	0.83
7	Issues of safety during construction are taken as the highest priority and all safety measures are strictly administered.				4	4	36	0.90	1	0.66	2	-1	1	
8	Issues of training and development for skilled and unskilled labor are taken seriously.		2	2	3	1	27	0.68	2	0.58	4	-2	4	
												∑d	28	

	Quality performance	1	2	3	4	5		RII
1	How often are problems with quality management experienced?	1	1	6	3	1	38	0.63
2	Is material quality compromised in the project you are working on?	6	1	3	2		25	0.42
3	Is workmanship/technical quality compromised in the project you are working on?	6	2	3	1		23	0.38
4	How often do accidents occur on the site due to poor administration of safety regulations?	1	4	7			30	0.50
5	How often are technical or management training given for project team?	3	5	4			25	0.42