



DIRECTORATE OF RESEARCH AND GRADUATE TRAINING

**A REGRESSION MODEL TO ENHANCE THE PROFITABILITY OF
LOCAL CONSTRUCTION CONTRACTORS IN UGANDA**

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**A DISSERTATION SUBMITTED TO KYAMBUGO UNIVERSITY
DIRECTORATE OF RESEARCH AND GRADUATE TRAINING
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF MASTER OF SCIENCE
IN CONSTRUCTION TECHNOLOGY
AND MANAGEMENT DEGREE OF
KYAMBUGO UNIVERSITY**

SEPTEMBER 2022

CERTIFICATION

The undersigned certify that they have read and recommended acceptance by Kyambogo University a research dissertation titled: " **A Regression Model to Enhance the Profitability of Local Construction Contractors in Uganda**" to fulfil the requirements for the award of a Master of Science degree in Construction Technology and Management of Kyambogo University.

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DECLARATION

I, **Buhamizo Isaac**, hereby declare that this submission is my work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree of the University or another institute of higher learning, except where due acknowledgement has been made in the text and reference list.

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ACKNOWLEDGEMENTS

First, I express my most profound gratitude to the co-sponsor, the Swedish International Development Cooperation Agency (SIDA), for their financial support during my studies.

I owe gratitude to my supervisors, Dr. Muhwezi Lawrence and Dr. Ruth Sengonzi, for their logical and productive criticism offered in broad-based reviews. They have been enthusiastically and endlessly giving academic tests and intellectual motivation throughout this study.

Also, I would like to appreciate my colleagues: Mr. Grace Arinaitwe, Elong Samuel, and Mr. Natukunda Nathan, for reserving time to discuss various theories of the study as prospective aids for enhancing the quality of the research.

Finally, I offer special gratitude to my family: Rugumayo Abraham, Rugumayo Gladys, Immaculate Sigan, Buhamizo Mark Jayden, Rugumayo Andrew, Christine, Simon, Boaz, Benjamin, Joseph, and Ziporah for the support and patience.

DEDICATION

This dissertation is devoted to my sponsors, Swedish International Development Cooperation Agency; supervisors, Dr. Muhwezi Lawrence and Dr. Ruth Sengonzi; Family, Rugumayo Abraham, Gladys, Andrew, Sigam, and Jayden; and classmates from whom I had the privilege and pleasure to be associated, get financial support, critical intellectual guidance, and moral support.

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LIST ABBREVIATIONS

ATPM	After tax profit margin
GDP	Gross Domestic Product
GKMA	Greater Kampala Metropolitan Area
IMF	International Monetary Fund
NDP	National Development Plan
OROA	Operating Return on Assets
LCCs	Local Construction Contractors
POT	Profit percentage of turnover
PPDA	The Public Procurement and Disposal of Public Assets Authority
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROTA	Return on Total Assets
SDG	Sustainable Development Goals
SPSS	Statistical Package for the Social Sciences
UBOS	Uganda Bureau of Statistics
UK	United Kingdom
UN	United Nations
UNABCEC	Uganda National Association of Building and Civil Engineering Contractors
USA	United States of America

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ABSTRACT

Doubtlessly, the principal goal of every construction business is to maximise its profitability. Short of adequate profitability, firms can neither attract outside capital nor survive in the long run. Amidst enormous opportunities for Uganda's construction sector, local construction contractors (LCCs) continue to collapse in quite a short period. This study investigated the profitability of LCCs in the Greater Kampala Metropolitan Area. A survey was conducted to collect primary data from forty-seven local construction companies registered with Uganda National Association of Building and Civil Engineering Contractors (UNABCEC) and secondary data were collected from their audited books of accounts covering a period from 2016 to 2018. Thirty-five valid responses were received, representing a response rate of 74%. Data from questionnaires and financial statements were coded and entered into a statistical package for social scientists (SPSS) version 25, analysed using Relative Importance Index (RII), statistical correlation, and regression analysis. The study findings indicated that the LCCs' profitability is not satisfactory compared with the recommended industry profitability ratios. The results also showed a strong relationship between timeliness of payments, cost of finance, competitive bidding environment and the profitability of LCCs in Uganda. A regression model was then developed to enable LCCs to enhance profitability and minimise business failure.

Keywords: Local, Contractors, Profitability, Construction Industry

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Worldwide, the construction industry accounts for approximately 10% of the world's GDP and 7% of employment (UN, 2011). According to Mckinsey (2017), the construction Industry is one of the biggest in the world economy, with an expenditure of about \$10 trillion every year; this accounts for around 13% of the world's gross income. Colonnelli and Ntungire (2018) assert that the construction industry represents the backbone of most developing countries. It provides the base for infrastructure development. Therefore, it is thought to act as a multiplier for all other economic sectors that rely on such infrastructure. The construction sector contributed 7.1%, 7.3%, 7.6%, 7.3% and 7.2% to Uganda's Gross Domestic Product (GDP) for the financial years 2014, 2015, 2016, 2017 and 2018 respectively. This was reported against an economic growth of 5.1%, 5.2%, 4.8%, 3.9% and 6.1% respectively (UBOS, 2019).

International Monetary Fund (IMF) predicts that if investment in Uganda's infrastructure sector continues as planned, the national economic growth is forecasted to range between 6% and 7% in the next five years (IMF, 2019). Uganda accords the construction sector priority because of the multiplier effect in stimulating economic growth and development (Deloitte, 2016).

Despite its importance, the construction industry faces stagnation and collapse of contracting companies (Rajasekhar, 2017). A high rate of construction business failure has been reported globally and in Uganda in particular. For instance, Rajasekhar

(2017) states that the average rate of company collapse in the US construction sector from 1989 to 2002 was 14% higher than the average collapse rate for all industries. Later, the US construction industry experienced another decline in the number of construction companies by 23.59% (Strishcheck and McIntyre, 2008). In the UK, Creditsafe (2018) reported that the rate of failure among construction firms increased by 73.3% in the first quarter of 2018, with 934 firms falling into receivership. Consequently, the construction sector experienced a decline in growth, with total sales dropping by 6.28%, from £313.3bn to £293.8bn. Earlier in 2009, the UK bankruptcy rate hit a record high of 270,000, with construction accounting for about 40,000, i.e., 14.9% death rate (Jagafa and Wood, 2012). Similarly, studies by Ibn-Homaid (2015) in Saudi Arabia, Oladimeji and Olugbenga (2018) in Nigeria, and Kalamagye, Abednego, and Wanyona (2019) in Rwanda recognised the collapse of construction companies because of inadequate financial performance.

Uganda's current development policy focuses on infrastructure and the oil sector (IMF, 2019). Consequently, there is enormous public and private investment in the construction sector. Ironically, nearly all construction projects in Uganda are executed by foreign companies (Ocen, Alinaitwe and Tindiwensi, 2012). Their findings attributed it to the low competitiveness of LCCs. Indeed, preliminary investigations of this study indicated that there is an influx of foreign companies into Uganda's construction industry, especially Chinese-origin firms. This situation resonates with the argument that profitability reduces as competition increases (Chappelow, 2019). In addition, project cost management practices, project delays, delayed payments, stiff competition, are among other factors affecting LCCs' profitability (Strishcheck and

McIntyre, 2008; Dashor, 2019; Chandrashekhar and Ratnesh, 2016). As a result, many LCCs in Uganda close business in a brief time of their operations.

The phenomenon of business failure has attracted researchers' attention in various industries, for instance construction, manufacturing, banking, and agriculture. Failure of companies is a critical concern in the construction industry, not only in developing countries but worldwide (Ibn-Homaid and Tijani, 2015). Business failure is disruptive to the construction industry but may also cause serious impacts on the economy (Wong and Ng, 2010). An instance of this is the collapse of Carillion, the largest ever liquidated construction firm in the UK. As a result of low profitability and debt burden, Carillion collapsed and left a public debt of £1.6m, collapse of 2,700 subcontractors and suppliers, and over 43,000 workers unemployed (Amir and Simon, 2018).

Various researchers have linked low profitability to business failure in the construction industry. For instance, Kalamagye, Abednego, and Wanyona (2019) and Mohammed (2016) identified inadequate profit margins due to competition among the significant financial causes of construction business collapse in Rwanda and Nigeria respectively. Also, El-Kholy and Akal (2019) revealed that commercial causes lead to collapse of contracting companies in Egypt. Similarly, Mahamid (2012) identified a poor profit margins as one of the critical factors affecting the contractor's collapse.

The background of this study informed the need to investigate whether high competition and other factors identified in the literature review affect profitability of LCCs in Uganda. Consequently, a regression model was created to enhance

profitability of LCCs, help them prevent low profitability and minimise business failure.

1.2 Problem statement

Ugandan local construction contractors close business within a short time of their operations (Ocen, Alinaitwe and Tindiwensi, 2012). It has been reported that of 20,000 firms that were registered with the Uganda Registration Services Bureau (URSB) in 2019, 1,200 had closed by 2020 (Independent, 2020). 360 of 1,200 construction companies registered with URSB had collapsed, representing a 30% failure rate of construction companies.

Whenever these companies close, it results into unemployment, loss of income, supply chain uncertainty, public debt, the collapse of sub-contractors associated with the companies, and a reduction in government revenue. Besides, if this problem persists, Uganda will have a limited number of local contractors that can build and maintain its infrastructure. All these economic and social problems mean severe ramifications to the economy.

As earlier mentioned, several studies have linked business failure to the low profitability of contractors. This informed the need to investigate the profitability of LCCs and developed a regression model to aid contractors in preventing low profitability and consequently minimise business failure. The solutions provided by this study will assist to enhance profitability of LCCs, minimise the business failure rate of LCCs, enhance employment opportunities in the sector, improve certainty of supply chains in the construction sector and contribute to the national income.

1.3 Objectives of the study

1.3.1 Main objective

The main aim of this study was to develop a regression model to enhance profitability of local construction contractors in Uganda.

1.3.2 Specific objectives

The specific objectives of this study were:

- (i) To evaluate profitability of local construction contractors in Uganda;
- (ii) To identify factors that affect profitability of local construction contractors in Uganda;
- (iii) To assess the impact of the factors affecting profitability of local construction contractors in Uganda;
- (iv) To develop a regression model to enhance profitability of local construction contractors in Uganda.

1.4 Research questions

The following questions guided this study:

- (i) How are Ugandan local construction contractors performing in terms of profitability?
- (ii) What are the factors affecting profitability of local construction companies in Uganda?
- (iii) What is the impact of factors affecting profitability of local construction contractors in Uganda?
- (iv) How can profitability of local construction contractors be enhanced?

1.5 Justification of the study

There is a shortage of literature about profitability of local construction contractors in Uganda. Nevertheless, profitability has been identified and studied in other countries and sectors. For example, Kung'u (2017) investigated “the effect of liquidity management practices on profitability of the manufacturing industry in Kenya”; Kalamagye, Abednego and Wanyona (2019) studied “the causes of contractor’s failure in the construction industry in Rwanda”; Menicucci and Paolucci (2016) “investigated the determinants of bank profitability: empirical evidence from European banking sector”; Toong and Igor (2017), “investigated profitability of large commercial construction companies in Australia”; Mohamad, Ibrahim and Massoud (2013) “assessed the expected construction company's net profit using neural network and multiple regression models”; and Feeny (2000), “studied the determinants of profitability: an empirical investigation using Australian tax entities”.

These publications concern only countries where such studies were conducted, thus rendering the context of such studies only applicable to countries where the studies were conducted. This is because of the unequal business environments in different countries and industries. Therefore, this research is desired to provide valuable information relevant to contractors' financial performance in Uganda.

Besides, if this study is not carried out, local contractors will likely continue earning inadequate profit. Consequently, companies will continue collapsing, which means severe financial implications for the industry and the economy. Whenever these companies close, it results in unemployment, income loss, supply chain uncertainty,

public debt, the collapse of sub-contractors and suppliers associated with the contractor, and government revenue reduction.

1.6 Significance of the study

This study will reveal valuable information related to the performance of LCCs in terms of profitability. The information will be indispensable to the construction industry stakeholders such as investors, contractors, consultants, and the Government.

Additionally, the study will provide vital data for the Government of Uganda (GOU) in developing suitable construction industry policies. According to Deloitte (2016), the Government of Uganda accords priority to the construction sector because it is a driver of the economy. In other words, the industry has a multiplier effect in stimulating growth and development, capable of significantly contributing to the country's GDP, providing employment opportunities, providing and maintaining much-needed infrastructure to support sustainable communities, among others. Therefore, this information shall be of interest to Uganda's Government to significantly multiply the local economy.

The study will also enhance the prevailing body of information on contractors' profitability in the construction industry. It will also enlighten the academic community and the industry players about factors that affect LCCs' profitability. Such knowledge will help the industry players develop competitive strategies to prevent low profitability and minimise business failure.

1.7 Scope of the study

This study concentrated on investigating profitability of LCCs in Uganda. The research evaluated annual profitability levels of local construction companies instead of profitability at the project level. In this study, LCCs referred to contractors incorporated in Uganda and registered as local contractors by UNABCEC as of January 2019. However, it is acknowledged that numerous LCCs contribute to this economy's development but are not registered with UNABCEC; such contractors operate informally and are not regulated. Notwithstanding their contribution to the development of Uganda's economy, such contractors did not participate in this study because they could not quickly be established or even located.

Furthermore, the study focused on LCCs that mainly generated revenue from building and civil engineering construction activities. Each construction company was represented by one of the following: Director, Project Manager, Accountant, Quantity Surveyor or Procurement Manager. These were carefully chosen based on their practice, knowledge about profitability of the company and availability. Profitability of LCCs was evaluated using profitability ratios centered on the financial data obtained from audited yearly financial statements.

The research was confined to Uganda's Greater Kampala Metropolitan Area (GKMA) because ninety six percent of the LCCs listed on UNABCEC's directory of 2019 operated within Kampala and Wakiso Districts. The map of GKMA is shown in Figure 1.1.

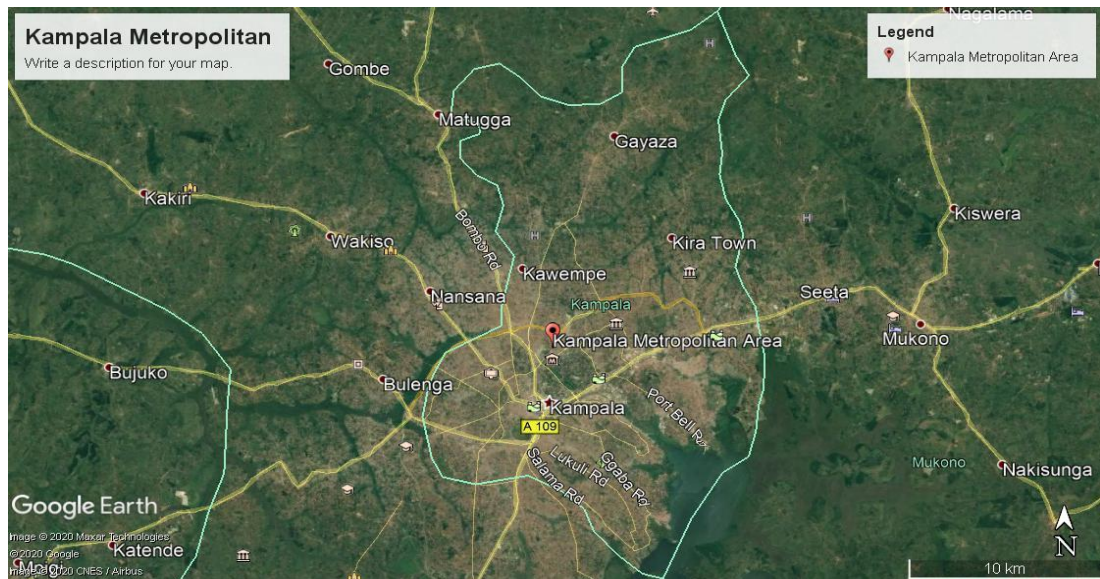


Figure 1.1: Map of Greater Kampala Metropolitan Area

(Source: Google Maps, 2020)

The study was conducted in this area because there is a good representation of the study population. This area was also selected because it has been allocated in Vision 2040 as an economic and administrative focal point, and a considerable investment target for Uganda. 46% of all recognized workforces are working in Greater Kampala; Greater Kampala contributes 30% of Uganda's overall gross domestic product (GDP); and 35% of informal businesses say their major limitation is inadequate profitability. (Hobson and Angus, 2017).

The study was carried out between August 2019 and January 2020 and considered the profitability of local construction companies in Uganda for three years i.e. from 2016 to 2018.

1.8 Conceptual framework

A conceptual framework is defined as the logical conceptualisation of the entire research project (Kivuga, 2018). In other words, the conceptual framework relates all concepts and ideas that occupy the researcher's mind as he or she contemplates, plans, implements and concludes his or her study. It provides a masterplan for the survey.

The study aimed to investigate LCCs' profitability in Uganda and develop a model that can enhance their profitability. Thus, the researcher evaluated the profitability levels of LCCs, identified the factors affecting their profitability; but also assessed the level of impact of the identified factors on profitability of LCCs. Preliminary literature indicated that the independent variables shown in Figure 1.3 affect the profitability of contractors. If the contractors and the industry do not effectively manage these factors, they can result in low-profit contractors. Consequently, without profit, contractors can't survive long in the construction industry.

The study was limited to the factors indicated in Figure 1.2 as independent variables and the dependant variable. Independent variables were identified from the existing literature presented in Chapter two of this dissertation. The independent variables were categorised as follows: management factors, project-related factors, economic factors, and market-related factors. Management factors are independent variables directly controlled by the organisation's management. Project related factors are variables borne by the characteristics of construction contracts. Economic factors are variables borne by the national economic conditions including monetary and fiscal policy, the global economy's state, and inflation. Lastly, market related factors are variables

resulting from industry forces of demand and supply, and the nature of practices in the industry.

Independent Variables

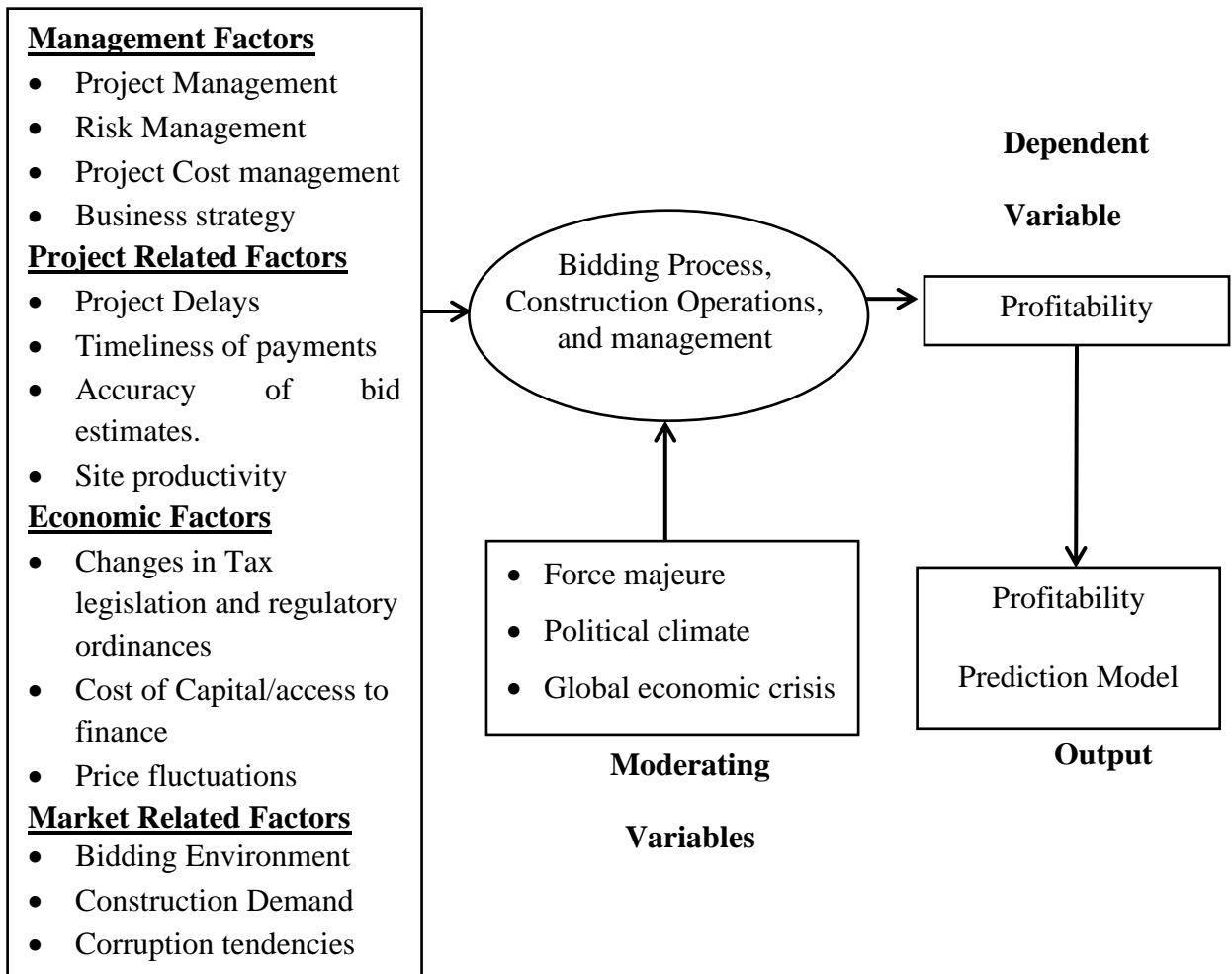


Figure 1.2: Conceptual framework of the study

The study disclosed the relationship between independent and dependent variables. It also established the impact of the independent variables on LCCs' profitability in Uganda, considering that other circumstances remain constant. Correlation analysis

was carried out to establish whether the relationship of the variables was significant or not. The results are indicated in Chapter four of this dissertation.

1.9 Ethical issues and consideration

This study was conducted purely for academic purposes. The researcher ensured that only questions related to the research objectives were asked. In keeping with standard research ethical requirements, the researcher sought permission to conduct the study. The researcher explained the study's nature and purpose and informed the potential respondents that all information provided was treated with the utmost confidentiality. The researcher carried along with the research tools, an introductory letter from the Graduate School indicating that he was a student conducting the research entirely for educational purposes.

1.10 Limitations of the study

While the study required accessing company financial statements and reports, difficulties were experienced obtaining financial information from some construction companies because of confidentiality and privacy issues. Unfortunately, there is no platform where the companies publish their financial reports without bias, making it difficult to get all the relevant data. Therefore, the research recommends setting up a legitimate and mandatory platform where registered contractors should submit their annual financial statements. Consequently, stakeholders will easily access data regarding LCCs; this could provide reliable data that will inform policy formulation and encourage investors since there is transparency in financial performance.

1.11 Organization of dissertation

Chapter One consists of the study's background, the problem statement, states the study's objectives, asks the questions behind the study, states the justification, significance of the study, the scope of the study, and study conceptual framework.

Chapter Two contains the literature review, which provides an overview of the critical literature sources from which the ultimate primary research draws. The section comprises literature regarding profitability as the essential subject matter, measures of profitability, the factors that affect profitability, regression modelling, procedure for model development, and possible steps to enhance LCCs' profitability, a literature review summary, and a research gap.

Chapter Three contains the research theory, design, approach, study population, sampling strategy, sample size determination, description of the study area, data collection instruments, data sources, quality control of data collection instruments, data analysis, ethical considerations, and limitations of the research.

Chapter Four consists of data analysis, discussion, and presentation of results. It utters the results found from data collection and profitability ratio analysis conducted on various LCCs in Uganda.

Chapter Five clarifies the findings, followed by suggestions, recommendations, and conclusions, which answer the research questions in chapter one.

1.12 Chapter Summary

Background to the study provided a context for this study by identifying low profitability as a research problem, and research questions were developed, which required literature review. This study's primary objective (investigating the profitability of local construction contractors in Uganda) defined the research's route and destination. The specific objectives translated the main objective into operational statements and informed how the study's overall aim was to be achieved. The problem statement identified the gap between the current and desired state and concisely described low profitability as the research problem. Research justification provided the rationale for investigating profitability and developing a regression model to enhance profitability of LCCs while the significance of the study indicated the benefits of investigating the profitability of LCCs to society. The scope of the study stated the boundaries of the study in terms of content and geographical coverage. Lastly, the conceptual framework provided the road map of this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter consists of the literature review, which provides an overview of the critical literature sources from which the research draws. It contains literature regarding profitability, measurement of profitability, factors that affect profitability, regression modelling, regression analysis, and possible measures to improve profitability of contractors.

2.2 Profitability

Literature related to profitability is abundant. However, most of the existing literature is industry-specific, while others are country-specific. Examples of industry-specific studies are for; the banking industry Petria, Caprar and Ihnatov (2015); construction Industry (Rajasekhar, 2017); industrial companies (Al-Jafari and Al-Samman, 2015); oil and gas industry (Ebiringa, Yadiricukukwu, Chigbu and Ogochuhwu, 2013); electrical and energy sector, (Dagoumas and Polemis, 2017); among others. Examples of country-specific studies are for Romania (Popa and Ciobanu, 2014); Indonesia (Margaretha and Supartika, 2016); UAE (AlEid A. B., 2015); Rwanda (Kalamagye, Abednego, & Wanyona, 2019); among others. These publications concern only countries where such studies were conducted, thus rendering the context of such studies only applicable to countries where the studies were conducted. This is because of the unparalleled business environments in different countries and industries.

Now, there is a shortage of literature on the profitability of contractors in Uganda. Nevertheless, the researcher used existing literature highlighted above, applicable to other countries and industries, to establish with factors that may significantly affect Ugandan LCCs' profitability.

2.3 Profitability and business failure in the construction industry

Al-Jafari and Al-Samman (2015) define profitability as earnings of companies that are generated from revenues after deducting all expenses incurred during a given period.

Makarand (2015) asserts that the construction industry has unique characteristics and financial aspects, such as producing unique products that often have long project durations and being project-oriented compared to process-oriented manufacturers, contractors operating without centralised production, contractors have special payment terms and also heavily use subcontractors. Consequently, this makes them prone to cash flow problems and inadequate liquidity.

Additionally, the construction business involves many stakeholders that depend on each other's financial stability and operational performance, making contractors unsafe to external changes and increasing their operational risks (Makarand, 2015). He further indicates that the construction industry's characteristics contribute in many ways to a high business failure rate in the construction industry and a relatively high proportion of insolvencies compared with the rest of the economy.

Hyung, et. al., (2005) argue that the lack of cash or assets is another reason why construction companies fail. Similarly, Toong and Igor (2017) provided empirical evidence that companies reporting low profitability are at an increased risk of failure.

An instance of this is the collapse of Spencon Services Ltd, a prominent construction company in Uganda. Spencon Services Ltd collapsed because of insolvency resulting from delayed payments by the Government of Uganda (Adengo, 2017).

Business failure does not only affect main contractors but also subcontractors. Schanfelberger (2012) studied business failure at the subcontractor level in construction. His findings suggest that business failure does not only affect main contractors but also subcontractors. An instance of this is the collapse of Carillion in January 2018, a prominent construction firm in the UK, which resulted in the failure of another 2,700 construction firms (sub-contractors) which were affiliated with it (Amir and Simon, 2018). Furthermore, Schanfelberger (2012) indicates that the primary causes of subcontractor business failure are: insufficient capital, managerial immaturity, lack of early warning actions, increases in project scope, insufficient billing procedures, inability to appraise project and company profitability, unfamiliarity with new geographical areas, and poor use of accounting systems.

2.4 Measurement of profitability

Ibn-Homaid and Tijani (2015) state that it is essential for a construction business to assess its financial performance every so often so that the essential and proper strategies can be put in place to sustain its survival. Lee (2009) states that profitability is a function of sales volume, capital invested, and profit margin. He further indicates that profitability is conveyed as the profit Percentage of Turnover (POT) or Return on Investment (ROI) as shown in the equations below.

$$\text{Gross profit margin} = \frac{\text{Profit}}{\text{Turnover}} \times 100\% \dots \dots \dots \text{(Equation 2.1)}$$

$$\text{Return on investment} = \frac{\text{Interest accrued per unit time}}{\text{Principal}} \times 100\% \dots \dots \dots (\text{Equation 2. 2})$$

(Source: Leland and Anthony, 2012)

Where profit is the net sales less the cost of goods and turnover is the total volume of sales made during a specified period. According to Leland and Anthony (2012), “ROI is used equivalently with a rate of return (ROR) in different sectors and settings, especially where large capital funds are committed to engineering-oriented projects”. In addition, they define the rate of return as simply the rate earned on the unrecovered balance of an investment.

Sales volume, capital invested, and the margin of profit earned relate to construction activities and are computed to achieve a profitability level and show whether the company is efficient and its management effective (Lee, 2009). Leland and Anthony (2012) indicate that accountants, financial analysts, and engineering economists frequently utilise business ratio analysis to evaluate a company's financial health over the time with industry norms. They further recommend that it is necessary to compute ratios for several companies in the same industry for comparison purposes. Also, they indicate that ratios used are classified depending on the purpose of measuring the organisations. The ratios discussed by Leland and Anthony (2012) include: solvency ratios, efficiency ratios, and profitability ratios. Furthermore, they discuss these business ratios' roles as follows: Solvency ratios assess the company's ability to meet the short-term and long-term financial obligations. Efficiency ratios measure the management's ability to use and control the company's assets. In contrast, profitability ratios measure the company's ability to earn a return for the owners of the company.

Given the general objective of this study, profitability analysis, which involves using profitability ratios, was applied to this study. This conclusion resonates with AlEid A. B. (2015) findings that profitability is the financial performance indicator of companies.

2.5 Profitability analysis

According to Makarand (2015), profitability analysis determines how profitable a company is and is likely to continue to be so. Furthermore, he argues that profitability establishes the company's future payoffs as a critical factor determining its value. Such information is relevant to shareholders and the board of directors, senior managers, potential business partners, accountants, auditors, and potential investors.

Leland and Anthony (2012) hold that the profitability ratios measure the company's ability to earn a return for the company's owners. Burja (2011) defines a profitability ratio as a measure of profitability, a simple way of measuring a company's financial performance. AlEid A. B. (2015) states that the higher the value relative against a competitor's ratio or comparative ratio from the previous period, the company is doing well and vice versa.

Similarly, Leichter (2011) indicates that profitability ratios are the most standard metrics used in financial analysis. Again, he points out that these ratios fall into two categories: margin ratios and return ratios. He further explains that margin ratios provide insight from several angles on a company's ability to turn sales into a profit. In contrast, return ratios offer several different ways to examine how well a company

generates a return for its shareholders. More information about profitability ratios is summarised in Table 2.1.

In addition, other researchers have analysed profitability of companies through indicators such as Net Operating Profit (NOP), (Rahema, T, Qayyuma and Bolda, 2010) and (Dong and Su, 2010); Return on Total Assets (ROTA), (Deloof, 2003) and (Padachi, 2006); and return on capital and return on assets (Narware, 2006). The study by (AlEid A. B., 2015) analysed three major construction companies' financial performance using the following profitability ratios, as summarised in Table 2.1.

Table 2.1: Profitability ratios

Profitability Ratios	Equation	Purpose
Margin ratios		
Gross profit margin	$= \frac{\text{Gross Income}}{\text{Revenue}} \times 100\%$	Assesses how much profit the company makes over and above the cost of goods.
Operating Profit margin	$= \frac{\text{Net Operating Income}}{\text{Revenue}} \times 100\%$	Measures the percentage of profit produced from company operations before deducting the interest charges and taxes.
Net profit margin	$= \frac{\text{Net Income}}{\text{Revenue}} \times 100\%$	Measures the net profit as a percentage of the net income after deducting the cost of goods, operating costs and taxes.
Return ratios		
Return on Assets	$= \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$	Measures the company's efficiency in terms of how it utilises its assets.
Return on Operating Assets	$= \frac{\text{Net Income}}{\text{Operating Assets}} \times 100\%$	Measures the percentage return the company earns from investing funds in assets that contribute to its daily operations
Return on common stockholders	$= \frac{\text{Net Income}}{\text{Average shareholders Equity}} \times 100\%$	Measures the return to common stockholders
Return on Equity	$= \frac{\text{Net Income}}{\text{Shareholder's Equity}} \times 100\%$	Measures the ability of the company to earn a return on to the shareholders for their investments.
Return on Total Assets	$= \frac{\text{EBIT}}{\text{Total Assets}} \times 100\%$	Assesses profitability of the business in relation its total assets

(Source: AlEid A. B., 2015)

According to Fuhmann (2019), "Return on Equity (ROE) and Return on Assets (ROA) are two of the most important measures for evaluating how effectively a company's management team is doing its job of managing the capital entrusted to it". In a study to investigate the factors influencing the companies' profitability, Ibn-

Homaid and Tijani (2015) used gross profit margin, after-tax profit margins, return on assets and return on equity to assess companies' profitability over five years. The results showed that all the companies had their gross profit margins below the industry median, which meant that companies had spent much on construction project costs and acquired a lot of debt over the years with less revenue.

This study's first specific objective was to evaluate LCCs' profitability in Uganda, i.e., to assess these companies' ability to turn sales into a profit. Therefore, margin ratios were used to assess the profitability of LCCs in Uganda. The margin ratios selected for this study included: gross profit margin, operating profit margin, and net profit margin. Return margins were also used in this study to assess the companies' effectiveness in managing their resources to make a profit and earn dividends for their shareholders or equity providers. The return ratios selected for this study included: return on assets and return on equity.

Strishcheck and McIntyre (2008) stress that financial ratios must compare with the industry's standard average over a long period. Also, they argue that these ratios have a meaning and point to how the company has been run in the years of accounts. Table 2.2 shows the types of financial ratios and ranges used for construction companies, as Peterson (2009) proposed.

Table 2.2: Proposed 17 financial ratios, industry median, and range for construction companies

No.	Ratios	Median	Range
R1	Quick ratio (QR)	1:2:1	2:0:1 to 0:7:1
R2	Current ratio (CR)	1:7:1	2:8:1 to 1:2:1
R3	Current liabilities to Net work ratio (CLNW)	0:67:1	0:30:1 to 1:34:1
R4	Debt to equity ratio (DER)	1:0:1	0:4:1 to 2:0:1
R5	Fixed assets to net worth ratio (FANW)	0:65:1	0:35:1 to 1:11:1
R8	Average age of accounts payable (AAP)	45 days	
R9	Assets to revenues ratio (ARR)	0:6:1	0:34:1 to 0:62:1
R10	Working capital turns (WCT)	8:7:1	16:0:1 to 4:9:1
R11	Accounts payable to revenue ratio (APRR)	5.7%	2.8% to 9.7%
R12	Gross profit margin (GPM)	24%	
R13	General overhead ratio (GOR)	10%	
R14	After tax profit margins (ATPM)	28%	6.6% to 0.7%
R15	Return on assets ratio (ROA)	5.8%	14% to 15%
R16	Return on equity (ROE)	12.8%	29% to 3.5%

(Source: Peterson, 2009)

According to Mohd, Mastura and Omar (2010) if the firm's financial ratios vary significantly from its industry average, analysts should be concerned about why this variance occurs. Equally, the management of the company should be alerted to check for their survival.

2.6 Margin ratios

2.6.1 Gross profit margin ratio (GPM)

According to Wilkinson (2013), the gross profit margin ratio, also known as gross margin, is the gross margin ratio expressed as a sales percentage. It is further asserted that gross margin alone indicates how much profit a company makes after paying off its cost of goods sold or direct costs. In other words, he holds that it is a measure of the efficiency of a company using its raw materials and labour during the production

process. Wilkinson (2013) further states that the gross profit margin's value varies from company and industry. Also, he says that the higher the profit margin, the more efficient a company is, and this can be assigned to a single product or an entire company.

Similarly, from the construction industry perspective, the CLA report of 2018 states that the gross profit ratio measures the percentage of total contract income that the business retains after incurring the direct costs associated with completing the contract (CLA, 2018). It further indicates that the higher the percentage, the more profit the business maintains, which means more money is left over for other operating expenses and net profit. Furthermore, it argues that gross profit margin is affected by the amount of work the contractor self-performs on the contract and apportions corporate overhead costs, such as payroll, between general and administrative expenses and contract costs.

In a study to analyse financial performance, Ibn-Homaid and Tijani (2015) used gross profit margin to assess Saudi Arabian construction companies' profitability. His findings showed that the GPM of the company under study was below the industry median GPM.

2.6.2 After-tax profit margin (APM)

According to Kagan (2018), “the after-tax profit margin is a financial performance ratio calculated by dividing net income by net sales or revenue”. Also, she argues that a company's after-tax profit margin is significant because it shows how well a company controls its costs. She further states a high after-tax profit margin generally indicates that a company runs efficiently, providing more value in the form of profits to

shareholders. Kagan (2018) further asserts that the after-tax profit margin alone is not an exact measure of a company's performance or determinant of its cost control measures' effectiveness. However, with other performance measures, it can accurately depict the overall health of a company. Some industries inevitably have considerable costs. As a result, their margins may be lower. However, that does not equate to poor control of costs.

In a study to analyse financial performance, Ibn-Homaid and Tijani (2015) used the after-tax profit margin to assess Saudi Arabian construction companies' profitability. Their findings showed that the company's after-tax profit margin was less than the stipulated industry average of 28%.

2.6.3 Operating profit ratio (OPM)

According to Babalola and Anifowose (2018), “operating profit margin is a profitability ratio that establishes the relationship between operating profit and net sales”. The main objective of computing OPM is to determine the operational efficiency of the management. This ratio is also known as the operating profit ratio. Operating profit refers to the net profit from the business's everyday processes and actions without considering unnecessary transactions and expenses of a purely financial nature. A higher operating profit ratio represents good quality operational efficiency of the business. A higher operating profit ratio means that the company can increase its sales and cut down its operating expenses (Babalola and Anifowose, 2018).

2.7 Return ratios

2.7.1 Return on assets (ROA)

Various researchers such as Nor and Noriza (2006), Burja (2011), Rajasekhar (2017), and Ibn-Homaid and Tijani (2015) have analysed profitability using the Return on Assets (ROA). According to Ibn-Homaid and Tijani (2015), a construction company's efficiency utilises its assets is measured by ROA. Leichter (2011) states that the term Return on Asset (ROA) ratio customarily refers to net profit or net income, the number of earnings from sales after all costs, expenses, and taxes. It is computed as a ratio between net Income and total assets (Burja, 2010). According to Leichter (2011), a high percentage rate can show if a company is well managed and has a healthy return on assets. He further suggests that the recommended ROA should be 15% or greater.

2.7.2 Return on equity (ROE)

ROE is a ratio that concerns a company's equity holders the most since it measures their ability to earn a return on their equity investments Leichter (2011). One of the most important profitability metrics for investors is its Return on Equity (ROE). Return on equity reveals how much after-tax income a company earned compared to the total amount of shareholder equity found on the balance sheet. In other words, it conveys the percentage of investors' dollars that have been converted into income, giving a sense of how efficiently the company is handling their money.

Therefore, return on equity (ROE) is the measure of a company's annual return (net income) divided by the value of its total shareholders' equity, expressed as a percentage.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Shareholders' Equity}} \times 100\% \dots \dots \dots (\text{Equation 2. 3})$$

Return on Equity is a two-part ratio in its derivation. It brings together the income statement and the balance sheet where net income or profit is compared to the shareholders' equity. The number represents the total return on equity capital and shows its ability to turn equity investments into profits. To put it another way, it measures each dollar's gains from shareholders' equity.

James argues that ROE may increase dramatically without any equity addition when it can merely benefit from a higher return helped by a more extensive asset base. According to Leichter (2011), as a company increases its asset size and generates a better return with higher margins, equity holders can retain much of the return growth when additional assets result from debt use. Various researchers have used ROE to analyse profitability (Burja, 2011; Homaid and Tijani, 2015; Lee, 2009; and (Antoine, Seissian, Gharios and Awad, 2018)

2.8 Evaluation of profitability of contractors

2.8.1 Profitability of contractors in USA from year 2016 to 2018

This section presents the CLA 2018 construction benchmark report, which explains contractors' profitability in the USA from 2016 to 2018. The study compares this data with the profitability trends of LCCs in Uganda. In the USA, Return on Assets ratio (ROA), Net Profit Margin (NPM) and Return on Equity (ROE) reduced from 9.6% to 7.8%, 5.4% to 4.6% and 21.4% to 17.5% respectively. However, it showed a positive accelerating trend for Gross Profit Margin (GPM) from 14.5% to 16% and Operating Profit Margin (OPM) from 8.1% to 9.3% (CLA, 2018).

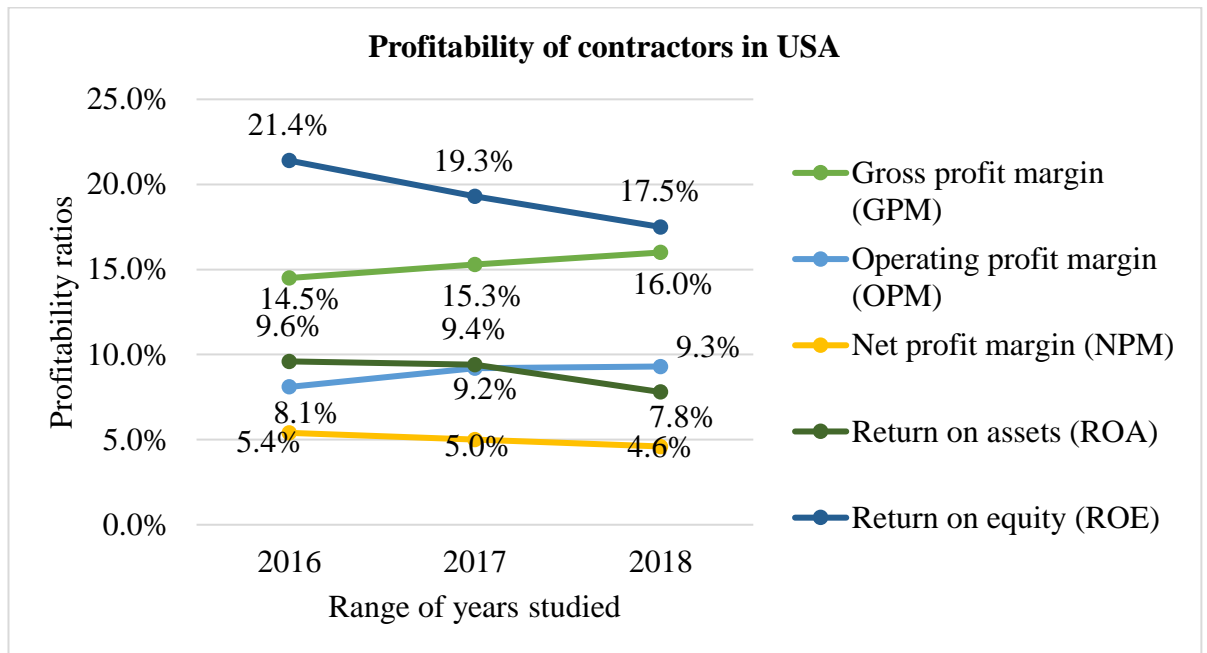


Figure 2.1: Profitability of contractors in USA from 2016 to 2018

(Source: CLA, 2018)

Figure 2.1 indicates the data extracted from the CLA 2018 construction benchmark report. The profitability of contractors in the USA is still strong compared to Uganda's LCCs. Despite the contraction in ROE and ROA of contractors in the USA, these are above the average industry ratios. This trend indicates that USA contractors earn adequate profit for their shareholders, sufficiently manage their resources in-terms of controlling costs, optimally utilize their assets, and rely less on financial leverage. The data shows an expansion in GPM which is a sign that contractors are efficiently using their resources during production. NPM is contracted from 5.4% to 4.6% from 2016 to 2018, and it is 23% lower than the recommended industry NPM. Low NPM implies that USA contractors are subject to very high taxes. Nonetheless, the financial performance of USA contractors is better than that of Ugandan LCCs.

2.8.2 Profitability of contractors in Indonesia from year 2004 to 2006

Figure 2.2 shows profitability ratios for LCCs in Indonesia (Asian Continent) from 2004 to 2006.

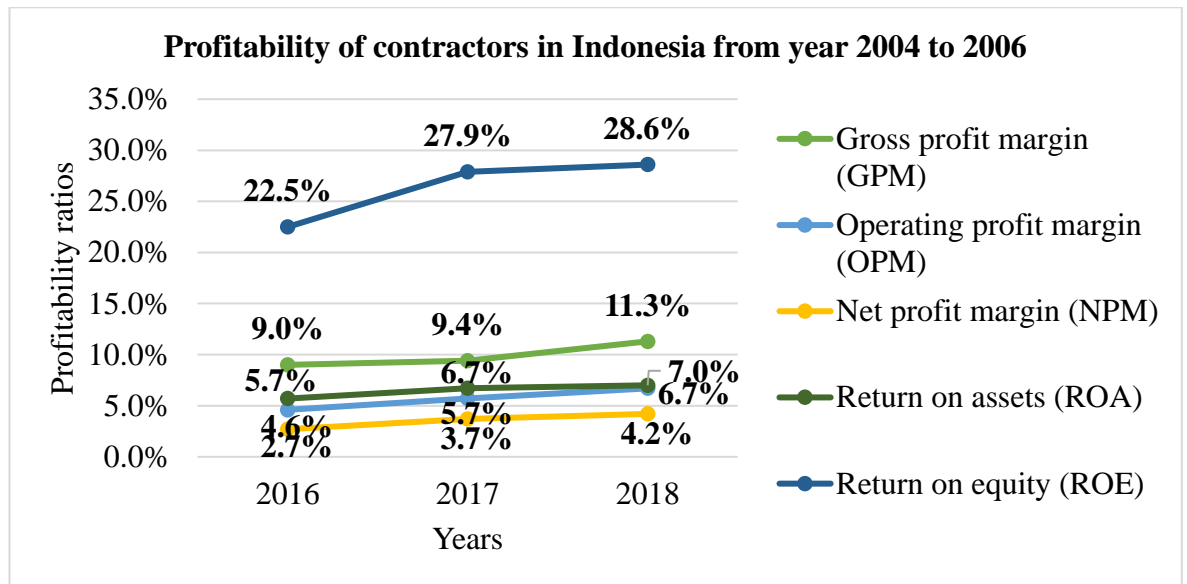


Figure 2.2: Profitability of contractors in Indonesia from year 2004 to 2006
(Source: Pamulu, Stephen and Betts, 2007)

The data about the profitability of contractors in Indonesia revealed that the average GPM, OPM, and NPM continuously increased year by year from 2004 to 2006, as indicated in Figure 2.2. The increased profitability affected the contractor's composite of Return on Asset (ROA) and Return on Equity (ROE), which increased from 5.7% to 7.0% and 22.5% to 28.6% respectively (Pamulu, Stephen and Betts, 2007). ROA measures how well management utilizes all the business assets in generating an operating efficiency of the firm, and ROE considers how the operation yields a return to shareholders. Judging from the data above, a conclusion can be made that Indonesian contractor in this study are reasonably sound in terms of profitability. Profits and returns generated from construction works are still satisfactory considering

the recommended construction industry average ratios as indicated in Table 2.2. Also, construction firms delivered a better return to their shareholders compared to Ugandan LCCs.

2.8.3 Profitability of contractors in UAE from year 2011 to 2013

UAE's trend of financial data concerning the profitability ratios for construction companies from 2011 to 2013 revealed a decelerating trend for Return on Assets (ROA) from 4.7% to 4.2% and Return on Equity (ROE) from 3.7% to 3.2% as indicated in Figure 2.3. However, it revealed a positive trend for gross profit margin (GPM) from 24% to 25.67%, operating profit margin (OPM) from 18.7% to 19.7%, and net profit margin (NPM) from 11.7% to 12.3% (AlEid A. B., 2015)

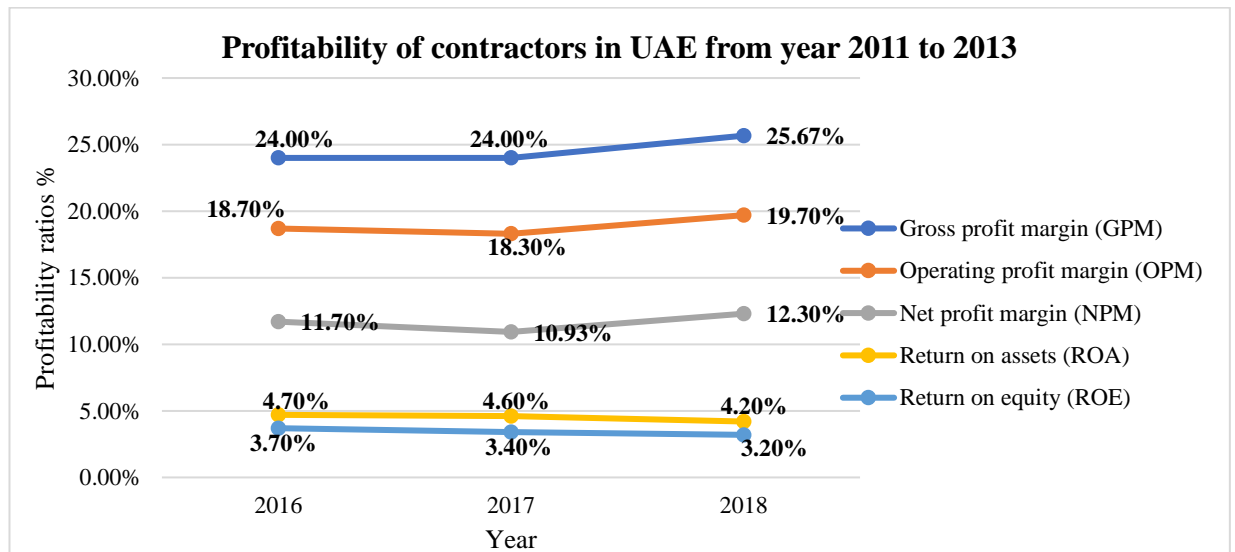


Figure 2.3: Profitability of contractors in UAE from year 2011 to 2013

(Source: AlEid A. B., 2015)

Based on the above analysis, the companies' general performance over the three consecutive years was exceptionally satisfactory, considering the recommended average ratios. Over the years, the company's revenues were adequate, and all margin

ratios were acceptable compared with the recommended industry median and range. However, contractors in UAE during the study period experienced a contraction in ROA and ROE, which is an indication that these companies could be relying on financial leverage. Moreover, ROE and ROA are below the construction industry average.

The analysis indicates that UAE contractors are performing better than Ugandan LCCs financially. All the profitability ratios for UAE contractors are higher than those for Ugandan LCCs except ROE

2.9 Factors that affect profitability in the construction industry

Profitability as a significant indicator of financial performance has been a critical issue for many researchers. The second specific objective of the study sought to establish the factors influencing LCCs' profitability in Uganda. The existing literature was reviewed to gain a deeper understanding of these factors. These factors have been categorised as follows: management factors, project-related factors, economic factors, and market factors. The meaning to these categories is defined in the content scope of this study i.e., section 1.7.1 of Chapter one of this dissertation.

2.10 Management factors

Danny, Donnet and Richard (2021) define management as the attainment of organisational goals effectively and efficiently through planning, organising, leading, and controlling organisational resources. The aim is to ensure organisational effectiveness and efficiency and the multitude of skills that managers use to perform their jobs successfully. Figure 2.1 shows activities that fall in the core management

functions. Depending on the job requirements, managers perform numerous tasks, but all can be categorised under these primary functions.

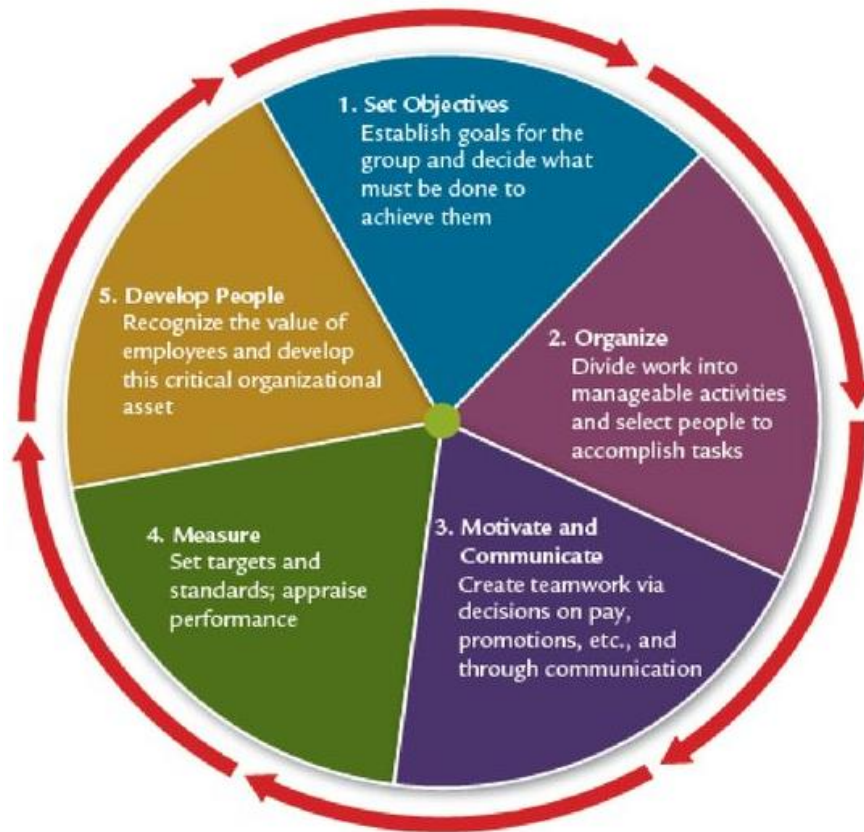


Figure 2.1: Roles of managers
(Source: Danny, Donnet and Richard, 2021)

Existing literature indicates that the following management factors affect the profitability of contractors. Therefore, managers need to effectively pay attention to these factors to control costs and enhance their profitability.

2.10.1 Project management

Chan and Scott (2004) define project management action as a key to project success. Project management actions include several variables such as: communication systems, control mechanisms, feedback capabilities, a planning effort, developing

appropriate organisation structures, implementing effective safety programs, implementing effective quality assurance programs, control of subcontractor's work, and overall managerial actions Chan and Scott (2004). Without these variables, the company is unlikely to achieve its goals.

Strishcheck and McIntyre (2008), through their survey, attributed inadequate project management to financial difficulties among contractors. In their study, poor project management involves incompetent or untrained personnel. Incompetent and unqualified managers may fail to implement, monitor cost controls, make uninformed economic decisions without clear justification and planning, which can consequently affect the company's profitability.

Therefore, good project management practices are critical to the company's profitability. This factor is believed to be essential to the profitability of contractors. Moreover, other researchers, such as Davidson and Martin (2003) have also linked management deficiency to business failure. Therefore, LCCs need to employ qualified and competent project managers and other staff to enhance their profitability.

2.10.1.1 Risk management

According to (Laurence, Gantz, Steve Isaacs and Rod, 2013) risk is defined as the chance of loss or an unfavorable outcome associated with an action. They further argue that the greater the uncertainty, the greater the risk. Also, the risk is what makes it possible to make a profit. If there were no risk, there would be no return to the ability to manage it successfully. In a study "red flags and warnings of contractor failure," Strishcheck and McIntyre (2008) identified failure to address or consider risks as a

significant factor contributing to contractors' financial loss. For example, when a contractor assumes the risk for subcontractors by not acquiring performance bonds from subcontractors, it frequently cuts into the general contractor's profit.

Laryea and Hughes (2006) argue that construction projects are affected by many risks that must be assessed and incorporated into a tender. Otherwise, the construction company suffers a tremendous loss and eventually fails. They also indicate that contractors may be unable or unwilling to make appropriate allowances to cater for the risk. The common construction risks include; weather, unexpected job conditions, personnel problems, errors in cost estimating and scheduling, delays, financial difficulties, strikes, faulty materials, faulty quality, operational issues, inadequate plans and specifications, and disaster. Contractors can choose to forecast the price of risk based on the information available at the tender stage and account for it, or they can be indifferent and count the cost of risk after a contract.

Risk management is no longer just a defensive strategy. The more sophisticated and formalised a company's risk management processes are, the more opportunity a contractor can profit from mitigating and managing the associated risks (Bartholemy, 2014). If the risks are not accounted for pre-contract at the tender stage, then any occurrence can significantly affect the contractor's profit margin on a construction project.

2.10.1.2 Project cost management practices

Construction project cost management is defined by Grima and Getachew (2018) as a process that completes the broad functions of estimating and tendering, scheduling,

cost control, and financial control. Otim, Nakacwa and Kyakula (2007) carried out a study on cost control techniques used on building construction sites in Uganda; their findings indicate that the methods are not the problem but rather the poor management of the processes and the laxity in supervision on most sites visited. Without effective cost management, contractors can not sustain long-term profitability.

According to Grima and Getachew (2018), poor cost management and overrun in project cost are severe issues in developed and developing countries. They further indicate that project cost management is essential for project success and construction project performance. Grima and Getachew (2018) discovered that inadequate financial planning and lack of effective and efficient project cost management systems are among the highest responsible factors for obtaining low profit. Therefore, contractors need to improve project cost management processes to improve financial management capacity and contractors' profitability. Construction cost management deals with a broad range of functions: estimating, scheduling, cost control, resource costing, and financial control (Hendrickson, 2008).

2.10.2 Business strategy

Porter (2008) defines strategy as creating a unique and valuable position involving different activities. He further asserts that the myriad activities that go into creating, producing, selling, and delivering a product or service are the primary competitive advantage units. Furthermore, he argues that long-term profitability must respond strategically to the competition. By understanding competitive forces that influence your industry's profitability, the contracting company can develop strategies for enhancing its long-term profits. These competitive forces include the threat of new

entrants into the market, bargaining power of the suppliers, bargaining power of the buyers, and threat of substitute products or services.

According to Strishcheck and McIntyre (2008), without a contingency plan, no goals or objectives, the contractor may not be prepared for changes. Gene, Lin-Yhi and Lih (2015) claim that the issue of whether a firm's business strategy (diversification or focus strategy) has an impact on its risk has been at the centre of a large body of literature in corporate finance. Therefore, an organization's core competencies should be focused on satisfying customer needs or preferences to achieve above-average returns.

2.11 Project-related factors

This section of the literature review discusses factors that are borne by the characteristics of construction contracts.

2.11.1 Project delays

According to Kikwasi (2012), construction project delays and disruptions are among the challenges faced in executing construction projects. Lee (2009) writes that "profits are made by completing the project efficiently and on time so that almost all clients appreciate their investments in their construction products in return". It is vital for projects to be completed on time and that the extent of liquidated damages (failure to complete a project on time) is not high, for late completions offset profits. The amount of liquidated damages imposed on a construction company due to a late completion certainly undermines the profits, which diverges from a company's targeted profitability. Dashor (2019) argues that delay in a construction project hurts clients,

contractors, and consultants regarding growth in adversarial relationships, mistrust, litigation, arbitration, and cash-flow problems.

2.11.2 Timeliness of payments

Cashflow is the most significant factor affecting profitability of construction projects (Chandrashekhar and Ratnesh, 2016). Also, they indicate that cashflow plays a greater role in the modern construction business as companies handle many projects simultaneously that necessitates precise planning for fund management.

Delayed payment has been identified as one of the biggest problems facing small businesses in the UK, with an estimated 50,000 companies collapsing each year because of delayed payments leading to severe cash flow problems (Amir and Simon, 2018). Delayed payments are considered a significant factor because it causes severe cash flow problems to the contractors (Ansah, 2011). Anash's study on the causes and effects of delayed payments by clients on construction projects in Ghana indicates that withholding or delaying payment creates a financial hardship for the construction companies. Its impacts are sometimes so harsh that some companies have to close down. Such an instance in Uganda is the collapse of a prominent construction company called Spencon. Spencon went down and sought a government bailout since they were finally distressed because it demanded billions of shillings from the Ugandan Government, and the Government delayed to pay. Yet, they had to settle loan obligations from banks (Adengo, 2017). The example stresses the importance of payments and cash flow relationships.

2.11.3 Reliability of bid estimates

Kermisch and David (2018) claim that most companies call pricing a high priority in an organisation, but 85% say they still have significant room for pricing improvement. They further argue that poor pricing practices are insidious; they damage a company's economics and go unnoticed for years. According to Atul (2017), "wrong estimates become a serious concern, especially when working on a fixed price contract. These contracts pose a significant risk to profit margin". As a result, the project team has to work with zero escalation of costs until completion.

Futhermore, Atul (2017) identified factors that cause wrong estimates. These include using cost data of previous similar projects to develop bid estimates, lack of trained/experienced human resources, ambiguous project requirements, lack of continuous improvement strategies, speculation, and unrealistic project time schedules. He recommends that contracting companies need to develop good costing models that: can withstand the test of time, suitable for use in varying scenarios, easy to use by team members, flexible enough to cater for changing needs of the project/customer, and applicable to both large and small projects, with minimal or no tailoring.

2.12 Economic factors

According to Agniesika and Sadowska (2011), "for an organisation to properly function and develop, good managers who can well understand the economic environment that it operates in are required". However, this understanding is often limited to the closest setting. They further argue that this is why many successes and failures come highly unexpected. The failures arise from the surrounding

macroeconomics; companies are often unaware of their forces. Therefore, its mechanisms need to be understood, its potential opportunities need to be utilised, and its threats limited. Teshager (2016) defines the economic environment as the milieu that comprises the fundamental macroeconomic values characterising the economy in which an enterprise runs, institutions operating in a given economy, and the specific legal system and technologies.

A country's economic conditions are influenced by numerous macroeconomic and microeconomic factors, including monetary and fiscal policy, the global economy's state, unemployment levels, productivity, exchange rates, inflation, and many others (Robert and James, 2020). These conditions change over time as an economy goes through periods of expansion and contraction. Robert and James (2020) argue that economic circumstances are considered sound or positive when an economy is expanding and is seen as undesirable or negative when an economy is contracting. He further asserts that financial data is often issued frequently, generally weekly or monthly and sometimes quarterly. Some economic indicators like the unemployment rate, inflation, and GDP growth rate are monitored closely by market participants, as they help assess economic conditions and potential changes in them. The economic indicators can be used to define the state of the economy or economic conditions, include the unemployment rate, levels of current account and budget surpluses or deficits, GDP growth rates, and inflation rates. An instance of this is the Bank of Uganda (BOU) and the Uganda Bureau of Statistics' monthly, quarterly, and annual reports about Uganda's economic performance. The economic factors covered by this

study include changes in tax legislation and regulatory ordinances, cost of capital/finance, and price fluctuations.

2.12.1 Changes in tax legislation and regulatory ordinances

Lee (2009) indicates that changes in the market and industry regulatory ordinances and statutory requirements require head office staff to manage, control, and supervise within the company's organisation to fulfil these changes. In Uganda, these changes include tax policy amendments by the parliament of Uganda or Uganda Revenue Authority (URA), changes in the statutory requirements by statutory authorities such as Kampala Capital City Authority (KCCA), changes in environmental regulations by the National Environmental Management Authority (NEMA), among others.

An instance of this in Uganda, is the introduction of a special treatment of VAT relief on donor-funded projects in August 2017; this tax amendment of 2017, termed as VAT deemed paid to the contractor, took immediate effect. The amendment affected many contractors who were executing ongoing donor-funded projects at that time. When the tax policy became effective, the VAT status of the ongoing donor-funded projects changed from VAT standard rated at 18% to VAT deemed paid to the contractor. Therefore, government agencies no longer paid VAT to the contractors with immediate effect. However, many contractors had already procured materials VAT inclusive but not yet incorporated in the works.

Consequently, input VAT paid on those materials resulted into a cost to the contractors. It was already settled as an input tax but could not be recovered or claimed from URA; this substantially affected the contractor's profit margins. Contractors lost

thousands of dollars because of such a drastic change. Tax reforms could also create a positive impact on the company's profitability. An instance of this is the 2017 tax reform in the US, where the effective tax rate was reduced from 37% to 29% for pass-through construction entities.

2.12.2 Cost of capital/finance

According to Colonnelli & Ntungire (2018), "the construction industry is a high-risk sector for financiers". It frequently requires high fixed capital investments and incurs very high costs. The absence of access to finance is especially severe for local construction firms in Uganda whose ability to borrow is restricted by rigidities in the domestic market and a lack of collateral security. A survey of the local and foreign construction firms executing donor-funded construction road projects in Uganda by Balimwezo (2009) found out that the typical amount of credit obtained by foreign companies was 20 times larger than that obtained by LCCs. The high contrast in access to financing for the domestic construction industry puts local firms at a disadvantage, restricting their ability to undertake new projects, recruit skilled labour, or even manage current projects. These are more salient issues for local firms. The influx of international firms, primarily those from China accessing considerable cheap credit from their countries, strongly limits national firms from competing for the same contracts.

Commercial banks have undertaken the most significant share of financing to the LCCs in Uganda. Still, banks mostly have short-term liabilities and are therefore not well placed to hold long-term assets on their balance sheets, which further hinders borrowing, especially for long-term construction projects. Additionally, commercial

banks and other financial institutions' lending interest rates range between 18% and 24%, making it costly for LCCs to borrow from domestic markets (Bank of Uganda, 2020). Most LCCs' interviewees revealed that most small and medium local firms rely on money lenders who charge a premium over the average market interest rates. The flexibility is essential for LCCs and partly justifies the high associated costs. Other alternative funding sources for projects often include family and friends, while development finance institutions seem to have limited traction in Uganda due to perceived excessive bureaucracy. All these challenges become particularly relevant for LCCs tendering for contracts. To finance equipment and contracts, and in the absence of access to credit, such companies resort to own savings or hire equipment from the local market, further undermining their competitiveness, quality of work produced, and profitability.

According to Nuwagaba (2018), commercial banks' current high lending rates have led to increased business costs and, ultimately, slow business growth in Uganda. He further indicated that; Uganda's commercial banks' lending rates are as high as 26% when our neighbours, such as Rwanda and Kenya, are 19% and 14%, respectively. Other countries with low bank lending rates include the United States (3.5%), Japan (0.9%), and South Africa (10.5%). In China, the highest commercial bank lending rate was reported to be 3.30 % in April of 2018 and a record low of 3 % in February of 2016 (Trading-Economics, 2019). Currently, the majority of competitors to the LCCs are firms of Chinese origin. If these Chinese firms are borrowing at interest rates as low as 3.3%, their cost of doing business will remain much lower than that of the LCCs borrowing at interest rates as high as 26% per annum.

Consequently, LCCs are forced to lower profit margins than international companies to compete with foreign companies. Otherwise, LCCs will continue to submit much higher bid figures compared to the international firms. As a result, many LCCs will be outcompeted, release inadequate profitability levels and pushed out of business.

2.12.3 Price fluctuations

Price fluctuations are defined by Anjay and Regmi (2017) as the rise and fall of prices of goods, materials, and services on the market. They further claim that a contractor who tenders at a fixed price runs the risk that he may later have to pay more for materials and labour than the prices and wages current at his tender time. Conversely, the contractor may benefit if those prices and wages go down.

Figure 2.3 shows the trend of material price fluctuations in Uganda's construction industry from 2008 to 2018. Construction costs for civil works and non-residential buildings have outpaced overall inflation significantly and appear to be accelerating. Figure 2.3 shows the index of construction costs compared with the consumer index for the period 2008 to 2018. Whereas the prices for the construction sector as a whole fell by 0.4% between December 2016 and December 2018 (lessen by a slump in the residential housing prices), the prices for civil works rose by 3.1%, reflecting a surge in the construction industry.

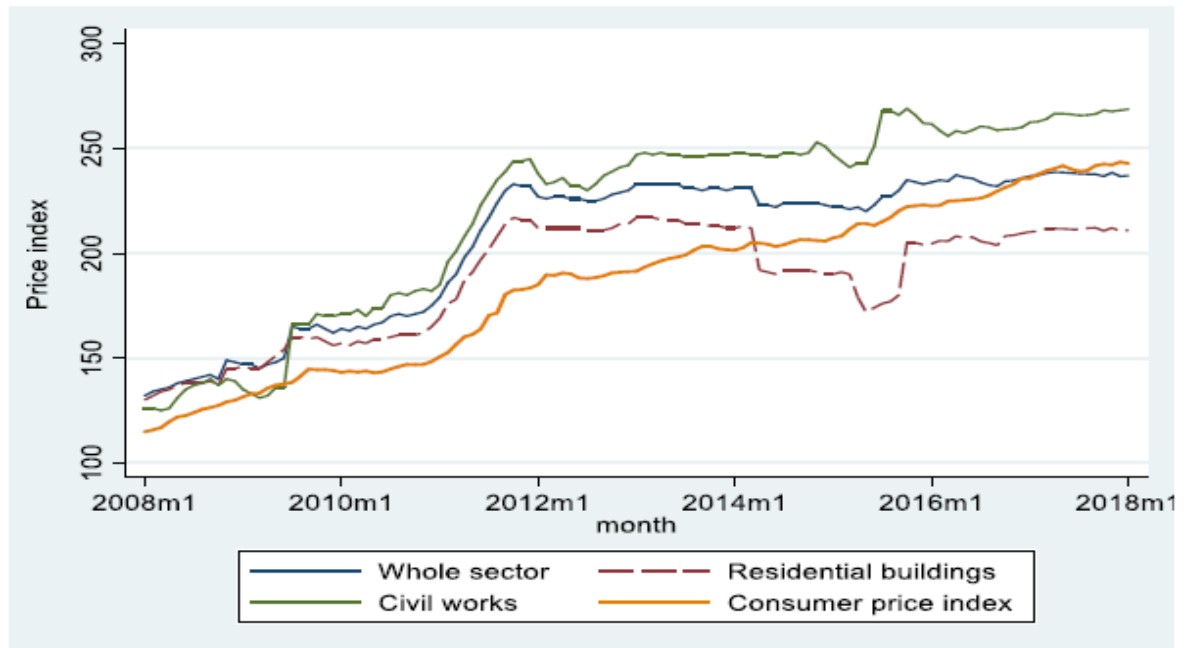


Figure 2.4: Index of construction costs compared with consumer index for the period 2008 to 2018 in Uganda

(Source: Colonnelli & Ntungire, 2018)

2.13 Market-related factors

Robinson (2020) defines the market as a means by which the exchange of goods and services occurs; buyers and sellers contact one another, either directly or through mediating institutions. Generally, four significant factors influence a market's trends, including government intervention, international transactions, speculation, and demand and supply (Cory, 2019). Also, she asserts that trends are what allow traders and investors to capture profits. This study majorly looked at three factors that affect construction contractors' profitability, including competitive bidding environment, construction demand, and corruption tendencies. Literature about these factors was reviewed to understand these factors and their impact on profitability.

2.13.1 Competitive bidding environment

Competitive bidding is the principal mechanism of competition (Hyung-Jin and Reinschmidt, 2011). Also, bidding is risky because the actual cost of the job is unknown. Thus, the bid should be high enough to make a profit but low enough to win the bid. The result of competition depends on the competitor's risk-taking behaviours affected by the organisation's risk attitudes. They further assert that a contractor's risk-taking is an essential element of the construction business. Winners and losers are determined through their competition in the market.

Lee (2009) claims that construction contractors worldwide have been forced out of business, primarily because of a higher competitive bidding environment that resulted in relatively low profitability and even significant losses. An example is Gaza land, where the construction industry is dominated by a competitive construction sector driven by the most inferior cost mentality. This built a lot of pressure on contractors to reduce pricing during the bidding process for construction contracts pushing them on the edges of the already worse economic times, resulting in losses in due course (Enshassi, Al-Hallaq, & Mohammed, 2006)

Uganda is not an exception, Ocen, Alinaitwe, & Tindiwensi (2012) confirmed that the construction businesses in Uganda close business or changes business in a short time due to the low competitiveness of LCCs. This was majorly attributed to: qualification of project key personnel; health and safety planning; production of realistic project schedule and budgets, company's credit status; accessibility to financial credit and loans; relationship with the clients; government policies on the construction industry; and the ratio of technical staff in the company.

2.13.2 Construction demand

Sub-Saharan Africa's construction sector structure is very fragmented and underdeveloped, severely limiting its potential to evolve into a functional industry. This situation has hindered the development of professional cadres of trades and management personnel, making it exceedingly difficult to subject the sector to regulatory policies and improvement programs.

Therefore, it is hardly surprising that the industry is bedeviled by technical and managerial difficulties arising from skill shortages and applying technological and management techniques to construction processes. These attributes owe much to the fact that most construction firms are owned and managed by sole trader-type entrepreneurs with little knowledge of the construction industry's workings (Ofori, 1991).

Similarly, the environment in which construction activities occur in Sub-Saharan Africa is generally unfavourable to entrepreneurial initiatives to develop and modernize the industry (Ofori and Toor, 2008). Although seasonality of work is a typical feature to build and update the sector globally, it is nevertheless more pronounced in developing countries such as sub-Saharan Africa because of the over-reliance on government for work and the private sector's narrow base sector.

However, government construction orders fluctuate with income, especially multilateral and unilateral finance assistance, which often facilitate the foreign exchange devoted to imports, including construction materials. In the absence of domestic capacity to effect material supplies, the construction industry is forced to

operate far below capacity each time the government's income fluctuates in income. This helps perpetuate the informal approach to construction activities as the seasonality of construction materials discourages long-term strategic planning, hindering access to investment capital.

Usually, detailed investment appraisal is required by financial institutes to grant business loans, which is generally impossible in an uncertain economic environment brought about by the enormous variations in construction demand. As a result, a vicious circle emerges where uncertainties prevent access to capital investment. As a result, firms can only operate on a very small scale, forfeiting the vast advantages usually associated with economies of scale. It is worth noting that; there is a shortage of current literature about construction demand in Uganda.

2.13.3 Corruption

Colonnelli & Ntungire (2018) claim that corruption is seen as the leading friction to doing business in Uganda. As a result, the cost of doing business is very high for companies relying on government jobs. The reason why sectors such as construction are so prone to corruption are several. Construction is highly dependent on public procurement. This, coupled with typically sizeable contracts, gives public officials and consultants many lucrative opportunities to illegally solicit money from contractors. Corruption is amplified considering that government plays not only the client role but also the regulatory role.

Another reason is that, by nature, construction costs are challenging to measure, as construction involves complex non-standard processes with high levels of asymmetric

information between the clients, consultants, and contractors. Finally, the construction industry involves an intricate supply chain, several inter-sector linkages, and several different private sector agents, which lead to difficulties for regulators to track illegal activity and take proper enforcement actions.

During interviews for the study, most interviewees confirmed that government officials managing public procurement solicit money from LCCs before they are given a contract; this money could range between 5% and 10%. Also, government officials and consultants solicit money from contractors during the project's construction phase; this could be for purposes of expediting necessary approvals and payments. As a result, the contractor's profitability is affected since such monies are not catered for in the contractor's cost targets.

2.14 Regression modelling

Regression modelling is the process of using mathematical and statistical techniques to interrogate current and historical data to test hypothesis, estimate or make predictions (Frank, 2015). Waller and Fawcett (2013) indicate that it results from data mining forecasting probability and trends. Kim and Kim (2015) define modelling as predicting future behaviour or tendencies.

Each model is made up of several predictors, which are likely to influence future results. Formulation of a statistical model is conducted after collecting the data. The model may employ a simple linear equation or a complex neural network, mapped out by sophisticated software. As additional data become available, the statistical analysis

model is validated or revised. Predictive modelling is often associated with meteorology and weather forecasting, but it has many applications in business.

Once data scientists gather this sample data, they must select a suitable model. Linear regressions are among the simplest types of predictive models. Linear models take two variables correlated and plotted on the x-axis and one on the y-axis. The model applies the best fit line to the resulting data points. Data scientists can use this to predict future occurrences of the dependent variable. There are several types of predictive models, including Ordinary Least Square Generalized, Linear Models, and Logistic Regression. Regression analysis was adopted for the predictive model developed for this study.

2.15 Regression analysis

Regression analysis helps solve engineering and science problems involving exploring the relationship between two or more variables (Mohammad, Kumra, & Praveen, 2012). According to Verma (2013), regression analysis involves an independent variable that can only be altered by the researcher and a dependent variable that changes due to a change in the independent variable. Regression analysis deals with estimating the value of the dependent variable based on one or more independent variables.

An equation is developed between dependent and independent variables using the least square method, represented by the equation $Y_i = b_0 + b_1X$. b_1 is the slope of the line, and b_0 is the intercept on Y-axis. Y_i is the dependent variable's predictive value as per the line best fit after the independent variable, and X is the independent causes a

change in the dependent variable. Therefore, after a regression, each sample point has two dimensions X and Y thus Y_i is the estimated value obtained from the line of best fit.

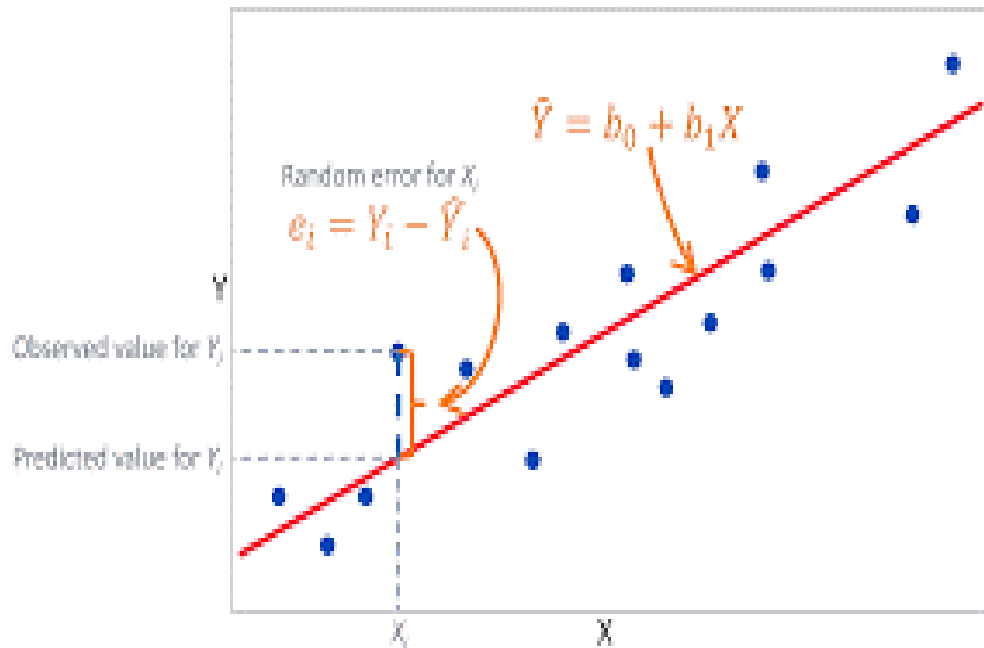


Figure 2.5: Regression graph

(Source: Verma, 2013)

Verma (2013) further explains that in developing a multiple regression, one needs to know the efficiency of estimating the dependent variable based on the model's identified independent variables. The estimation efficiency is measured by the coefficient of determination (R^2) which is the square of multiple correlations. The coefficient of determination explains the percentage of variance in the dependent variable by the model's identified independent variables. In other words, the coefficient of determination tells one how well the data fits the model. Multiple correlations demonstrate the relationship between the group of independent variables and

dependent variable. Thus, high multiple correlations ensure greater accuracy in estimating the dependent variable's value based on the independent variables.

Feeny (2000) utilized simple regression techniques to analyze Austrian tax entities' profitability. Also, Mohamad, Ibrahim, and Massoud (2013) assessed the impact of the expected construction company's net profit using neural networks and multiple regression models. Sutter (2017) performed financial analysis of the construction industry, innovation and company performance using regression analysis. It is against this background that the researcher used regression analysis to develop a model that can enhance profitability of local construction contractors in Uganda.

2.16 Summary, research gap, comments, and criticism

In their study "An analysis of the competitiveness of local construction contractors in Uganda," Ocen, Alinaitwe, and Tindiwensi (2012) claim that stiff competition from international companies is the primary reason why LCCs collapse. However, the study does not indicate how stiff competition leads to LCCs' collapse; neither establishes other causes of company failure in the construction industry. Empirical studies in other countries have suggested that stiff competition affects the contractor's profitability, resulting in business failure (Toong and Igor, 2017) and (Petria, Caprar, and Ihnatov, 2015)

Besides, now, there is a shortage of data on the profitability of contractors in Uganda. This data would be essential to enlightening policy debate and enabling contractors to enhance their financial performance. Consequently, this would lead to the growth and survival of LCCs. Therefore, LCCs' profitability and factors that affect their

profitability need to be established to develop strategies that will enable local contractors to improve their financial performance and reduce business failure in the construction industry.

2.17 Chapter summary

This chapter contained literature regarding profitability, measurement of profitability, factors that affect profitability, regression modelling, a literature review summary, and research gap. The next chapter presents the research theory, design and approach, study population, sampling strategy, sample size determination, description of the study area, data sources, data collection instruments, quality control of data collection instruments, data analysis, and ethical considerations limitation of the research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter presented literature review, which provided a theoretical background for the research, broadened the knowledge base, and brought clarity to the researcher problem, helped to establish the nexus between the study and what has already been studied, improved research methodology, and helped to contextualize the study findings. This chapter entails the theoretical foundation and methods, or procedures used to achieve the study's general objective and justifies the choice of these methods. It presents research strategy or design, research approach, study population, sampling techniques, data sources, data collection instruments, data quality testing, data analysis, ethical considerations, and limitations of the research.

3.2 Research design

According to Creswell (2009), research design is explained as a plan and procedures for the study that span the decisions from broad assumptions to detailed data collection methods and analysis methods. Similarly, Creswell and Creswell (2018) define research design as a type of inquiry that provides specific direction for research procedures.

There are several inquiry strategies such as survey research, experimental research, ethnography, grounded theory, case studies, a phenomenological, narrative, sequential mixed methods, concurrent mixed methods, and transformative methods. The survey type of inquiry was selected as the most suitable inquiry strategy to investigate LCCs' profitability in Uganda. Abdulai and Anash (2014) state that surveys include cross-

sectional and longitudinal studies that use mostly questionnaires, interviews, and observation for data collection, which was largely the case in this study. Surveys lead to a generalization of results from a representative sample (Bryman, 2015) and (Hart, 2005). According to Creswell (2009), survey research provides a quantitative or numeric description of trends, attitudes, opinions, and populations by studying a population sample.

A survey is a gathering information system that includes cross-sectional and longitudinal studies that use questionnaires, interviews, and observation for data collection. In a cross-sectional study, all the data on relevant variables are collected simultaneously or within a brief period. Therefore, it provides a snapshot of the investigation variables at one point in time. However, in longitudinal surveys, data are collected over prolonged periods. Measurements are taken on each variable over two or more distinct periods; this permits the measurement of change in variables over time. A cross-section survey strategy was adopted for this study since the data for this study was collected over a brief time i.e., four months.

3.3 Research approach

The study emphasized a mixed research approach which included a combination of quantitative and qualitative methods. One method's strength improves the weakness of other, hence being the most suitable approach for this study. Creswell and Creswell (2018) argue that the combination of qualitative and quantitative methods offers a better understanding of the research problem than one of the methods when used alone. For instance, qualitative research methods lack validity, reliability, and generalising

findings (Creswell, 2013), (Maxwell, 2012) and (Berg, 2017). However, quantitative methods address these limitations.

3.4 Research population

The target population for this study comprised company representatives with knowledge about company's profitability. These included: Directors, Project Managers, Quantity Surveyors, Accountants, Administrators, Procurement Managers from the different companies. Each construction company appointed a single representative from the above list to participate in the study. Appointment was made based on availability and experience of the respondent. The companies that participated in this study are those registered with UNABCEC as local civil and building engineering contractors under the various classes, including A-1 local, A-2, A-3, A-4 and A-5. Contractors registered with UNABCEC are classified depending on their estimated annual volume of work, area of specialty, and nationality as indicated in Table 3.1.

Table 3.1: Study population of the research

Class of companies (UNABCEC, 2019)	Population
A-1 local	13
A-2	15
A-3	9
A-4	22
A-5	30
Total	89

(Source: UNABCEC, 2019)

The directory of UNABCEC comprised of 89 LCCs registered in the above classes as of 2019. Ninety two percent (92%) of these contractors had their offices based in the Greater Kampala Metropolitan Area, and these are the contractors that formed part of

the residual population in 2019. The study did not consider other classes of contractors registered with UNABCEC. These were either international contractors, manufacturers, or strictly deal in construction supplies, or mechanical and electrical works. UNABCEC categorized the contractors as follows; Class A-1 international, international contractors; class B-1, manufacturers of construction materials; class B-2, agents and supplies of construction materials and equipment; class C-1, international mechanical and electrical contractors; C-2, local mechanical and electrical contractors; D-1, international associate members; and D-2, local associate members. The study majorly focused on LCCs involved in civil and building works.

3.5 Sampling strategy

3.5.1 Sampling technique

The study population comprised of small strata based on the contractors' annual volume of contracts, area of specialty, and nationality classified under distinct categories. Therefore, stratified sampling, a probabilistic technique was adopted for the study. This technique was considered for this study because the study population which was originally heterogenous in terms of size was divided into smaller groups or subpopulations. Such subpopulations are termed as strata.

3.5.2 Sample size

The sample size of the entire population of contractors was determined using Yamane's formula for calculating a sample of a finite population (Yamane, 1967). Yamane's formula was appropriate because the population of local construction contractors registered with UNABCEC was known.

Yamane's Formula calculating sample of a finite population is:

$$n = \frac{N}{1+N(e^2)} \dots\dots\dots(\text{Equation 3.1})$$

Where:

n = Sample size, N = The population of the study, and e = Level of precision (10%).

The sample size of the entire population was determined as illustrated below:

$$\text{Sample size (n)} = \frac{89}{1+89(0.1^2)} = 47$$

Due to the study population's nature, a sample fraction in each stratum (n_i) was determined. The proportional allocation method was used to determine the sample fraction from each stratum. The technique is appropriate for determining the sample size when using a stratified sampling method. Proportional stratified sampling was a suitable type of sampling. Like simple random sampling, proportional stratified random sampling is an equal probability of selection method (EPSEM), which means the researcher generalized directly from the final combined sample to the population (Kalton, 1983) and (Kish, 1995). However, proportional stratified sampling was a little more efficient than simple random sampling (which requires slightly fewer people and is therefore less expensive).

The formula for proportional allocation method is : $n_i = n \frac{N_i}{N}$ (Equation 3. 2)

Where:

n_i = is the sample fraction of i^{th} strata,

n = is the sample size of the entire population,

N_i = is the population size of i^{th} strata, and

N = is the population size of the study

For instance, the researcher applied equation 3.2 to class A-1 local with a sample size of the entire population (n) of 47, population size of ith strata of (N_i) of 13 and population size (N) of 89 as illustrated below.

$$\text{Same fraction } (n_i) = 47 \frac{13}{89} = 6$$

The sample fraction (n_i) obtained was 6, and the same equation applied to the other strata as indicated in Table 3.2.

Table 3.2: Sample fraction of the study population

Stratum	Class	Annual Volume of work (UGX)	N _i	(n _i)
1	A-1 Local	Over 10 billion	13	6
2	A-2	Over 5 billion but not exceeding 10 billion	15	8
3	A-3	Over 2.5 billion but not exceeding 5 billion	9	5
4	A-4	Over 500 million but not exceeding 2.5 billion	22	12
5	A-5	Less than 500 million	30	16
Total			89	47

After determining the sample fractions, systematic sampling was used to identify the contractors forming part of the sample fraction from each stratum. Even numbers on the list of contractors obtained from UNABCEC were then used to determine the contractors forming part of each stratum's sample fraction. The list of contractors that were selected for this study is appended to this dissertation in appendix 5.

3.6 Data sources

Data source is the reference from which research information is collected for a specific research study. Data sources include data that are already collected, and data collected

during the study. Data sources are used to describe different data collection methods and or tools. The study used both primary data and secondary data as discussed below.

3.6.1 Primary data

According to Abdulai and Anash (2014), primary data is “first hand” information gathered via procedures such as questionnaires, interviews, observations, and direct experiences. Primary data collection took place between October 2019 and January 2020 using questionnaires and interview guides for the in-depth interviews.

Questionnaires are normally used in Quantitative research; these can be administered via email/post, internet, or face to face while interviews which are often used for qualitative research can be conducted face to face, over the phone, using a voice over IP service such as Skype. The procedure of how these data collection tools were used in this study is discussed in sub-section 3.8 of this dissertation.

3.6.2 Secondary data

Secondary data refers to any published materials, such as books, journals, newspapers, reports, magazines, dissertations or thesis, online materials, databases, photographs, films and computer-based programs. The secondary data collection instruments used in this study included: published journals, books, published reports, online materials, and company annual financial statements for three years (2016-2019).

3.7 Data collection instruments

The data collection instruments are research data collection tools that were used to gather data which was later processed and analyzed to answer the research questions. The data about profitability levels of LCCs in Uganda were collected from the

companies' audited financial statements covering the period 2016 up 2018. The data collected provided reliable data for research question one.

A questionnaire survey was used to gather data about factors that affect profitability of local construction contractors. The structured questionnaires were distributed to company representatives such as a Director, Project Manager, Quantity Surveyor, Accountant, or any other staff with experience in the construction companies' financial management. The Likert scale was used for respondents to state their extent of agreement or disagreement with a particular question or statement based on their level of experience or knowledge about the profitability of LCCs. Five points of Likert scale indicated that: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4= agree, and 5 = strongly agree.

Questionnaires present the following limitations: first, they do not allow either the researcher or respondents to seek clarity on ambiguous/unclear responses or questions being asked, respectively (Naoum, 2012). Secondly, they do not allow the researcher to follow other emerging themes during research compared to the interview method (Naoum, 2012). Therefore, the researcher deployed interviews as a second data collection tool for this study.

The researcher obtained approval from the university and sought consent from the respondents. The respondents were assured their participation was voluntary and they could feel free to terminate the interview or not answer what they felt uncomfortable. Interviews were conducted in private and quiet places and all the information was stored safely on a personal phone (I-phone 8) to ensure confidentiality only accessed

by the researcher. The interviews were guided by a structured interview guide appended to this dissertation.

The interviewees in this study majorly were critical informants of the study, such as Directors, Project Managers, and Quantity Surveyors representing LCCs. These were selected because of their experience and knowledge about financial performance of the construction companies. Appointments were made with interviewees before the interview session, and this allowed them enough time to prepare. The interview sessions were recorded after seeking permission from the interviewee. Later, the audio recordings were transcribed to enable further analysis. The recording enabled the researcher to concentrate during the interviews as compared to taking notes as the interview proceeds.

Interviews allowed the researcher to probe further on any responses from the interviewee that were unclear. Secondly, it also facilitated the researcher to gather valuable information from emerging themes. Therefore, interviews added credibility to the study by providing rich data that had not been collected from questionnaires. These methods enabled achievement of specific objective two, three and four.

3.8 Data quality testing

Various views of previous authors in the literature review form the core of the questionnaire. For instance, factors that affect contractors' profitability, profitability measurement, and the model used to predict profitability. The data collection tools were administered via email, and others were delivered to recipients in hard copies.

The tools used in this study were structured questionnaires comprising of closed-ended questions.

The data collection tools included questions that were asked to solicit information which enabled investigation of research objectives. However, there was need to explicitly link data collection instruments to the research objectives. Therefore, a pilot study was carried out to remove errors and irrelevant questions out of the questionnaire and interview guide so that respondents in the main study would not experience difficulties in completing the tools. A preliminary analysis was also carried out to determine if or not the wording and the format of questions would present difficulties when the main data are collected and analysed. This trial involved testing the wording of questions, identifying ambiguous questions, testing the data collection procedure, and measuring the effectiveness of invitation to respondents. This was done by carrying by testing the validity and reliability of the data collection instruments.

3.8.1 Validity of the questionnaire

Validity is the degree to which the interpretations and concepts have mutual meanings between participants and the researcher. It requires that the instrument is reliable without being valid. Validity explains how well the collected data covers the actual investigation area.

There are three types of validity; face validity, content validity, and criterion validity. Face validity is a subjective judgment on the operationalization of a construct. Face validity is the degree to which a measure appears to be related to a specific construct, in the conclusion of non-experts such as test-takers and representatives of the legal

system. That is, a test has face validity if its content simply looks relevant to the person taking the test. It evaluates the questionnaire's appearance in terms of feasibility, readability, consistency of style and formatting, and the clarity of the language used (Oluwatayo, 2012).

Criterion validity is the extent to which a measure is related to an outcome. It measures how well one measure predicts an outcome for another measure. A test has this type of validity if it is helpful in predicting performance or behavior in another situation (past, present, or future). Criterion validity is an alternative perspective that de-emphasizes the conceptual meaning or interpretation of test scores.

Content validity is defined as “the degree to which items in an instrument reflects the content universe to which the instrument will be generalized (Straub, Boudreau, and Gefeu, 2014). In general, content validity involves evaluating a new survey instrument to ensure that it includes all the essential items and eliminates undesirable items to a particular construct domain. The judgmental approach to establish content validity involves literature reviews and then follow-ups with expert judges or panels' evaluation. The procedure of the judgmental approach of content validity requires researchers to be present with experts to facilitate validation.

Content Validity was conducted in the research to determine the feasibility of the content being supplied to respondents if it at all answers the questionnaires of the study and fulfills all the research objectives. Content validation was carried out per objective and the results are presented in Table 3.3. All the sections had a high content validity index ranging from questions regarding factors that affect the profitability of local

construction contractors in Uganda with validity index of 0.978 to the evaluation of LCCs' profitability in Uganda with 0.988 as the highest content validity index. Yusoff (2019) recommends that the acceptable values of content validity index should range between 0.78 and 1; the closer to 1 the better and more satisfactory. Therefore, with a content validity index of 0.983, the content in the questionnaires is believed to be valid and hence provided accurate information for the research project.

Table 3.3: Content Validity of the questionnaires

Parameter	Item - Content Validity Index (CVI)
SECTION B: Questions regarding factors that affect the profitability of local construction contractors in Uganda.	0.978
SECTION C: Evaluation of profitability of LCCs in Uganda	0.988
Average CVI	0.983

3.8.2 Reliability of the questionnaire

Reliability refers to the degree to which scale produces consistent results when repeated measurements are made, it relates to the consistency of a measure. It is the measure of stability, the ability to test research findings for repeatability. Strength can be checked by making a comparison of the results of repeated measurement, whereas equivalence can be gauged when two researchers compare the observations of the same events. There are various methods of testing reliability of questionnaires, including: test-retest reliability (or stability), alternate-form reliability (or equivalence), and internal consistency reliability (or homogeneity). However, internal consistency reliability was selected for this study because it is the most commonly used method and it avoid problems of testing the data collection instrument over a multiple time

period. There are several research tools to measure internal consistency reliability, these include; Kuder-Richardson 20 (KR-20) and Cronbach's alpha among others.

An internal consistency technique using Cronbach's alpha (α) was applied to measure data collection instruments' reliability. Cronbach's α is a coefficient of reliability that gives an unbiased estimate of data generalizability. Since many variables inflate the alpha value, there are no set interpretations of an acceptable alpha value. A rule of thumb that applies for the alpha values in the various ranges as represented in table 3.4 applies in most situations.

Table 3.4: Reliability range for a Study

Range of α Values	Ranking
0.9 - 1.0	Excellent
0.8 - 0.9	Good
0.7 - 0.8	Acceptable
0.6 - 0.7	Questionable
0.5 - 0.6	Poor
0.0 - 0.5	Unacceptable

(Source: Koonce and Kelly, 2014)

Table 3.4 shows the values of Cronbach's Alpha for each filled section of the questionnaire and the entire questionnaire. For filled areas, values of Cronbach's Alpha were 0.763 for evaluation of profitability of LCCs in Uganda and 0.862 for questions regarding factors that affect the profitability of local construction contractors in Uganda. These values are high enough and therefore believed to be acceptable since the average Cronbach's Alpha value equals 0.813 for the entire questionnaire, which indicates good reliability of the whole questionnaire. Therefore, the questionnaire was considered valid, reliable, and distributed to an acceptable population sample size. The

Cronbach alpha was estimated using SPSS. A reliability coefficient (alpha) of 0.70 or higher is considered acceptable reliability in SPSS (Bougie & Sekaran, 2010).

Table 3.5: Cronbach’s Alpha reliability analysis for the questionnaires

Parameter	Cronbach's Alpha
Factors that affect the profitability of local construction contractors in Uganda	0.862
Evaluation of profitability of LCCs in Uganda	0.763
Average	0.813

3.9 Data analysis

Different types of data, for example, quantitative and qualitative, have specific methods of analysis and are analyzed separately (Creswell & Creswell, 2018). The data collected with questionnaires was quantitative. This data was cleaned, sorted, coded, classified and entered into statistical packages and scored using ordinal scale (5-point Likert scale). Software packages such as MS – excel and SPSS simplified data which would ordinarily consume a lot of time to process manually.

3.9.1 Quantitative data analysis

A combination of MS Excel and SPSS 25 version 25 was used to analyze the field's data to answer the research questions. The researcher used regression analysis to measure the relationship, strength, and direction of the variables and tested the significance of the variables using correlation analysis. Tables, bar graphs, and pie-charts were used to present the analyzed data for easy understanding.

The data from the financial statements were collected, summarized, and analyzed using profitability ratios. The median as a statistical measuring tool was used as a baseline for obtaining the different profitability figures for the LCCs in Uganda. A line

graph indicating profitability figures of the various local construction contractors in GKMA was developed in conjunction with the ratios for countries with efficient literature on profitability ratios, that is, United Arab Emirates (UAE), Saudi Arabia, Indonesia, and United States of America to compare the difference and provide justifications for the variance in data. These countries were selected to reflect performance of contractors in various continents but also that is where similar studies about profitability of contractors have been conducted. This method helped to achieve specific objective one.

Based on the questionnaire results, the data were analyzed, and the value of the Relative Importance Index (RII) was used to rank all factors that affect LCCs' profitability in Uganda. The average RII for the sub-factors in each main factor were computed and used as a baseline point to determine the significant and insignificant factors affecting LCCs' profitability in Uganda. In other words, the factors affecting profitability of LCCS in Uganda with RII above average value were considered significant factors, while those with RII below average value were deemed to be insignificant. The relative importance index was computed as suggested by Azman, et. al., (2019) using equation (3.3).

$$\mathbf{RII} = \frac{\Sigma W}{A \times N} \dots\dots\dots \mathbf{(Equation\ 3.\ 3)}$$

Where:

W = the weight given to each factor by respondents ranging from 1 to 5 using the Likert scale.

A = the highest weight in the research which is 5 in this case.

N = the total number of respondents

This research method helped to achieve the specific objective two.

The relationship of factors affecting the profitability of LCCs in Uganda were first determined using relative importance index (RII) and spearman's correlation analysis used to determine the degree of impact of the factors on profitability were then determined using equation (3.4)

$$R = 1 - \left[\frac{6\sum d^2}{n(n^2-1)} \right] \dots\dots\dots \text{(Equation 3.4)}$$

Where:

R = Spearman's correlation coefficient

d = difference between ranks and d^2 = difference squared.

n = Sample population

This research method assisted in analyzing and achieving specific objective two.

The inputs of the regression model were independent variables (selected factors that affect the LCCs' profitability) that provide a change in the dependent variable (LCC's profitability) for each factor. Regression analysis was used to analyse the inputs for developing the model. The regression model was developed using a data analysis package, SPSS version 25. Regression analysis provides quantification of the dependent variable (LCCs' profitability) as per the impact of the different independent variables (selected factors affecting LCCs' profitability). After many iterations when most variables were significant, the regression process was terminated, and a valid model was developed to enhance profitability of LCCs. The general regression equation can be expressed as seen in the regression equation (3.5).

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \epsilon \dots \dots \dots \text{(Equation 3.5)}$$

Where:

Y = the dependent variable, which is profitability of LCCs,

β_0 = the constant or y intercept

X_1, \dots, X_k = independent variables (factors affecting the profitability of LCCs),

β_1, \dots, β_k = the estimates of the independent variables. i.e., the coefficients of the independent variables.

The first order of regression equation was selected for this study because the relationship between the response and the terms in the model was linear not curved.

3.9.2 Qualitative data analysis

Qualitative data involves non-numeric data such as interview transcripts, audio, video recordings, among others. In this study, qualitative data were the interview transcripts. According to Creswell (2009), there are various methods of analyzing qualitative data. These include content analysis, narrative analysis, discourse analysis, among others. However, Creswell (2009), argues that content analysis is the best method to analyze qualitative data quickly. In this regard, the researcher used content analysis to analyze qualitative data from the interviews.

3.10 Procedure for model development

First, the variables to develop the model were determined: the dependent variable and independent variables. The dependent variable was the profitability of LCCs, and the independent variables were management factors, project management, risk management, project cost management and business strategy; project-related factors,

project delays, timeliness of payments, the accuracy of bid estimates and site productivity; economic factors, changes in tax legislation and regulatory ordinances, cost of capital/finance and price fluctuations; market-related factors, bidding environment, construction demand.

Secondly, once these variables were identified, an effective strategy was adopted to measure how strongly the given independent variables affected the dependent variable by using the product-moment correlation coefficient (r).

Thirdly, the coefficient of determination known as the R-squared (R^2) was measured. R-squared (R^2) explains how much variability of one factor can be caused by its relationship to another factor. This measure is represented as a value between 0.0 and 1.0, where a value of 1.0 indicates a perfect fit, and is thus a highly reliable model for future forecasts. In contrast, a value of 0.0 would suggest that the model fails to fit the data accurately. Therefore, in regression analysis, R^2 was used for assessing the efficiency of the regression model.

Fourthly, the researcher developed the multiple regression model by using the least square method to predict the value of a dependent variable with a unit shift in the independent variables. This process comes after many iterations are done in the regression process to draw the points of interest to the best line of fit to get a perfect model, that is to say, a model with a high significance level, low error level and one with the most impact on the dependent variable.

Lastly, the researcher verified and validated the model. Fisher F-test approach was used to verify the model. The overall fit of the model was checked by looking at the

model F-value and the associated p-value to confirm model significance. The greater the observed F-value than the F-value critical from the F-distribution table, the more strongly significant, and the lower the computed F-value than the critical value from the F-distribution table the more insignificant the model. The model terms with p-value less than level of significance indicate that these model terms are statistically significant (Creswell & Creswell, 2018).

Model validation was carried out using the split sample approach. In this approach, the data were split while training it and the reason for doing that is to understand what would happen to the model if it encountered information not seen before. For this model validation, the train and test split method was used, where data were randomly split into roughly 70% for training the model and the remaining 30% used for validating the model. The data obtained from the questionnaires and coded in SPSS was split into a 70% and 30% ratio, and the model re-run to determine the authenticity of the model and if the model was a perfect model with normalized not overfitted points and if the test and train model produces a similar outcome of the multiple correlations (R^2).

3.11 Chapter summary

This chapter discussed the research theory, design, approach, study population, sampling strategy, description of the study area, data collection instruments and sources, data analysis, ethical considerations, and limitation of the research. It offered the researcher the opportunity to explain how the research was carried out. The next chapter will consist of data presentation, analysis, and discussion of results.

CHAPTER FOUR

PRESENTATION, ANALYSIS, AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents the findings which the researcher obtained from the field of study. This concerns data presentation, analysis, and interpretation of the results. The objectives of the study were to evaluate profitability of LCCs in Uganda, to identify factors that affect their profitability, to assess the impact of the factors affecting profitability of LCCs, and to develop a regression model for enhancing profitability of LCCs in Uganda.

4.2 Response rate

Questionnaires were administered among forty-seven (47) LCCs in Uganda. Each construction company was represented by one person either a Director, Project Manager, Quantity Surveyor, Accountant or Administrator depending on who is available and conversant with financial management of the company. A total of thirty-five (35) usable responses were received representing a 74.3% response rate as shown in Table 4.1.

Table 4.1: Response rate

Class of different firms	Sample Population	Participants	Response Rate
A-1 local	6	6	100
A-2	8	6	75
A-3	12	10	83.3
A-4	5	4	80
A-5	16	9	56.2
Total	47	35	74.4 ~ 74

The study response rate was approximately 74% contributed to by class A-1 local with the highest percentage of 100, followed by A-3 with 83.3%, A-4 with 80%, A-2 with 75%, and A-5 with 56.2%. Class A-5 had the highest proportion of the targeted sample population. However, it had the least response rate compared to other classes. This indicates that LCCs in this category did not have proper financial records and therefore were unable to respond. Failure to have appropriate financial records could be as result of not having adequate financial management systems since the companies are small in size and operations. Therefore, they don't have enough resources to cater for such general overhead or administrative functions.

All the LCCs in category 1 (A-1 local) responded to the survey and submitted their financial statements. This implied that big LCCs are well organized and keep track of their financial performance. In addition, the results imply that the information obtained is reliable since these companies had proper financial statements.

4.3 Characteristics of survey respondents

The characteristics of the survey respondents give relevance to the research study conducted as they form the basis of decision-making. The respondents' characteristics in terms of position in the organization, type of construction projects the organization is involved in, company class of registration with UNABCEC, Years of experience of the LCCs in the construction industry, involvement in alternative business and the different alternative businesses were investigated.

4.3.1 Type of construction projects executed by LCCs

Figure 4.1 explains the type of construction projects that various contractors were engaged in. The majority of the respondents were involved in civil and building works followed by civil works, building works, civil and industrial works, building and water schemes, and industrial works in that order with percentages of 48, 24, 19, 5, 5, and 0 respectively. These results imply that the respondents' data were considered reliable since most of the respondents are involved directly in the building, and civil engineering works which was the target group for this study and therefore lead to reliable and dependable research findings.

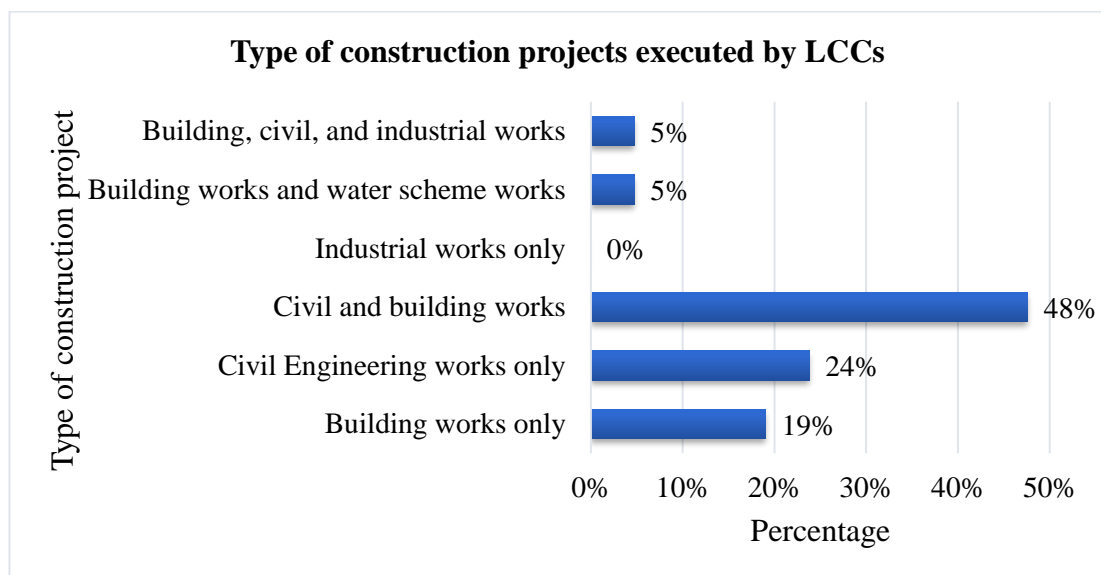


Figure 4.1: Types of Construction Projects LCCs are involved in

The results indicate that 57% of LCCs are involved in more than one type of construction work such as building and civil engineering works or building and waterworks. This is done to manage stiff competition and cashflow challenges faced by the construction sector. Also, the results suggest that 43% of LCCs are involved in

only one type of construction work, i.e., either building works or civil works. This is due to challenges facing Uganda's constructions sector such as inadequate staff training, low levels of technology utilization, insufficient financial capacity, and low investment in research and development. It is also evident that no company is involved in any industrial works. LCCs are limited by financial capacity/access to financing, human resource experts, and tech-mechanical resources which are the ongoing trend of technology that only foreign companies can afford and procure within the timeline.

4.3.2 Classification of LCCs as per UNABCEC directory of 2019

Figure 4.2 indicates the class of the selected companies registered with UNABCEC as of 2019.

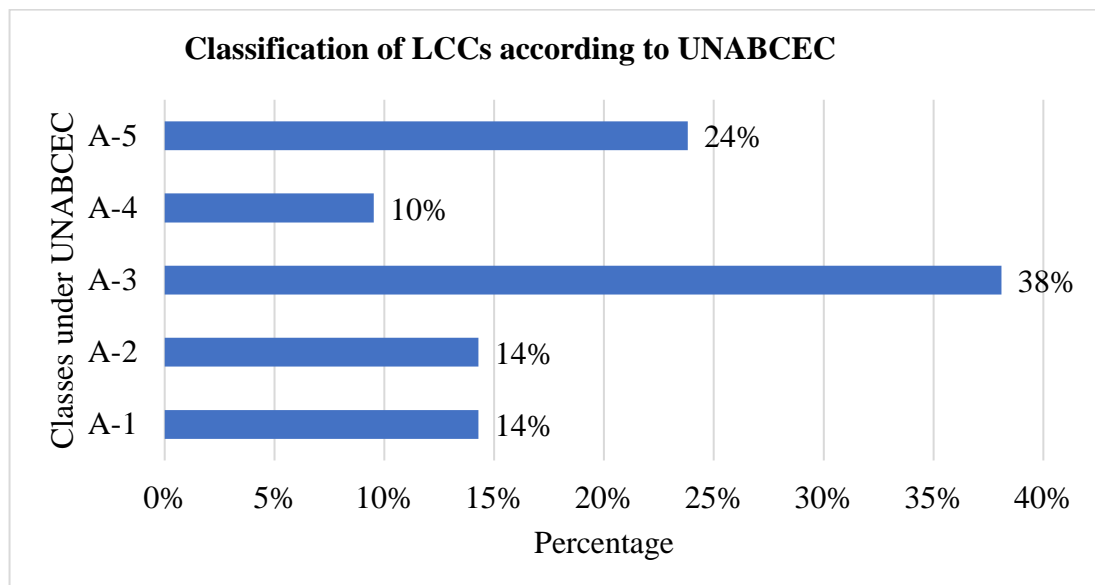


Figure 4.2: Classification of LCCs according to UNABCEC directory of 2019

Most of the respondents were from class A-3 with 38%, followed by class A-5 with 24%, class A-2 and class A-1 local with the same rating of 14% and A-4 companies with 10%. Contractors from Classes A-3 and A-1 local had the highest number of participants in this study, representing 62% of all the respondents. These contractors

are medium to large construction companies in the Uganda as per the directory of UNABCEC of 2019. The classification is largely based on the annual volume of contracts the company executes among criteria such as nationality and area of specialty. The results indicate that most of the local construction contractors who participated in this study are actively operating in the construction industry. Therefore, the respondents' data were perceived to be reliable since most contractors were actively working in the industry and each class of contractors was represented.

4.3.3 Experience of LCCs in the construction industry

Figure 4.3 provides information about the experience of LCCs in the construction industry.

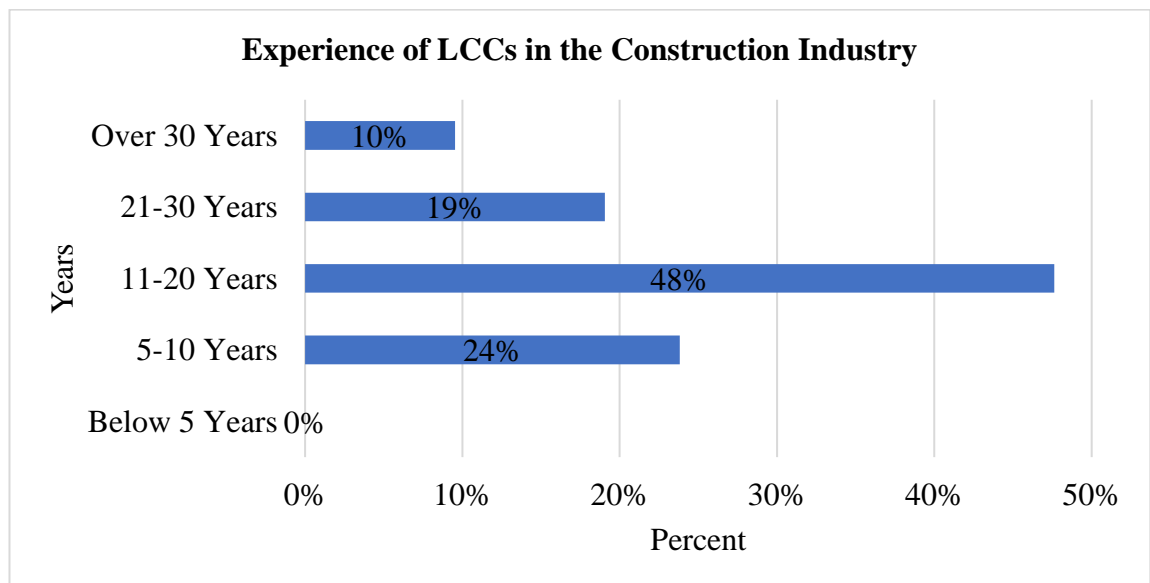


Figure 4.3: Experience of LCCs in the Construction Industry

Most respondents had experience ranging between 11 to 20 years with 48%; 5 to 10 years with 24%; 21 to 30 years with 19%; over 30 years with 10%; and less than 5 years with 0%. The results imply that about 77% of the respondents had adequate experiences of more than a decade. Therefore, the respondents' data were perceived to

be reliable since most contractors were experienced and actively participated in the construction industry which would lead to dependable and reliable results.

4.3.4 Position of respondents in the firms

Figure 4.4 indicates the positions of respondents for each local construction company that participated in this study.

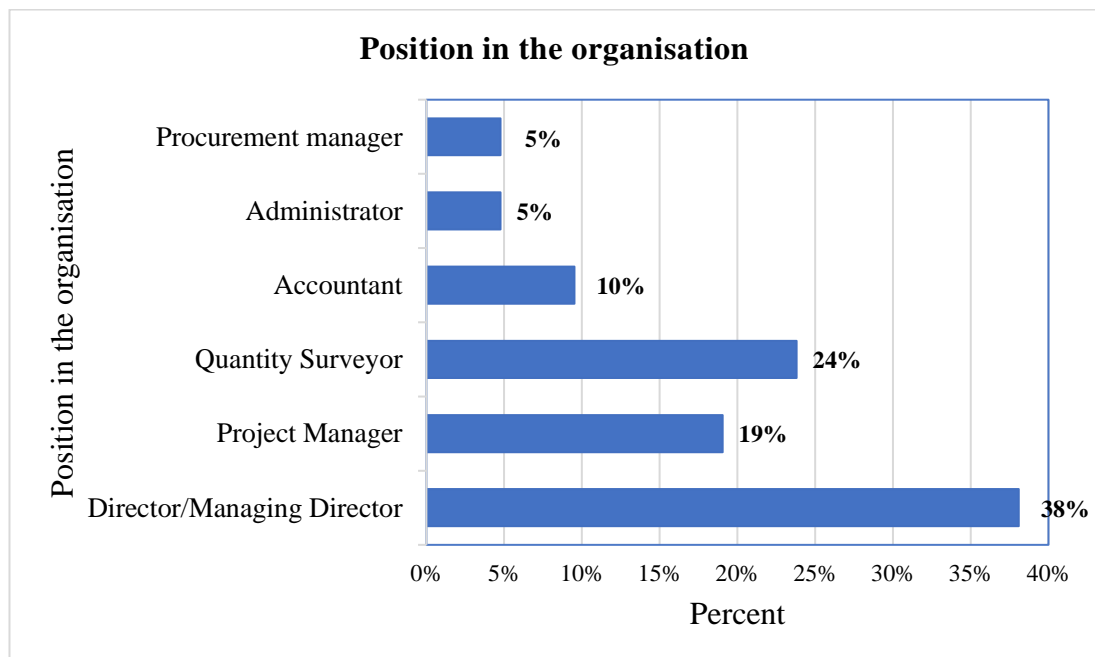


Figure 4.4: Position of the respondents in the construction company

The majority of the respondents were: Managing Directors with 38%, followed by Quantity Surveyors with 24%, Project Managers with 19%, Accountants with 10%, and Administrators and Procurement managers with the same rate of 5%. According to the primary data obtained, 10% of respondents agreed to have Accountants, Procurement Managers, and Administrators in their companies. The rest rely on Quantity Surveyors and Project Managers to perform finance and administrative work.

The results suggested that the data collected was reliable since 38% of the respondents were Managing Directors. Managing Directors have all the information concerning the company structure and factors affecting its growth and financial performance. Procurement Managers and Administrators were the least respondents representing 10% of all respondents because they are not directly involved in the construction companies' day-to-day financial management. These would only share the company's financial data after getting authorization from the Directors.

4.3.5 Involvement in alternative business

Uncertainty is a crucial feature of any construction industry (Chen, Wang, Shi, and You, 2018). Therefore, very few LCCs can have consistent construction projects throughout the year. Furthermore, LCCs face high competition from foreign contractors who have a higher competitive advantage in various aspects (Ocen, Alinaitwe and Tindiwensi, 2012). When LCCs don't have on-going construction projects, they still incur fixed costs in the form of general overheads such as office rent, office salaries, etc. Without an alternative investment to support the construction business, the fixed expenses substantially erode profits and eventually lower profitability levels. Therefore, construction projects alone are not enough to bear the industry.

Therefore, in this research, questionnaires and interview guides were administered to establish whether local construction companies were involved in alternative businesses apart from construction works. After data collection and analysis, the results indicated that 33% of the respondents were engaged in an alternative business. In comparison, the remaining 67% are not involved in any alternative business, as displayed in Figure

4.5. Therefore, the results imply that majority of LCCSs obtain revenue solely from construction work, thus providing valuable information concerning the LCCs' profitability.

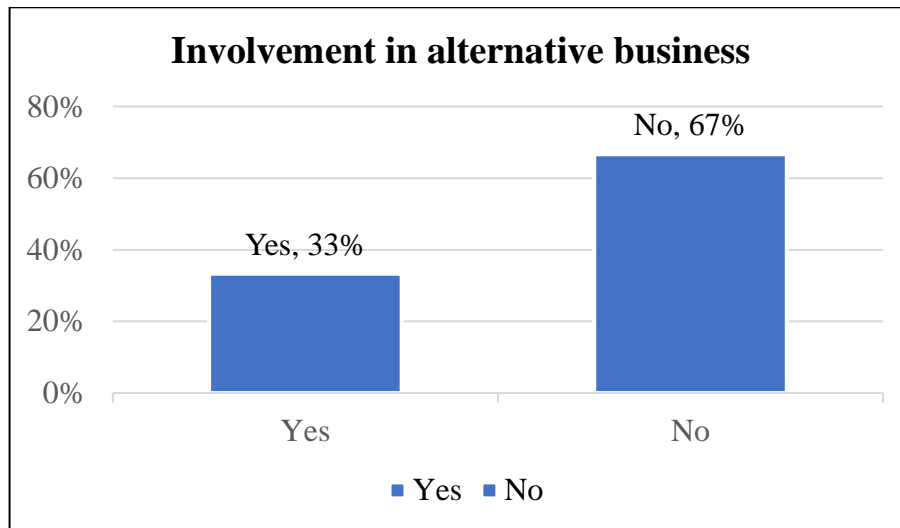


Figure 4.5: Involvement of the construction companies in alternative business

4.3.6 Types of alternative businesses LCCs are involved in

The study results indicated that 33% of the LCCs generated their income from construction projects and other investments. Out of the 33% that agreed to have alternative businesses, 43% are involved in manufacturing pre-cast concrete products, followed by real estate with 29%, and finally timber joinery factory and production and supply of quarry materials rate of 14% as presented in Figure 4.6.

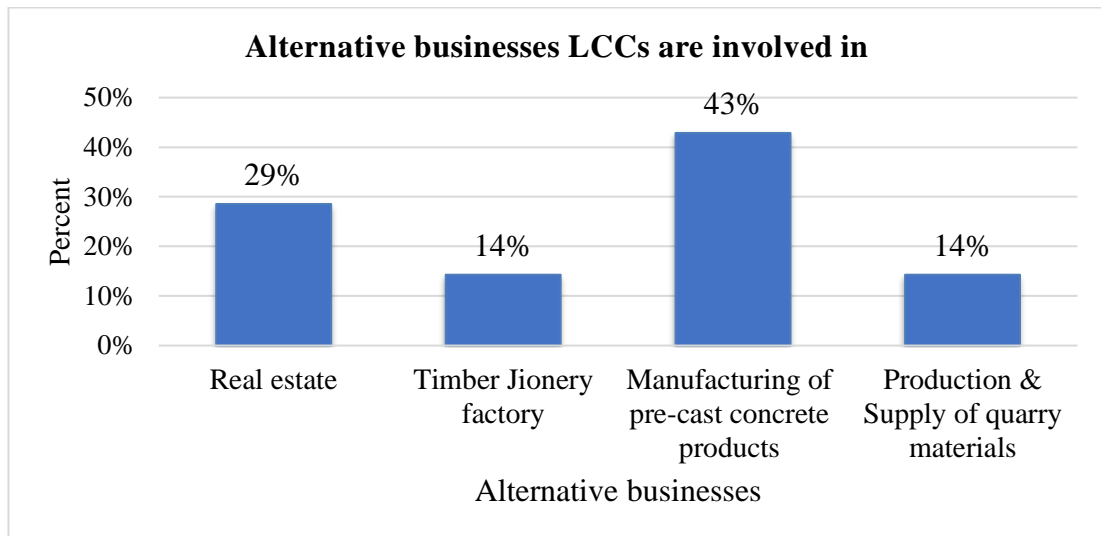


Figure 4.6: Alternative businesses LCCs are involved in

According to the interviews, LCCs are involved in alternative businesses to minimize cash-inflow problems resulting from delayed payments and inconsistent construction contracts. Also, the study revealed that procurement of materials is made cheaper and more convenient for LCCs, especially those involved in the supply of construction materials as an alternative business. Manufacturing and supplying their materials help them; to minimize costs associated with acquiring materials, easier material control, and speed up work. LCCs that diversify into other investments, such as managing real estate, waste management, and property, earn from it. It is what keeps them busy when they are out of contracts or experiencing delayed payments on construction contracts.

The increasing competitive pressure on construction companies requires the revision of existing corporate structures. Therefore, extending product ranges (diversification) is one way to secure the market position in the long term. By complementing the core business with sector-related services, the establishment as a generalist succeeds.

Another possibility is to strengthen the core business. Consequently, diversification ensures the function of price or quality leader.

Saparauskas and Vilutiene (2005) found it purposeful to diversify a company's activities by the type of activities and geographical markets. The combinations of different kinds of diversification influence turnover growth and the change of ratios that reflect the efficiency of the construction company's efficiency. The results and existing literature suggest that local construction companies should diversify to maintain or enhance profitability to sustain them in the construction industry.

4.4 Empirical findings

The following sections present the empirical findings and discussions on an objective-by-objective basis.

4.5: Evaluation of profitability of LCCs in Uganda

Profit refers to an enterprise's total income during the specified period, while profitability refers to its operating efficiency (Babalola and Anifowose, 2018). A very high profit does not always indicate sound organisational efficiency, and low profit is not always a sign of organisational weakness. Therefore, profit is not the prime variable based on which an organisation's operational efficiency and financial efficiency can be compared. Tulsian (2014) argues that to measure the productivity of capital employed and operational efficiency, profitability analysis is considered as one of the best techniques.

According to Makarand (2015), profitability analysis determines how profitable a company is and is likely to continue to be so. For a company to increase its

competitiveness, satisfy its shareholders' interests and survive for a long time, it must implement and maintain strategies from an economic and financial perspective control. The strategies are based on reliable financial and economic data about the internal and external conditions in which the company operates. The financial data is critical in validating managerial decisions about potential changes in the economic resources that a company needs to control.

Data collected from the field were summarized and analyzed according to the questionnaires pertaining to the profitability of various LCCs in Uganda's Greater Kampala metropolitan area (GKMA). The details are presented in the subsequent sections of this dissertation.

4.5.1 Profit range expectations from construction contracts

Figure 4.7 shows the level of profitability anticipated by LCCs on construction contracts.

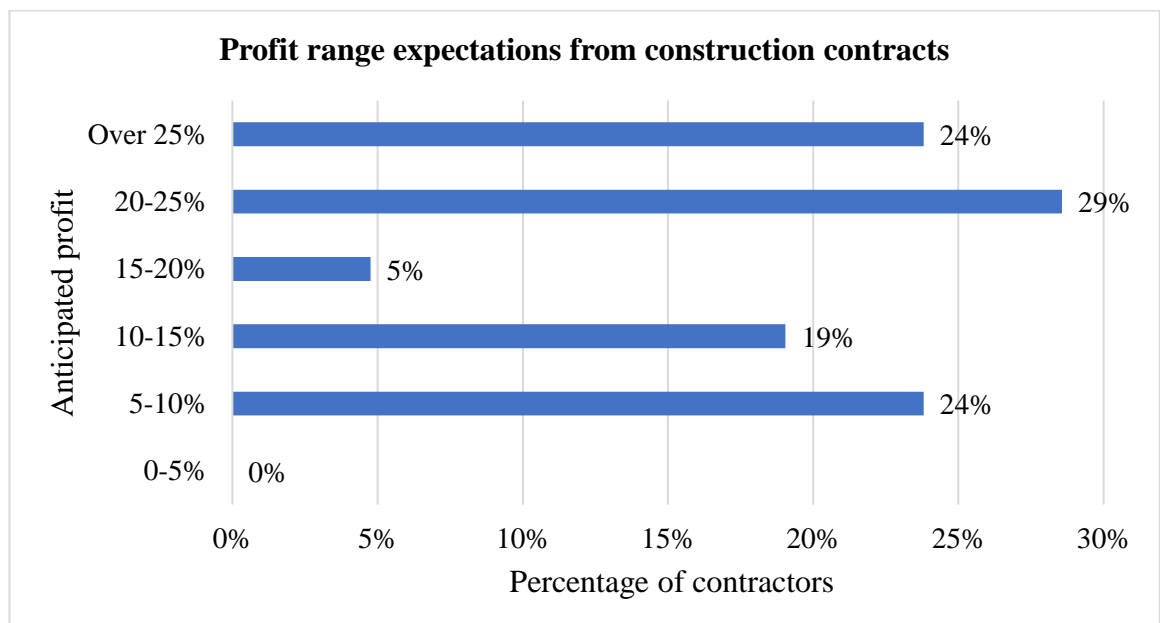


Figure 4.7: Profitability range anticipated during a project bidding process

The respondents were asked the range of profit margin they normally anticipate from construction contracts during the bidding process. The results indicated that 29% of LCCs anticipated profits in the range of 20-25%, followed by a range of 5-10% and over 25% with the same percentage of 24%, range of 10-15% with 19% and finally a range of 15-20% with 5% respondents. Most LCCs anticipated between 20-25% of a profit from each project. Stone (2021) indicates the normal ranges of different work types, as shown in Table 4.2. These ranges resonate with the results of this study.

Table 4.2: Average normal target profit margins on construction contracts

Type of construction	Industry margin
New construction	20-25%
Remodeling/repair/rehabilitation	34-42%
Specialty work	26-34%

(Source: Stone, 2021)

The normal targeted profit was compared with LCCs' profitability ratios, particularly gross profit margin. LCCs actual average profitability is 8.29% over the 3 years studied which is much less than the recommended profit margins. This is an indication that LCCs are incurring a lot of expenses, there is less consistence in getting work, and they possibly rely a lot on debt to finance their projects. Based on the findings and discussion above, it can be concluded that a profit margin below 20% is generally not expected to sustain the construction projects and company at large.

4.5.2 Divergence from the targeted profitability of the project

The intention of this question was to determine whether LCCs were experiencing divergencies in expected profitability on construction contracts and therefore a need

to establish the factors leading to these divergences. Categorical data was collected about whether LCCs have experienced divergence from the targeted profitability of the project. Nominal data collected in each category i.e. Never, Rarely, Sometimes, Usually, and Always were counted and a frequency distribution determined using MS excel. Then, a relative frequency of each category was calculated to determine the percentage distribution as indicated in Table 4.8.

The analysis revealed that “Sometimes” weighed the most with 33% followed by “Usually” and “Always” with 29% each, “Rarely” with 9%, and finally “Never” with 0% response. The analysis revealed that 100% of the respondents have ever experienced divergence in the targeted profit margin on construction projects; virtually, this affects LCCs' profitability. This indicates the high level of uncertainty in the construction industry.

The divergency could be negative or positive. However, most interview responses revealed that local construction contractors frequently experience negative divergency in profit. In other words, they make less profit than anticipated. Therefore, this justifies the need to establish factors that affect LCCs' profitability and develop well informed strategies that enable contractors to enhance their financial performance.

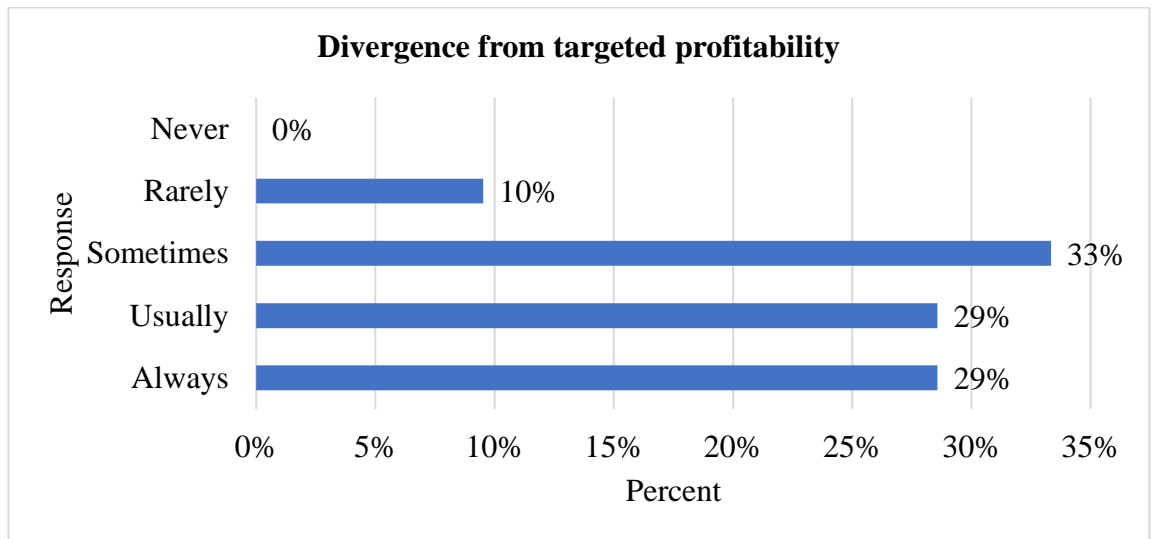


Figure 4.8: Response on the divergence of the profitability from the target probability

4.6 Trend of the probability ratios of LCCs from the year 2016 to 2018

Hinged on the financial data acquired from LCCs, profitability ratios were computed and compared with Peterson's median and range for the construction industry (Ibn-Homaid and Tijani, 2015). Also, the ratios were compared with the previous years and those of other countries like USA, UAE, and Indonesia. Analysis of the profitability ratios is as follows: gross profit margin, net profit margin, operating profit margin, return on assets, and return on equity.

4.6.1 Profitability of Ugandan LCCs from 2016 to 2018

Figure 4.9 presents results concerning profitability ratios for LCCs from the year 2016 to 2018 in Uganda.

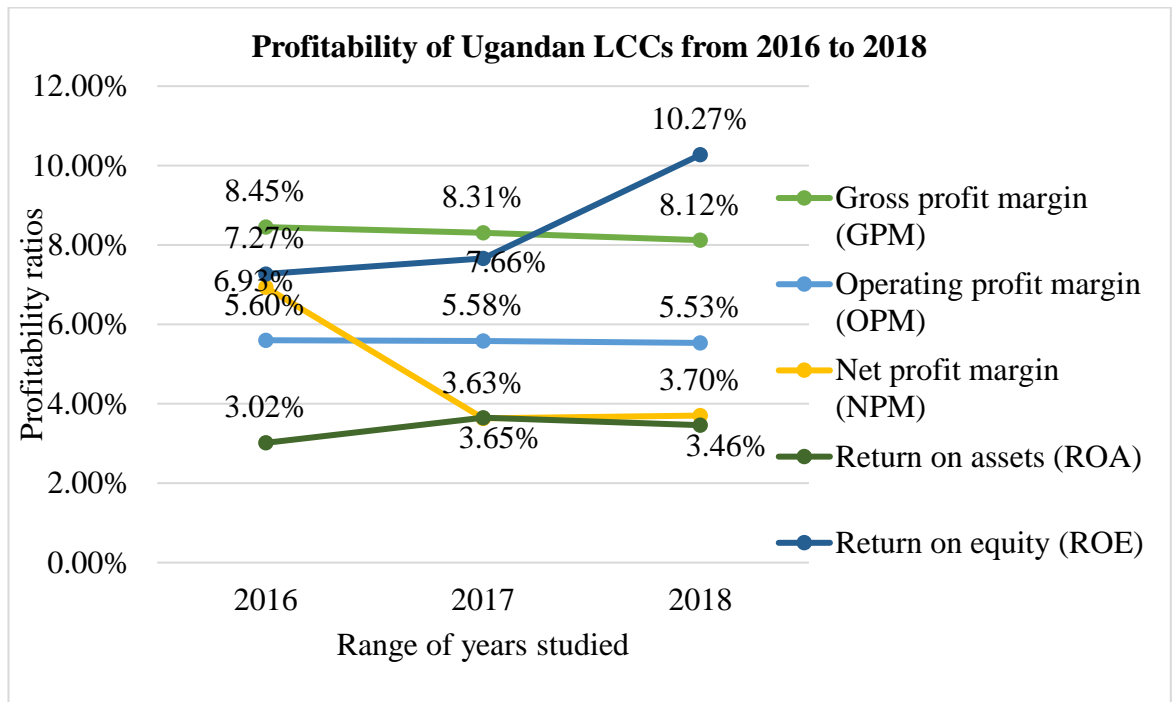


Figure 4.9: Profitability of Ugandan LCCs from 2016 to 2018

The results indicate that LCCs have a gross profit margin (GPM) below the recommended construction industry average of 24 % (Peterson, 2009). GPM gradually reduced from 8.45 % to 8.12% between 2016 and 2018. For this period, it is an indicator that contractors spent much on construction project costs and probably acquired many debts that affected their revenue. The divergency between the targeted profitability on construction projects and company's annual profitability is also high considering that the average targeted profit on construction projects as 25% but the company annual gross profit margin is averagely 8.29% over the last three years.

Also, there is a considerable difference between the industry recommended GPM of 24% and that realised by the local construction contractors. All these imply that LCCs are either incurring high costs, or they unrealistically determine their prices, or other

factors as established by this study in the subsequent sections are eroding the targeted profitability.

LCCs experienced a contraction in Operating Profit margin (OPM) from 5.6 % to 5.53 %; these margins fell below the industry's average Operating Margin of 10% (Peterson, 2009). This is an indication that LCCs are not effectively controlling their costs, both fixed and variable costs. As asserted by Anifowose and Babalola (2018) operating profit margin determines the company's operational efficiency of the management. Operating margin can improve through better management controls, more efficient use of resources, improved pricing, and more effective marketing (James & Hayes, 2021). Therefore, LCCs need to improve their management strategies to improve on the profitability levels.

Also, the results indicate that LCCs experienced a drastic contraction in Net Profit Margin (NPM) by 53.39 % from 6.93% to 3.7% between 2016 and 2018. NPM of LCCs was below the industry's average net profit margin of 28% (Peterson, 2009). Net profit margin (NPM) is the same as the After-tax profit margin (ATPM), which a result of net income divided by net sales. High tax rates and dependence on debt capital are the reasons for low net profit. Also, gross profit and overhead costs directly impact Net Profit Margin (Varghese and Menacere, 2012).

Decreasing NPM indicates that contractors rely more on debts, which has been alluded to by some contractors during the interviews. Also, contractors are not effectively managing their overhead costs and are incurring many or high taxes and statutory requirements. The remedy to provide easy access to cheaper contract financing,

improved management of operation costs and reducing on the taxes and statutory requirements.

LCCs experienced an increase in equity (ROE) return from 7.27 % in 2016 to 10.27 % in 2018. However, return on assets (ROA) slightly increased by 21 % from 3.02 % in 2016 to 3.65 % in 2017 but dropped by 5 % to 3.46 % in 2018. Both ROE and ROA are below the recommended industry average of 12.8% and 5.8% respectively and don't even fall within the recommended range. As deduced from literature review, ROE can measure how much a business is earning with respect to the amount of equity that is put in the business. In contrast, ROA tells us how much profit is being generated by the business with the total amount of assets invested in the business.

The results show that ROE is higher than ROA amidst the low-profit margins reported. Return on equity measures how much a business earns with respect to the amount of equity put in the business. ROE being lower than the industry recommended average signifies that LCCs are not able to generate reasonable and acceptable returns for their equity shareholders. Return on Assets is a measure to gauge how much profit is generated by the business with the number of total assets invested in the business. Low ROA indicates that contractors are not utilizing their assets well. This indicates that LCCs inefficiently managed their assets and probably relied more on borrowed capital which substantially affects their financial performance.

Return on equity (ROE) and return on assets (ROA) are two of the most critical measures for assessing how effectively a company is doing its job of managing the capital entrusted to it. The primary differentiator between ROE and ROA is financial

leverage or debt (Furhmann, 2019). According to Ryan (2019), how a company's debt is considered is the main difference between ROE and ROA. In the absence of debt, shareholder equity and the company's total assets will be equal. Logically, the company's ROE and ROA would also be the same. Although if that company takes on financial leverage, its ROE will rise above its ROA. By taking on debt, a company increases its assets thanks to the cash that comes in. But since shareholder equity equals assets minus total debt, a company decreases its equity by increasing debt. This could be the reason why LCCs average ROE is higher than ROA amidst the low profit margins.

Profitability ratios of LCCs were further compared with ratios of contractors in other countries such as USA, Indonesia, and UAE as indicated in subsections 2.8.1 up to 2.8.3 of Chapter two. Ugandan LCCs are less profitable compared to other countries and therefore mitigation strategies are required to enhance their profitability.

4.7 Factors affecting profitability of local construction contractors in Uganda

Company performance especially profitability is useful in sustaining managerial decisions regarding potential changes in the economic resources that the company will be able to control in the future. The factors affecting profitability of LCCs in the Greater Kampala's Metropolitan Area were categorized into four main factors and their subfactors. According to the methodology, the relative importance index (RII) was used to determine the most significant factors affecting the profitability of local construction contractors in the metropolitan area of Kampala as suggested by (Azman, et al., 2019)

4.7.1 Management factors that affect the profitability of LCCs in Uganda

Table 4.3 presents findings which reveal that project cost management was the most critical management sub-factor that affects profitability of LCCs. It was ranked first with the highest RII value of 0.8190, followed by project management and risk management with the same RII value of 0.8095 as the significant factors since they were above the average RII value of 0.7485 as opposed to business strategy with RII value of 0.6571 and profit strategy with RII value of 0.6476 whose RII values were below the average RII value hence considered not significant.

Table 4.3: Management factors that affect profitability of LCCs in Uganda

Management factors that affect profitability	RII	Rank
Project cost management	0.8190	1
Project management	0.8095	2
Risk Management	0.8095	2
Business strategy	0.6571	4
Profit strategy	0.6476	5
Average	0.7485	

According to data analysis, project cost management is the most critical sub-factor affecting profitability, hence inadequate project cost management is directly proportional to the profitability of LCCs. This study concurs with findings of research carried out in Uganda by Otim, Nakacwa and Kyakula (2007) which concluded that it is not the cost control techniques that are the problem but the project cost management of this technique that sparks all the rise in cost, resulting in low profitability. This is equally seconded by Getachew & Grima (2018) who asserted that project cost management is the most critical function for project success and a project's profitability.

On the contrary, research by Albert and David (2004) concluded that project management which includes communication systems, feedback capabilities, a planning effort, developing appropriate organization structures, and implementing effective safety programs among others is the most influential management factor affecting the profitability of LCCs. The findings in this study disagree with Strishcheck and McIntyre (2008) who concluded that risk management is the most significant factor.

4.7.2 Project-related factors that affect the profitability of LCCs in Uganda

Table 4.4 presents findings indicating timeliness of payments as the most critical project-related sub-factor that affects LCCs' profitability the most. It was ranked first with the highest RII value of 0.9810, followed by project delays with an RII value of 0.9048 as the significant factors since they were above the average RII value of 0.8419 as opposed to the accuracy of bid estimates with an RII value of 0.8190, change in scope/variations/change orders with RII value of 0.7619 and site productivity with RII value of 0.7429 whose RII values were below the average RII value hence not significant.

Table 4.4: Project related factors that affect profitability of LCCs in Uganda

Project related factors that affect profitability	RII	Rank
Timeliness of payments	0.9810	1
Project delays	0.9048	2
Accuracy of bid estimates	0.8190	3
Change in scope/variations/change orders	0.7619	4
Site productivity	0.7429	5
Average	0.8419	

Research by Amir and Simon (2018) supports the study findings that late payment is one of the biggest challenges facing small businesses in the UK. An estimated 50,000 contractors fail each year because late payments leading to serious cash flow problems. Ansah (2011) also had the same findings of timeliness of payments being the most influential and significant factor affecting contractors' profitability as it causes several cash flow problems to the contractors. However, Lee (2009) did not agree with the findings of the above studies. He found out that project delays affect contractors' profitability the most and that profits are made by completing the project efficiently and on time so that almost all clients appreciate their investments in their construction products in return.

Furthermore, Atul (2017) concludes that wrong bid estimates pose a significant risk to the profit margin on contracts with a fixed price, hence reducing contractors' profitability levels. According to research findings and values of RII obtained, the project-related factors were so significant since they had the highest relative importance index values as compared to other factors.

4.7.3 Macro-Economic factors that affect the profitability of LCCs in Uganda

Table 4.5 presents findings which reveal cost of finance or capital as the macroeconomic sub-factor that affects the profitability of LCCs the most. Cost of finance was ranked first with highest RII value of 0.9238, followed by price fluctuations ranked second with RII value of 0.8952 as the significant factors since they were above the average RII value of 0.8857 as opposed to changes in tax legislation and regulatory ordinances with RII value of 0.8381 hence not significant.

Therefore, the findings on macro-economic factors in this dissertation single out the cost of finance or capital as the most influential macroeconomic sub-factor.

Table 4.5: Macroeconomic factors that affect profitability in Uganda

Macro-economic Factors that affect profitability	RII	Rank
Cost of finance or capital	0.9238	1
Price fluctuations	0.8952	2
Changes in Tax legislation and regulatory ordinances	0.8381	3
Average	0.8857	

This same paradigm is in resonance with Nor and Noriza (2012) who indicated that the cost of capital signifies what a firm has to pay for capital used and the more the cost the less the profits at the end of the day. The more the cost of capital, the less the profit generated from the contractors. Nuwagaba (2018) stated that commercial banks' interest rates are high lending rates for Sub-Saharan countries like Uganda, which shoot as high as 26%.

High-interest rates make the capital or the cost of the capital too high, so firms cannot afford big projects because big projects amount to big loans to be fetched from the bank with very high-interest rates. Adem (2016) communicates about China's Diplomacy in Eastern and Southern Africa. Chinese have dominated most of the heavy works because they have a meagre commercial bank lending rate of as low as 3%.

If these Chinese firms are borrowing at interest rates as low as 3%, their cost of doing business will remain much lower than that of the LCCs borrowing at interest rates as high as 26%. Then, LCCs will be forced to lower profit margins to compete with foreign companies. Otherwise, LCCs would continue to submit higher bid figures

compared to the international firms. As a result, many LCCs are outcompeted and pushed out of business.

Anjay and Regmi (2007) contradict the findings of this study. They argue that price fluctuations affect profitability the most since a contractor who tenders at a fixed price runs the risk that he may later have to pay more for materials and labour than the prices and wages current at the time of his tender.

4.7.4 Market-related factors that affect the profitability of LCCs in Uganda

Table 4.6 presents findings that reveal competition as the market-related sub-factor that affects construction LCCs' profitability the most. Competition was ranked first with the highest RII value of 0.9333. Corruption tendencies ranked second with an RII value of 0.8667 as the significant factors since they were above the average RII value of 0.8334 as opposed to experience of the contractors with an RII value of 0.7810 and supply and demand with an RII value of 0.7524 which are below the RII baseline or average point hence considered not significant.

Table 4.6: Market-related factors that affect profitability in Uganda

Market-related factors that affect profitability	RII	Rank
Competition	0.9333	1
Corruption tendencies	0.8667	2
Experience of the contractors	0.7810	3
Supply and demand	0.7524	4
Average	0.8334	

The findings on market-related factors in this dissertation single out the competition as the most influential market-related sub-factor and this is in agreement with Hyung-Jin and Kenneth (2011) who indicated that competitive bidding is the major

mechanism of competition. In addition, bidding is risky because the actual cost of the job is unknown. Lee (2009) also asserts that construction contractors worldwide have been forced out of business, mostly because of a higher competitive bidding environment that resulted in relatively low profitability and even significant losses. Likewise, research by Adem (2016) hints on the strategy the Chinese government has used to exploit developing countries like Uganda where they provide tough conditions for their loans to the poor LDCs countries in favor of granting them construction projects even up to the grass-root level of the local construction leaving the local construction contractors with nothing. This affects profitability of LCCs in the long run.

4.8 Assessing the impact of factors above on profitability of LCCs

To assess the impact of the factors that affect LCCs' profitability, an analysis package SPSS version 25 was used to develop a correlation between profitability of LCCs and the factors that influence it. Having two variables imply that there are two possibilities. First, the change in one variable is concomitant with a change in another i.e., a higher magnitude on the independent variable occurs along with a higher magnitude on the dependent variable vice versa and this situation denotes as a positive correlation. In the second situation, two variables vary inversely. In other words, the higher magnitudes of one variable go along with the lower magnitudes of the other end and vice versa. This situation is denoted as a negative correlation.

Therefore, following the data collected using questionnaires from the respondents, the degree of impact of the factors affecting the profitability of LCCs was determined using Spearman's rank correlation methods since the data were ordinal for all the

different sub-factors in the various main factors affecting profitability and one asterisk (*) indicate significance at 5% and two asterisks (**) indicate significance at 1%.

4.8.1 Correlation of management factors that affect profitability of LCCs in Uganda

The findings indicated in Table 4.7 show there was a significant positive correlation between project cost management and profitability with a correlation value of 0.863. Also, there was a positive correlation between project management and profitability with a positive correlation coefficient of 0.800, a significant positive correlation between risk management and profitability with a correlation coefficient of 0.800, a positive correlation between business strategy and profitability with a correlation coefficient of 0.535 and a positive correlation between profit strategy and profitability with a correlation coefficient of 0.459.

Table 4.7: Correlation of management factors that affect profitability of LCCs

Correlation of management factors that affect profitability of LCCs							
		Profitability	A	B	C	D	E
Profitability	Correlation Coefficient	1.000					
	Sig. (2-tailed)						
	N	35					
A	Correlation Coefficient	.863**	1.000				
	Sig. (2-tailed)	0.000	0.000				
	N	35	35				
B	Correlation Coefficient	.800**	1.000	1.000			
	Sig. (2-tailed)	0.003	0.009	0.000			
	N	35	35	35			
C	Correlation Coefficient	.800**	.530**	1.000	1.000		
	Sig. (2-tailed)	0.003	0.008	0.008	0.000		
	N	35	35	35	35		
D	Correlation Coefficient	.535**	.559**	.864**	1.000	1.000	
	Sig. (2-tailed)	0.005	0.004	0.003	0.007	0.000	
	N	35	35	35	35	35	
D	Correlation Coefficient	.459**	.438**	.453**	.450**	.650**	1.000
	Sig. (2-tailed)	0.006	0.001	0.001	0.009	0.004	0.000
	N	35	35	35	35	35	35

Legend:

A = Project cost management, B = Project management, C = Risk management, D = Business strategy, and E = Profit strategy.

The analysed data indicates that project cost management had the highest correlation coefficient hence considered to have the most significant impact on profitability, followed by project management, risk management, business strategy, and finally, profit strategy in that order.

4.8.2 Correlation of project-related factors that affect profitability of LCCs in Uganda

The findings indicated in Table 4.8 indicate that there was a significant positive correlation between timeliness of payments and profitability with a correlation value of 0.903. In addition, there was a positive correlation between project delays and profitability with a positive correlation coefficient of 0.898. Also, there was a significant positive correlation between accuracy of bid estimates and profitability with a correlation coefficient of 0.790, a positive correlation between change in scope and profitability with a correlation coefficient of .500 and a positive correlation between site productivity and profitability with a correlation coefficient of 0.499.

Table 4.8: Correlation of project-related factors that affect profitability of LCCs

Correlation of project related factors that affect profitability of LCCs							
		Profitability	A	B	C	D	E
Profitability	Correlation Coefficient	1.000					
	Sig. (2-tailed)	0.000					
	N	35					
A	Correlation Coefficient	.903**	1.000				
	Sig. (2-tailed)	0.001	0.000				
	N	35	35				
B	Correlation Coefficient	.898**	1.000	1.000			
	Sig. (2-tailed)	0.002	0.000	0.000			
	N	35	35	35			
C	Correlation Coefficient	.790**	.530**	.330**	1.000		
	Sig. (2-tailed)	0.002	0.008	0.008	0.000		
	N	35	35	35	35		
D	Correlation Coefficient	.500**	.559**	.864**	1.000	1.000	
	Sig. (2-tailed)	0.003	0.007	0.002	0.009	0.000	
	N	35	35	35	35	35	
E	Correlation Coefficient	.499**	.438**	.453**	.450**	.650**	1.000
	Sig. (2-tailed)	0.005	0.001	0.001	0.009	0.000	0.000
	N	35	35	35	35	35	35

Legend: A = Timeliness of payments, B = Project delays, C = Accuracy of bid estimates, D = Change in scope, and E = Site productivity

4.8.3 Correlation of macro-economic factors that affect profitability of LCCs in Uganda

The findings in Table 4.9 indicate that there was a significant positive correlation between cost of finance or capital and profitability with a correlation value of 0.950, a positive correlation between price fluctuations and profitability with a positive correlation coefficient of 0.777 and finally, a significant positive correlation between changes in tax legislation and regulatory ordinances and profitability with a correlation coefficient of 0.676. This shows that cost of finance had the highest correlation

coefficient hence the greatest impact on profitability, followed by price fluctuations and finally changes in tax legislation and regulatory ordinances in that order.

Table 4.9: Correlation of macro-economic factors that affect the profitability of LCCs

Correlation of macro-economic factors that affect profitability of LCCs					
		Profitability	A	B	C
Profitability	Correlation Coefficient	1.000			
	Sig. (2-tailed)	0.000			
	N	35			
A	Correlation Coefficient	.950**	1.000		
	Sig. (2-tailed)	0.000	0.000		
	N	35	35		
B	Correlation Coefficient	.777**	.793**	1.000	
	Sig. (2-tailed)	0.004	0.000	0.000	
	N	35	35	35	
C	Correlation Coefficient	.676**	.561**	.255**	1.000
	Sig. (2-tailed)	0.002	0.001	0.000	0.000
	N	35	35	35	35

Legend: A = Cost of finance or capital, B = Price fluctuations, C = Changes in tax and legislation and regulatory ordinances

4.8.4 Correlation of market-related factors that affect the profitability of LCCs in Uganda

The findings in Table 4.10 imply that there was a significant positive correlation between competitive bidding environment and profitability with a correlation value of 0.901. Also, there was a positive correlation between corruption tendencies and profitability with a positive correlation coefficient of 0.865, a significant positive correlation between the experience of contractors and profitability with a correlation coefficient of 0.54, and lastly a positive correlation between supply and demand and profitability with a correlation coefficient of 0.523.

Table 4.10: Correlation of market-related factors that affect the profitability of LCCs

Correlation of market related factors that affect profitability of LCCs						
		Profitability	A	B	C	D
Profitability	Correlation Coefficient	1.000				
	Sig. (2-tailed)	0.000				
	N	35				
A	Correlation Coefficient	.901**	1.000			
	Sig. (2-tailed)	0.001	0.000			
	N	35	35			
B	Correlation Coefficient	.865**	.461**	1.000		
	Sig. (2-tailed)	0.002	0.013	0.000		
	N	35	35	35		
C	Correlation Coefficient	.540**	.840**	.100**	1.000	
	Sig. (2-tailed)	0.002	0.004	0.018	0.000	
	N	35	35	35	35	
D	Correlation Coefficient	.523**	.790**	.213**	.109**	1.000
	Sig. (2-tailed)	0.003	0.001	0.016	0.019	0.000
	N	35	35	35	35	35

Legend: A = Competitive bidding environment, B = Corruption tendencies, C = Experience of contractors, and D = Supply and demand

This analysed data shows that competitive bidding environment a market related sub factor had the highest correlation coefficient hence the greatest impact on profitability, followed by corruption tendencies, experience of contractors and finally supply and demand in that order.

4.9 To develop a regression model to enhance profitability of LCCs in Uganda

According to the data analyzed, multiple regression analysis was used to validate sub-factors affecting profitability of LCCs in Uganda. The sub-factors discussed earlier that were above the baseline point were used since they were more significant. The

researcher applied the SPSS version 25 to code, enter, and compute the multiple regression measurements for the study.

4.9.1 Regression model of factors affecting profitability of LCCs

Table 4.11: Regression model table for the multiple regression

Model		Coefficients			T	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	1.660	0.049		2.833	0.012
	Risk management (RM)	0.217	0.038	0.111	3.352	0.024
	Timeliness of payments (TP)	0.811	0.062	0.467	3.600	0.000
	Project delays (PD)	0.749	0.056	0.255	3.261	0.001
	Cost of finance (CF)	0.792	0.054	0.352	3.192	0.039
	Price fluctuations (PF)	0.400	0.044	0.171	3.444	0.004
	Competition (C)	0.776	0.036	0.359	3.476	0.008
	Corruption Tendencies (CT)	0.397	0.051	0.182	3.591	0.001
a. Dependent Variable: Profitability						

After running several iterations of the regression model, the perfect model was achieved which ruled out some variables (project cost management, project management) that had errors beyond the recommended P-value of 0.05. A perfect model was extracted from SPSS which involved seven sub-factors affecting profitability of LCCs as displayed in table 4.10 with the regression equation as follows.

$$\text{PROF} = 1.660 + 0.217\text{RM} + 0.811\text{TP} + 0.749\text{PD} + 0.792\text{CF} + 0.400\text{PF} + 0.776\text{C} +$$

$$0.397\text{CT} \dots \dots \dots \text{(Equation 4. 1)}$$

Where PROF = dependent variable (profitability), RM = Risk Management, TP = Timeliness of Payments, PD = Project Delays, CF = Cost of Finance, PF = Price Fluctuation, C = Competitive bidding environment and CT = Corruption Tendencies

4.9.2 Model Analysis

The regression equation (4.1) represents the relationships between the dependent variable (profitability) and independent variables of (risk management, timeliness of payments, project delays, cost of finance, price fluctuations, competition, corruption tendencies) which are the factors that affect profitability while it keeps other variables constant. The model shows which factors have a positive or negative impact on the dependent variable which is indicated by a negative or positive value of the model coefficients. These model coefficients represent the magnitude of impact of independent variables on profitability of LCCs in Uganda.

The regression equation (4.1) reveals that taking all factors constant (risk management, competitive bidding environment, cost of finance, timeliness of payments, project delays, price fluctuations and corruption tendencies) the dependent variable profitability of LCCs is 1.660 percent. It is observed from equation (4.1) that timeliness of payments had the most significant impact on profitability of LCCs which indicates that a unit change in TP while holding RM, PD, CF, PF, C and CT constant produces an increase in 0.811 units of profitability of LCCs, followed by holding TP, RM, PD, PF, C and CT constant a unit change in CF produces an increase in 0.792 units of profitability of LCCs and finally holding TP, RM, PD, CF, PF and CT constant a unit change in C produces an increase in 0.776 units of profitability of LCCs as the three most significant variables which have the most impact on the profitability of LCCs in Uganda. Therefore, according to the findings of this research, timeliness of payments has the greatest impact on profitability, followed by cost of finance, then competition, project delays, corruption tendencies, price fluctuations, and finally risk management.

4.9.3 Model Verification

Table 4.12: ANOVA table for the model verification

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.000	7	6.433	12.422	.000 ^b
	Residual	62.721	30	0.321		
	Total	104.721	37			
a. Dependent Variable: Profitability						
b. Predictors: (Constant), Risk management, Timeliness of payments, Project delays, cost of finance, Price fluctuations, competitive bidding environment and corruption tendencies						

The F-test in regression compares the fits of different linear models. The test compares two models within the reach of this study. The first model is the intercept-only model where there are no independent variables just the dependent variable and the actual model which includes all the independent variables. The main essence of comparing these two models is to determine if the independent variables influence the profitability of LCCs. The models have hypothesis where the intercept only model assumes the independent variables of factors affecting the profitability of contractors do not have any significant impact on the profitability of LCCs in the Uganda while the final model assumes the independent variables of factors affecting the profitability of contractors have a significant impact on the profitability of LCCs.

According to Kellie and Lemeshow (2006), the goodness of fit is calculated from the F-value; where the table of F-value is compared with the SPSS computed F-Value. “When the F-value computed > F-value critical then the model is adequate”. From the F-value table (appendix 8), given a degree of freedom (df) of 7 and a specific alpha p-value of 0.05 as shown in Table 4.12, the F-value is 5.69. When compared with the

computed F-value of 12.422 as in shown Table 4.12, the computed F-value is more than the table F-value of 5.69 which therefore indicates that the model is adequate and relative to a perfect model. Therefore, this implies a high level of association of the factors in the independent variables affecting the dependent variable profitability of LCCs.

4.9.4 Model Fitness Test

Table 4.13: Model Summary table to measure the fitness of the model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728 ^a	0.882	0.800	0.082

The fitness of the model was tested as follows, the regression equation and the coefficients of determination of R^2 were evaluated. The predicted and adjusted R^2 values are supposed to be in reasonable agreement (closer to each other). Higher values of R^2 are desirable. The closer predicted and adjusted R^2 value are, the stronger the model and the better it predicts the response (Blaikie, 2003). In this model, from Table 4.13, the value of R^2 was 0.882 which means the variance of 88% in profitability of LCCs is attributed to the selected factors in the study with only 12% of the total variance not explained by the model which may be due to other factors that have not been incorporated in the study. The value of the adjusted R^2 is even higher at 0.800 which is also higher which further supports the significance of the model.

4.9.5 Model Validation

The regression model developed was validated by the split sample approach. The data obtained from the questionnaires and coded in SPSS were split into a 70% and 30% ratio and the model re-run to determine the authenticity of the model and if the model

was a perfect model with normalized not overfitted points. If the test and train model produce a similar outcome of the multiple correlation (R^2) that is say the (R^2) for both actual model and predicted model were computed as indicated in Table 4.13. The study which indicates a small difference between the actual and predicted R-squared values are good indications that the model has good predictive ability.

Table 4.14: Model validation table of difference between the actual model and the split model

Actual R^2	Predictive R^2	Actual R^2– Predictive R^2	Remarks
0.882	0.816	0.066	Close
Actual Adj R^2	Predictive Adj R^2	Actual Adj R^2– Adj Predictive R^2	Remarks
0.800	0.789	0.011	Very close

The results from Table 4.14 indicate that there is a close agreement between the actual and predictive model under study and therefore this close agreement confirms the validity of the model. Therefore, the model developed is valid, reliable and can be applied by the LCCs to influence their profitability levels.

4.10 Application of the Model

This study presents a regression model to enhance profitability of LCCs in Uganda. The model was developed using regression analysis and the results indicate a strong relationship between the profitability of LCCs and timeliness of payments, cost of finance/capital, competitive bidding environment, project delays, price fluctuations, corruption tendencies, and risk management in that order. The model highlights the impact of these factors on profitability of LCCs.

A linear regression graph was developed based on the regression equation (4.1) to enable LCCs and industry stakeholders to quickly visualize and predict the impact of the factors mentioned in the previous paragraph on profitability of LCCs. Timeliness of payment, cost of finance/capital, project delays, and price fluctuations were considered in this regression graph because they are measurable. The other independent variables such as competitive bidding environment, risk management, and corruption tendencies were not considered because they cannot easily be measured. However, these factors need to be considered in form of risk when tendering for construction projects.

The model highlights the impact of identified factors affecting LCCs' profitability. Timeliness of payments (y1) and project delays (y2) were measured in terms of days while price fluctuations (y3) and cost of finance (y4) were measured in terms of percentages. The data derived from the model is presented in Table 15 and linear regression graphs is shown in Figures 13, 14, 15 and 16.

Table 4.15: Table showing the impact of significant factors affecting profitability

Regression Equation	PROF =1.66+0.811x	PROF =1.66+0.749x	PROF =1.66+0.792x	PROF =1.66+0.4x
(X) Days/percentage)	y1	y2	y3	y4
0	1.66	1.66	1.66	1.66
5	5.715	5.405	3.66	5.62
10	9.77	9.15	5.66	9.58
15	13.825	12.895	7.66	13.54
20	17.88	16.64	9.66	17.5
25	21.935	20.385	11.66	21.46
30	25.99	24.13	13.66	25.42

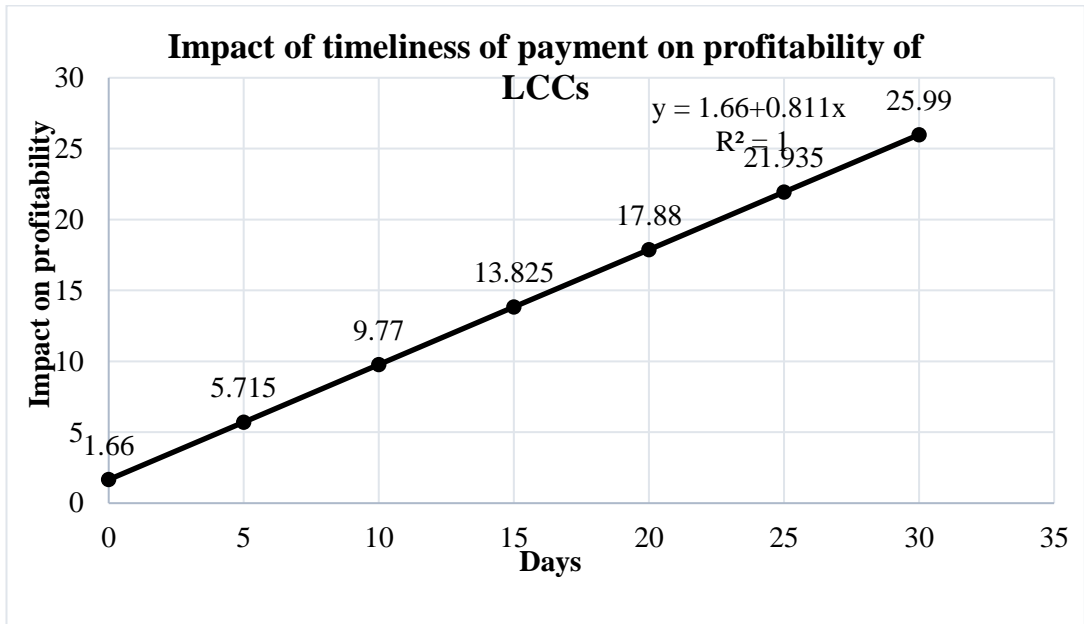


Figure 4.10: Impact of timeliness of payments on profitability of LCCs in Uganda

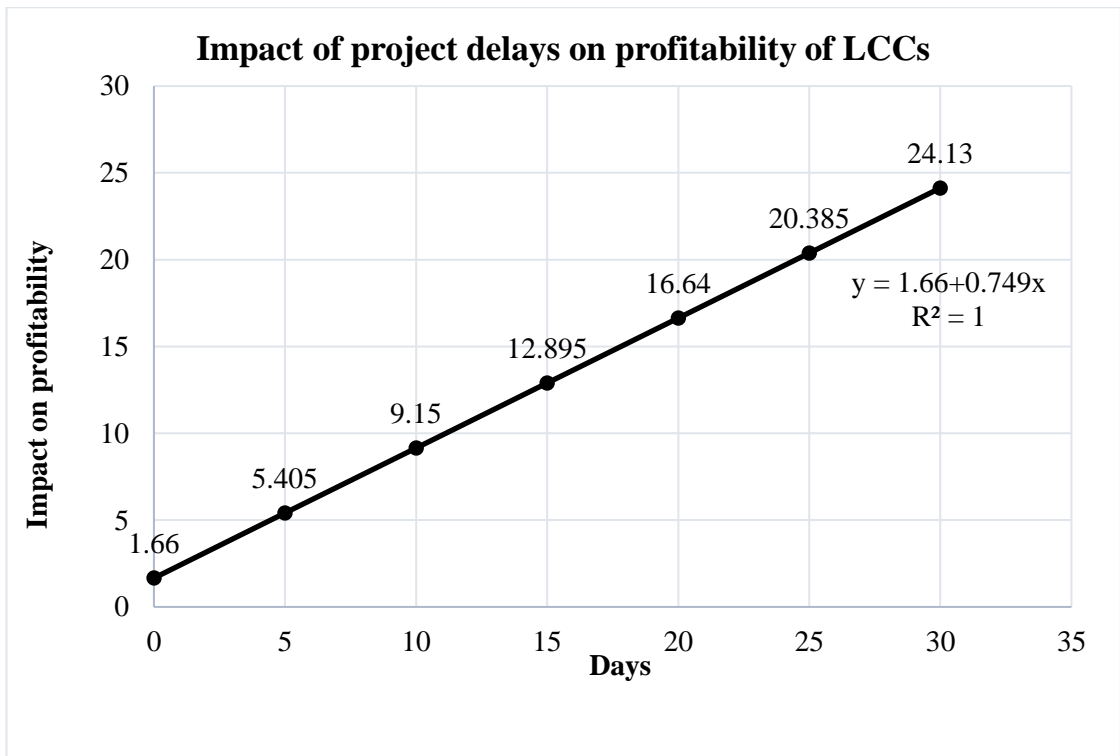


Figure 4.11: Impact of project delays on profitability of LCCs in Uganda

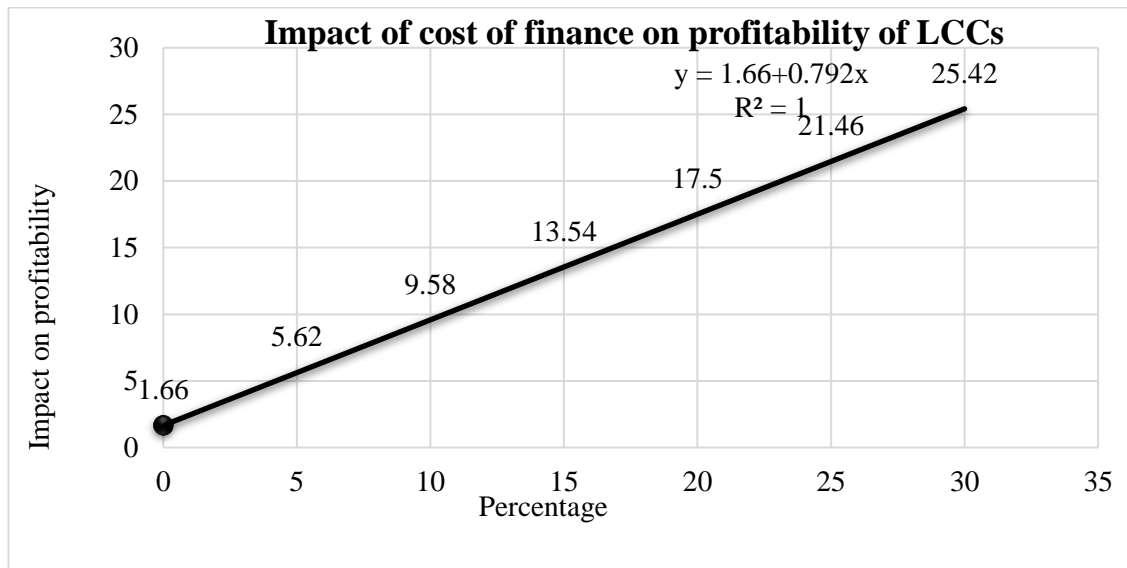


Figure 4.12: Impact of timeliness of payments on profitability of LCCs in Uganda

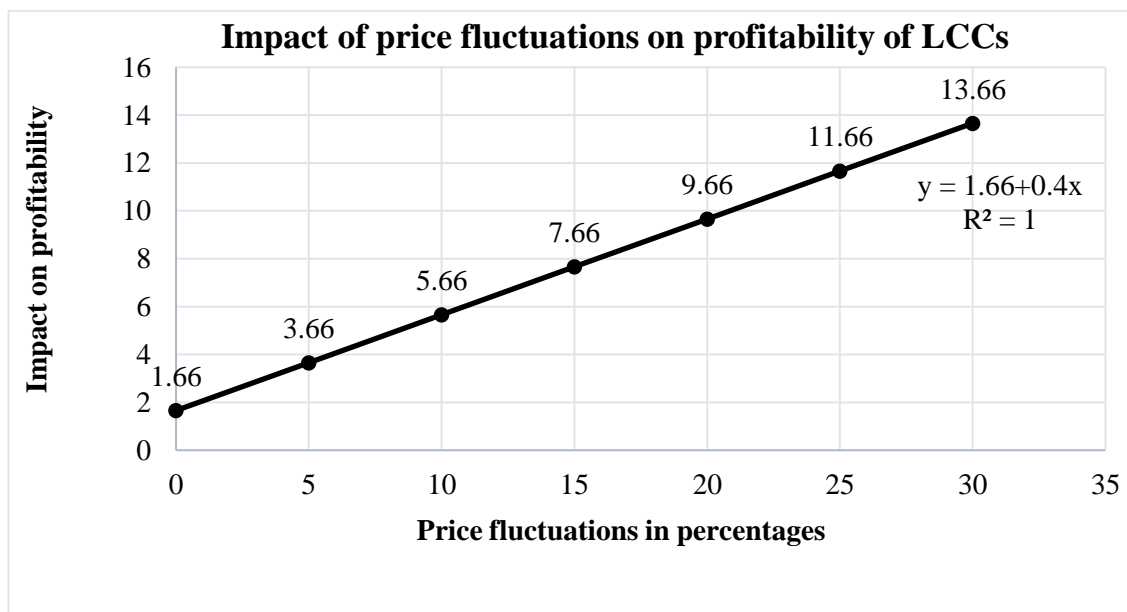


Figure 4.13: Impact of price fluctuation on profitability of LCCs in Uganda

Table 4.15 and Figures 4.10, 4.11, 4.12, and 4.13 show that timeliness of payments had the greatest impact on LCCs' profitability with an impact value of 25.99, followed by cost of finance, project delays and price fluctuations with impact values of 25.42, 24.13 and 13.66 respectively. This implies that the contractors' cashflow is very

critical to the financial success of a construction company. This model will help LCCs to easily identify which factors have the most significant power in enhancing their profitability.

By understanding where power lies, the model shall assist LCCs to identify their operational strengths, improve weaknesses, and avoid mistakes. Also, the model will help stakeholders of the construction sector to understand the forces affecting profitability in the construction industry, and this can help to inform decisions relating to whether to enter a particular industry; whether to increase capacity for a specific sector; and developing competitive strategies to enhance profitability and survival of LCCs.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter encompasses conclusions drawn from the study and recommendations of the study. This chapter also indicates recommendations for further research.

5.2 Conclusion of the study

The research aimed to develop a regression model to enhance profitability of local construction contractors in Uganda. The profitability levels of LCCs were evaluated relying on financial data obtained from audited financial statements for construction companies that participated in this study. The factors affecting profitability were identified from existing literature; these are elaborated in the literature view chapter of this dissertation. The interviews generated relevant themes which further informed this study and recommendations on strategies to improve profitability of local construction contractors.

The profitability ratios including margin ratios; gross profit margin ratio, operating profit margin ratio, net profit margin ratio and return ratios; return on assets and return on equity were used to evaluate profitability levels of the LCCs. Relative importance index, statistical correlation and regression analysis were then used to analyse the factors affecting profitability of LCCs. The analysed findings were presented in chapter four in form of tables, bar graphs, pie charts and rank tables for easy interpretation.

Objective one: to evaluate profitability of local construction contractors in Uganda.

The findings of the study verified that LCCs are earning inadequate profitability when compared with the construction industry's recommended profitability levels and contractors' profitability in other countries. The detailed results are indicated in section 4.6 of this dissertation. This created a need to understand why LCCs are earning inadequate profitability; this was achieved through objective two.

Objective two: to establish the factors affecting profitability of local construction contractors in Uganda.

The findings of this study indicated that timeliness of payments and cost of finance produce the greatest impact on profitability of LCCs. This necessitates LCCs and industry stakeholders to develop strategies that will improve the contractor's cashflow and ease access to cheaper financing. These strategies will help LCCs to prevent low profitability and enhance their survival in the sector. Having profitable LCCs will create a positive multiplier effect to the economy in terms of employment, increased government revenue, among others.

Objective three: to assess the impact of the factors affecting profitability of local construction contractors in Uganda.

Spearman's correlation analysis was used to determine the degree of impact of the factors affecting profitability of LCCs. Correlation of management factors indicated that there was a significant positive relationship between project cost management, project management, risk management, business strategy and profitability with correlation values of 0.863, 0.800, 0.800 and 0.535 respectively. Correlation of project related factors showed that timeliness of payments followed by project delays and

accuracy of bid estimates had a strong positive relationship with profitability of LCCs with correlation coefficients of 0.903, 0.898 and 0.790 respectively. Correlation of macro-economic factors indicated that cost of finance followed by price fluctuations and changes in tax legislation and ordinances had a great positive impact on profitability of LCCs with correlation coefficients of 0.905, 0.777 and 0.676 respectively. Lastly, correlation of market related factors showed that competitive bidding environment, corruption tendencies and experience of contractors had a strong positive relationship with profitability of contractors with correlation coefficients of 0.901, 0.865 and 0.540 respectively.

Relying on the above findings it was concluded that cost of finance followed by timeliness of payments to contractors, competitive bidding environment, project delays, corruption tendencies, project cost management, project management, risk management, accuracy of bid estimates, price fluctuations, changes in tax legislation and ordinances, experience of contractors and business strategy had a strong impact on profitability of contractors in this order. This helped to achieve specific objective three.

Objective four: to develop a regression model to enhance profitability of local construction contractors in Uganda.

A perfect model was achieved after running several iterations of the regression model. This ruled out some variables whose P-values exceeded 0.05. A perfect model was extracted from SPSS which included seven factors that remarkably affect profitability of LCCs. These factors included timeliness of payments, cost of finance, competitive

bidding environment, project delays, price fluctuations, corruption tendencies and risk management in this order.

The model was developed to enable contractors and industry stakeholders identify their operational strengths, improve weaknesses, and avoid mistakes during commercial management of their businesses. This will help to develop strategies that shall help to mitigate low profitability and consequently minimize business failure.

5.3 Recommendations of the study

The researcher deduces the following recommendations from this study to enable LCCs enhance their profitability levels.

The government should develop a law that governs the construction sector; particularly regarding cash flows and payments to the LCCs. A law that requires all construction contracts to provide for timely interim payments. For instance, in the UK, Economic Development and Construction Act 2009 requires all construction contracts to make timely monthly interim payments to contractors. The law also requires client to furnish contractors with payment guarantees to mitigate delayed or non-payment to the contractors.

Clients and project managers need to respect and enforce contractual provisions such as levying charges/penalties on delayed payments. Such contractual provisions are already embedded in the available standard forms of contracts.

The government should put up a fund to enable the Ugandan local construction contractors to easily access funding for the projects at affordable or favorable

borrowing interest rates. This study revealed the high cost of finance or capital as a significant factor affecting LCCs' profitability. Hence, there is a need for government intervention as a monetary policy to reduce the interest rates to favour the LCCs barely surviving amidst the pressure from big international construction companies.

Ensure mandatory subcontracting of the LCCs by foreign companies. For LCCs to grow, they need expertise from international companies to develop both technology wise, skill-wise and financially. This has been incorporated into the National Content Local Bill of 2019 which was passed by parliament and gazette on 25th January of 2019. This law aims at imposing local content obligations on a person using public money or utilizing Uganda's natural resources; to prioritize Ugandan resident companies in public procurement; to ensure skills and technology transfer to Ugandan. In this law, foreign companies are required to subcontract 40% of the contract scope to a Uganda company as long as it meets the requirements. This law is timely and requires strict implementation to release its objectives.

LCCs should embrace diversification to create alternative sources of income. The alternative businesses will support the companies' cash flow amidst delayed payments and competitive bidding environment. The government should also continue fighting corruption tendencies in public institutions.

Ugandan LCCs need to interest themselves in evaluating their financial performance periodically to realistically forecast the financial outcomes of the proposed and uncompleted construction projects as a key to their financial decisions. This will ensure continuous improvement in financial performance through developing,

implementing strategies, measures, and coherent policies from economic and financial point of view resulting from a good knowing of internal and external specific conditions in which they operate.

To enhance existing knowledge about profitability and general financial performance of contractors in Uganda, further research is recommended on the following.

There is need to investigate the impact of diversification on profitability of local construction contractors in Uganda. In addition, there is a need to evaluate financial performance using other financial ratios, such as solvency ratios, liquidity ratios, activity ratios, and price ratios. This assessment will enable us to understand the general financial performance of LCCs in Uganda. Further research should also be carried out to determine the impact of company size and experience on profitability.

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Appendix 1: University Introduction Letter

Appendix 2: Confidentiality Letter



INVESTIGATING PROFITABILITY OF LOCAL CONSTRUCTION CONTRACTORS IN UGANDA

Dear Respondent,

I am conducting research into profitability of Local Construction Contractors in Uganda for my Msc research project at Kyambogo University.

I am requesting you to participate in a survey for the research. Your input will provide value information regarding profitability of Local Construction Contractors in Uganda. All responses provided in this survey will be anonymous, confidential and for research purposes only. All records will be deleted on completion of the research. You may feel free to withdraw from the study at any point without providing any reasons whatsoever.

We thank you in advance for your assistance towards the study.

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Appendix 3: Questionnaire

Investigating profitability of Local Construction Contractors in Uganda

Kindly tick one box for each question or part question and add information where asked to do so. After completing this questionnaire return it to the researcher by hand or send it via email indicated on cover letter.

SECTION A: Respondent's Background			
1	Have you read the accompanying letter?	Yes	No

2	What is your position in the organisation?		
	Director/Managing Director		
	Project Manager		
	Quantity Surveyor		
	Other (please specify)		

3	What type of construction are you involved in?		
	Building Works		
	Civil Engineering Works		
	Industrial Works		
	Other (please specify)		

4	According to the UNABCEC directory of 2019, what class of Contractors does your organisation belong to?		
	A-1		
	A-2		
	A-3		
	A-4		
	A-5		

5	What is the experience of your organisation in the construction industry?	
	Below 5 Years	
	5 - 10 Years	
	11 - 20 Years	
	21 - 30 Years	
	Over 30 Years	

6	Does your company generate additional revenue? from other business activities besides construction?	Yes	No

7	If yes, Specify the kind of business activity the company is involved in.

SECTION B: Questions regarding factors that affect profitability of local construction contractors in Uganda.	
6	While Bidding, what is the average percentage of profit you normally anticipate on construction projects?
	0-5%
	5-10%
	10-15%
	15-20%
	20-25%
	Over 25%

7	Do you experience divergence from targeted profitability on construction projects?	
	Always	
	Usually	
	Sometimes	
	Rarely	
	Never	

8	The following factors affect the profitability of Local Construction Contractors in Uganda					
8.1 Management factors						
S/N	Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Project management					
2	Risk Management					
3	Project cost management					
4	Business strategy					
5	Profit strategy					
	Other (please specify)					

The following factors affect the profitability of Local Construction Contractors in Uganda						
8.2 Project related factors						
S/No	Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Project delays					
2	Timeliness of payments					
3	Accuracy of bid estimates					
4	Site productivity					
5	Change in scope/variations/change orders					
Other (please specify)						

The following factors affect the profitability of Local Construction Contractors in Uganda						
8.3 Macro-economic factors						
S/No	Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Changes in Tax legislation and regulatory ordinances					
2	Cost of finance or capital.					
3	Price fluctuations					
	Other (please specify)					

The following factors affect the profitability of Local Construction Contractors in Uganda						
8.4 Market related factors						
S/No.	Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Competition					
2	Corruption tendencies					
3	Supply and demand					
4	Experience of the contractors					
	Other (please specify)					

SECTION C: Information on how LCCs are performing in terms of profitability.	
9	The following information is required to enable the researcher make further investigations into profitability of the local construction contractors in Uganda. Fill the required information in the table below or attach the company's financial statements for the last three years from 2016 to 2018.

S/No.	Information Related to Turnover and Investment	UGX Currency, (Millions)		
		2016	2017	2018
1	Gross Income			
2	Net Operating Income			
3	Revenue/Turn Over			
4	EBIT (Earnings before Interest and Taxes)			
5	Total Assets			
6	Net Income			
7	Net Operating Income			
8	Average Shareholder's Equity			
9	Operating Assets			
10	Share Holders Equity			

Thank you

END

Appendix 4: Interview Guide

**INVESTIGATING PROFITABILITY OF LOCAL CONSTRUCTION
CONTRACTORS IN UGANDA**

1. Kindly introduce “yourself”.
2. Apart from construction, are there any other business activities from which the company generates income?
3. If yes, what kind of business?
4. What drives construction companies to invest in other business activities?
5. Has “your” organisation experienced divergence from the targeted level of profitability on construction projects?
6. What causes these divergences?
7. What strategies has the organisation put in place to minimize the problem of low profitability?
8. What are the major setbacks to the available management strategies put in place to ensure profitability?
9. What measures can be put in place to ensure or enhance the profitability of Ugandan Local Contractors?

Thank You

END

Appendix 5: List of Ugandan Local Construction Contractors that participated in the study

Strata	Class	(N_i)	Name of the Contractor
1	A-1 Local	6	Ambitious Construction Limited, Babcon Uganda Limited, Roko Construction Ltd, Veksos (U) Limited, Excel Construction Limited, Pearl Engineering Company Limited, And Pioneer Construction Ltd
2	A-2	8	Amugoli General Enterprises Ltd, Coronation Developers (U) Limited, Kiru General Services Ltd, Muma Construction Ltd, Rock Trust Contractors (U) Ltd, Uganda Martyrs Housing & Construction Company Ltd, Liveco Engineering and Investment Ltd, And Techno Three Uganda Ltd
3	A-3	5	Epsilon Uganda Ltd, Gabikan Engineering Ltd, Geses Uganda Ltd, And Gets Technical Services (GTS) Limited
4	A-4	12	Ars Construction Company (U) Ltd, Dynaco Ltd, Geomax Engineering Ltd, Home Builders Ltd, Mason Consult Ltd, Prutaz Construction & Vocational
4	A-4		Training (U) Ltd, Semeo Enterprises Ltd, Blessed Investments Limited, Kenvin Company Uganda Ltd, Starlite Engineering Ltd, and RMF Engineering Ltd
5	A-5	16	Al-Mubarak Contracting, Chamil International Ltd, Da Track Limited, Etabco Panafrica Limited, Friendship (U) Ltd, Heavy Investment Limited, Kavcon (U) Ltd, Malt (U) Ltd, Molecule Investment (U) Ltd, Reenboog Construction Services Ltd, Sanitation Africa Limited, S-M-Cathan Property Consult, Am & Ml Investments Ltd, Pincas Construct Ltd, Pharm Investments Ltd, And Pharm Investments Ltd
Sample Size		47	

APPENDIX 6: F-Value Distribution Table

Table 9.1a: Critical Values of F for v_1 and v_2 Degrees of Freedom and 5.0% ($\alpha = 0.05$) Level of Significance

Degrees of Freedom for Denominator, v_2	Degrees of freedom for numerator, v_1															DNF
	1	2	3	4	5	6	7	8	9	10	12	15	20	24		
1	161.45	199.50	215.71	224.58	230.16	233.90	236.77	238.88	240.54	241.88	243.91	245.95	248.01	249.05	250.10	
2	18.51	19.00	19.18	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	
4	7.71	6.94	6.59	6.39	6.26	6.18	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	
7	5.69	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.09	
9	5.12	4.26	3.88	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.88	
10	4.90	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.84	2.77	2.74	2.70	
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.40	2.42	2.38	
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	
15	4.54	3.68	3.28	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	
20	4.34	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	
25	4.24	3.38	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	
26	4.23	3.37	2.98	2.74	2.58	2.47	2.38	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.05	1.97	1.93	1.88	
28	4.20	3.34	2.95	2.71	2.55	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	
29	4.18	3.33	2.93	2.70	2.55	2.44	2.35	2.28	2.23	2.18	2.10	2.03	1.94	1.90	1.85	
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	
INF	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	

Source: From Table 22, The Penguin-Routledge Book of Tables, Copyright F.W. Kellaway (ed.) and Hineywell Controls Ltd. (R.T.P. Division), 1968

Appendix 7: The data used to assess the impact of the factors affecting the profitability of local construction contractors

Management factors										
S/No.	Management Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Weight	A*N	RII	rank
1	Project cost management	12	11	4	4	4	128	175	0.7314	1
2	Project management	10	14	2	6	3	127	175	0.7257	2
3	Risk Management	10	14	3	4	4	127	175	0.7257	2
4	Business strategy	6	11	6	8	3	111	175	0.6343	4
5	Profit strategy	3	15	6	7	3	110	175	0.6286	5

Project related factors										
S/No.	Project-related factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Weight	A*N	RII	rank
	Timeliness of payments	22	5	2	3	3	145	175	0.8286	1
	Project delays	18	8	2	3	3	137	175	0.7829	2
	Accuracy of bid estimates	8	15	6	3	4	128	175	0.7314	3
	Change in scope	9	13	4	5	3	122	175	0.6971	4
	Site productivity	8	12	7	4	3	120	175	0.6857	5

Macro-economic factors										
S/No.	Macro-economic Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Weight	A*N	RII	rank
1	Cost of finance or capital.	19	5	3	4	3	135	180	0.7500	2
2	Price fluctuations	15	11	2	4	3	136	180	0.7556	1
3	Changes in Tax legislation and regulatory ordinances	12	11	5	4	3	130	180	0.7222	3

Market related factors										
S/No.	Factors that affect profitability	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Weight	A*N	RII	rank
1	Competition	18	7	3	5	3	140	175	0.8000	1
2	Corruption tendencies	14	11	3	3	4	133	175	0.7600	2
3	Experience of the contractors	7	15	6	4	3	124	175	0.7086	3
4	Supply and demand	7	13	7	3	3	117	175	0.6686	4