THE IMPACT OF THE ZAMBIAN ECONOMY (2015 – 2017) ON THE SUSTAINABILITY OF THE CONSTRUCTION INDUSTRY

By

LINDI EMMANUEL MANZI

A dissertation submitted to the University of Zambia in fulfilment of the requirements

For the Degree of Master of Engineering in Construction Management

THE UNIVERSITY OF ZAMBIA

LUSAKA

2019

COPYRIGHT DECLARATION

I, **Lindi Emmanuel Manzi,** hereby declare that the work presented in this dissertation is the result of my research work and that it has not previously been submitted for a degree, diploma or other qualification at this or another university, hence all the figures and tables, except those whose sources have been acknowledged, are authentic.

_____   _____

Signature   Date

APPROVAL

The University of Zambia has approved this dissertation of Lindi Emmanuel Manzi as fulfilling the partial requirements for the award of the Degree of Master of Engineering in Construction Management.

NAME   SIGNATURE   DATE

_____   _____   _____

Examiner 1

_____   _____   _____

Examiner 2

_____   _____   _____

Examiner 3

_____   _____   _____

Chairperson of Board of

Examiners

_____   _____   _____

Supervisor

ABSTRACT

The construction industry is a composite sector with wide range of products, services and technologies that play an important role in economic growth of a country. The Zambian economy suffered an economic downturn in the period of 2015 – 2017 arising from global and domestic headwinds in more than a decade. The aim of the study was to investigate the impact of the 2015 – 2017 economic recession on the construction industry sustainability in Zambia and propose a framework to address the key effects identified for the industry's sustainability. The study adopted quantitative research approach and primary data collected through questionnaire survey, which was administered to 50 respondents. Interviews were used to support the questionnaire. The data were analysed using descriptive statistics and average index method to rank the strategies used by Zambian construction firms to survive the economic downturn. The study identified; delayed approval of invoices by the client (public), delayed payment to contractors and consultants and limited availability of funding as the prominent effects to the Zambian construction industry in the 2015 – 2017 economic recession. Spearman's correlation indicated low investment from government (rs =.930**), low investment from private investors (rs=.898**) and delayed approval of invoices by Client (Private) (rs=.857**) as most ranked effects with a positively strong relationship between their frequency and severity. The most utilized strategies were implementing stricter financial management on company cash flow (Mean=3.64); implementing stricter site management to reduce material & time wastage (Mean=3.52) and employing on a contract basis (Mean =3.50). The results of the survival strategies were classified into short-term and long-term strategies that formed part of the framework to assist Zambian Construction Company survive future economic downturns. The study concluded that 2015 – 2017 economic recession had a negative impact on the Zambia construction industry. Firms based on their financial status and operational capacity may use the established framework. The study recommends that government should liquidate contractors and consultants in economic recession.

Keywords: Economic downturn, strategies, construction industry, Zambian, framework

DEDICATION

The dissertation is dedicated to the Manzi family particularly to my wife Mrs. Inonge Nalucha Manzi and daughter Jasmine Thokozile Manzi for their prayers and endless support rendered. May the Almighty God continue to bless you with wisdom, peace and love.

ACKNOWLEDGEMENT

Primarily, am grateful to the almighty God for the guidance and protection given to me during the undertaking of the research, for keeping me in good health and providing me with the wisdom needed.

I would also want to extend my gratitude to Dr. Balimu Mwiya for her time, advice, patience and guidance during the undertaking of the study. I am grateful for the knowledge shared.

Profound gratitude goes to contributions from participants and respondents that took time off to attend to the questionnaires, interviews, pilot test and data collection. I would also like to thank the Managing Director at WCE Zambia Limited Eng. Eugene Haazele, the Principal Consultant at Civilink Engineering Designers Eng. Salvator Hara and workmates for the encouragement rendered during the course of the study.

Finally, would like to thank my mother Mrs. Lyness Banda Manzi, family members and friends for their endless love, support, encouragements and prayers

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF EQUATIONS

LIST OF APPENDICES

ABBREVIATIONS AND ACRONYMS

ACEZ	Association of Consulting Engineers of Zambia
AfDB	African Development Bank
BoZ	Bank of Zambia
CSO	Central Statistics Office
FI	Frequency Index
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GRZ	Government of the Republic of Zambia
GVA	Gross Value Added
IMF	International Monetary Fund
MoFNP	Ministry of Finance and National Planning
NCC	National Council for Construction
PwC	PricewaterhouseCoopers
RBV	Resource Based View
SI	Severity Index
SMEs	Small and medium –sized enterprises
SPSS	Statistical Package for Social Sciences
VAT	Value Added Tax
ZCI	Zambia Construction Industry

CHAPTER 1: INTRODUCTION

1.1 Background

The construction industry is a composite sector with a wide range of products, services and technologies that plays a powerful role in being a key sector of economic growth (UK. Department of Business, Innovation and Skills, 2013). The industry contributes greatly to education and training, research and innovation, the built and natural environment, resource conservation and social goals, which are all part of national welfare. Olantunji (2011) observed that the construction industry stimulates growth in national economies by motivating other industries to produce resources to service the needs of the industry, thereby creating employment for human and material resources.

The importance of the construction industry lies in the function of its products, as the constructed items are vital to the pursuit of economic activity as they provide the space needed for the production of all goods and services. United Nations Industrial Development Organization (2009) notes that the construction industry being a complex cluster of industries includes finance, materials, equipment, and contracting organisations. Tse & Ganesan IV (1997) stated that the construction industry as a significant relationship to the economy because a change in the output of the construction industry could be as a result of the change in economic output of an economy at proportionate change in demand.

The economy of any country is an important aspect of its health in both the local and global markets. Rangelova (2015) adds that the key factors in a successful economy include prosperity; high employment and the efficient use of resources each contribute to the wealth of a country and of individuals.

Economics can be divided into two types of analysis: macroeconomics and microeconomics (Rangelova, 2015).

Microeconomics is the study of individual decision-making by both individuals and firms (Dutta, 2006). It involves the study of supply and demand for a specific product, the production that an individual or business is capable of, or the effects of regulations on a

business (Dutta, 2006). It concerns the economic behaviour of individuals such as clients, contractors, surveyors and engineers in various markets (Dutta, 2006).

Macroeconomics is the study of economy, wide phenomena resulting from group decision-making in entire markets. Therefore, it deals with the economy as a whole (Dutta, 2006). Macroeconomics commonly focuses on unemployment rates, the gross domestic product (GDP) of an economy, and the effects of exports and imports, the rate of inflation, the growth rate of the whole economy and numerous other economy wide subjects.

The construction industry is often regarded as unstable because its fate is directly tied to a nation's economy and its one of the industries, which is sensitive to changes in the business environment (Daniela, et al., 2016). Such changes could include economic recession. Different scholars have defined economic recession. According to Iqbal and Vitner (2010) recession is a substantial downturn in economic activity that can last over few months. Recession is decline in a country's gross domestic product growth for two or more conservative quarters of the year (Khare, et al., 2017). It is part of the normal economic cycle, indicating that, the economy that grow over a period of time tends to slow down the growth. Generally, an economy expands for 6 – 10 years and tends to go into a recession for about six months to 2 years (Khare, et al., 2017).

Recession affected the United Kingdom construction industry in terms of the total construction output that fared poorly in 2009 and employment for the construction professionals in the economy as a whole declined (Construction Industry Council , 2009). The 2008 economic crisis exempted no European country and the construction industry (Nistorescu & Ploscaru, 2009). It was evidenced in 2009 in Western Europe when the production in construction decreased. According to Nistorescu and Ploscaru (2009), the first effects of the economic crisis were felt in both physical volume of construction works and in the value of the investments volume in the sector. As such, investors put off their plans to put resources into real estate despite lesser interest rates and most potential stakeholders considered retrofitting, renovation, and maintenance of existing property as a practical alternative (Nistorescu & Ploscaru, 2009). In addition, the effects of economic recession were on large portion of the construction companies that went into bankruptcy and total insolvent to pay the annuities.

In Africa, Adaranijo et al. (2008) indicated that the recession, which is a business cycle contraction, brings about decline in certain macroeconomic indicators such as GDP, employment, investment spending, capacity utilization, household income, business income, and inflation, with the attendant increase in the rate of unemployment. Olanrewaju, et al. (2018) investigated the effects and causes of global economic recession on Nigeria building construction industry and established that the effects included high rate of employment and paralysed construction activities in the country.

According to the Central Bank of Nigeria (2012), the impact of economic recession on construction and different sectors of the Nigerian economy were as outlined. Cash crunch influenced by the external investor because of absence of motivating force, rate of interest and supply, high rate of indigenous production are influenced by the rot in the infrastructure, fluctuation in the capital market as at time of March 2008 and inadequate funds prompt failure of infrastructures e.g. transport, road, communication (Central Bank of Nigeria, 2012). Other major effects of recession included high rate of bankruptcy or insolvency of construction companies and reduction in mortgage lending rate (Olanrewaju, et al., 2018).

In South Africa, the survey conducted by Mukucha et al. (2010) to investigated the effects of 2008 Global economic recession on the construction industry of South Africa reviewed that impacts on the industry were felt later. This was because the construction cycle is slower than the ordinary business cycle in terms of changing (Mukucha, et al., 2010). However, the immediate impacts included companies retrenching local labourers and employing cheaper immigrant workers (Mukucha, et al., 2010).

Lessons were learnt from the impact of economic recession as it results to abandonment of construction projects due to cost overrun and high rate of unemployment due to downsizing of workers so as to meet up with firm financial commitment (Olanrewaju, et al., 2018). Furthermore, every problem opens door for new opportunities and development (Adaranijo, et al., 2018).

Economic Recession in Zambia in the period of 2015 – 2017

The Zambian construction industry is able to stimulate both economic growth and employment due to its reliance on vast supply chain, making a remarkable contribution to the economy. According to the Bank of Zambia (2015), the construction sector in Zambia is led by various public infrastructure development projects coupled with residential housing activities around the country. Ramachandra, et al. (2013) indicated that the construction industry besides contributing to economic growth, it is affected by the conditions within any national economy.

In 2015, Zambia faced its worst economic crisis in more than ten (10) years of being one of the world's fastest growing economies, due to falling copper prices, pressure on the governments operating and investment budget, and electricity shortages affecting the real economy (AfDB, et al., 2016; PwC, 2016). All of this stimulated in 2015 a fast depreciating Kwacha and skyrocketing inflation. Consequently, the Bank of Zambia (BoZ) had to significantly tighten monetary policy in order to safeguard price stability (PwC, 2016). This led to low market liquidity, higher interest rates and contributed to higher non-performing loans.

Zambia's real GDP growth for 2016 was estimated at 3.4 percent, up from 2.9 percent registered in 2015 the lowest in more than a decade (Bank of Zambia, 2016). The major contributors were mining, manufacturing, wholesale and retail trade, transport and storage and tourism sectors. However, growth in 2016 was constrained by the electricity supply deficit, and the increase in fuel prices, following the removal of fuel subsidies, that raised production and transportation costs (Bank of Zambia, 2016).

In 2016, Zambian government revenue fell short of the motivated revenue target under the budget by 7.6 percent while spending was above target by 10.1 percent. Due to expenditure pressures, the 2016 fiscal deficit reached 5.7 percent of GDP on a cash basis, above the approved target of 3.8 percent, while the underlying deficit including new arrears reached 8.5 percent of GDP (World Bank, 2017).

In the fourth quarter of 2016, government had limited access to external and domestic borrowing at reasonable interest rates that led to government cutting several spending lines

and withheld payments to contractors and suppliers. This led to increase of the government stock of expenditure arrears of unpaid bills to about ZMW 17 billion (7.8 percent of GDP) at the end of 2016 owing road contractors, the major agriculture programs, fuel suppliers and pension obligations (World Bank, 2017). This had a major risk factor for the most businesses caused by a decrease in consumption and a persistent problem of debt risk, which was hidden in the form of delayed or unpaid invoices (Daniela, et al., 2016).

Economic activity in Sub-Saharan Africa picked up in 2017, particularly the Zambian economy continued to recover following subdued economic activity when economic growth fell to 2.9 percent in 2015, its lowest rate since 1998 (World Bank, 2017).

In the period of 2015 – 2017 the growth of the construction sector continued to slow down in real GDP from 18.0 percent in 2015 to 10.2 percent in 2016 to 6.4 percent in 2017 (Bank of Zambia, 2017). This was after the construction industry recorded USD 3.3 billion in foreign direct investment and being one of the largest industrial sectors of Zambia comprising of 27.5 percent of the GDP in 2014 (ZambiaInvest, 2017).

The contribution of an industry to their country's economy is best measured by its gross value added (GVA) as it only considers the actual 'added value' of the industry, and excludes costs incurred in the production process (Rhodes, 2015).

Table 1.1 shows the economic contribution of the various industries including the construction industry at constant prices 2010 prices and as a share of the economy.

Table 1.1: Gross Value Added growth rates by Industry at constant 2010 prices

Industry	2015				2016				2017	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1*	Q2*
Agriculture, forestry and fishing	-8.5	-7.8	-6.1	-7.7	3.1	-0.9	0.8	10.3	17.6	15.1
Mining and quarrying	-4.8	17.1	-2.0	-6.0	8.2	7.7	5.3	8.1	-5.1	4.2
Manufacturing	5.0	1.8	8.8	6.3	1.2	4.4	1.7	0.4	1.8	6.6
Electricity generation	8.8	7.2	-2.9	-18.9	-29.5	-21.1	-7.8	10.4	25.6	27.1
Water supply; sewerage	-6.4	-3.9	-8.0	-8.2	-3.0	-3.8	-3.6	-5.7	1.9	-3.7
Construction	37.2	20.3	3.8	15.7	9.8	12.6	15.9	4.1	2.6	5.0
Wholesale and retail trade	1.7	-1.3	3.7	1.6	0.8	-2.5	-1.0	2.3	1.9	-1.2
Transportation and storage	25.3	-11.8	14.6	-19.5	-7.6	-1.5	-4.9	7.0	7.9	8.7
Accommodation and food services	2.0	1.3	-2.5	-0.5	-0.6	-1.1	2.3	3.7	1.6	0.3
Information and communication	-4.8	-8.3	19.2	3.2	6.2	54.4	15.3	-3.1	-30.5	-22.3
Financial and insurance	3.7	7.6	21.6	14.9	5.2	5.2	-9.0	-8.2	-3.0	-2.5
Real estate	3.4	3.1	2.9	2.9	3.1	3.2	3.2	3.3	3.3	3.3
Professional, scientific and technical	2.1	7.0	-1.8	-2.4	5.0	5.7	8.9	6.4	3.9	8.2
Administrative and support service	-3.1	6.4	5.1	8.1	6.9	6.2	6.4	1.9	1.9	6.3
Public administration and defense	1.8	1.2	0.4	4.6	10.1	10.3	11.1	7.4	4.2	5.1
Education	2.4	0.2	-1.0	0.5	4.1	5.0	5.8	3.9	8.1	7.7
Human health and social work	8.0	2.9	0.1	1.1	1.5	2.0	1.4	1.6	11.5	15.4
Arts, entertainment and recreation	1.5	-9.9	5.6	18.3	8.3	7.2	-6.6	2.2	6.9	-1.4
Other services	2.4	3.0	3.4	3.5	3.3	3.2	3.1	3.1	3.2	3.2
Total Gross Value Added for the economy	3.9	2.6	3.5	1.2	3.2	4.8	3.5	3.7	3.0	3.4
Taxes less subsidies on products	6.2	2.6	7.5	5.4	4.8	1.3	2.5	5.2	3.6	-0.4
GDP at market prices	4.0	2.6	3.8	1.4	3.3	4.6	3.4	3.8	3.0	3.2

Source: The Monthly (CSO, 2017)

The trend shown in Table 1.1 shows the decline in growth rate output of the construction industry from first quarter 2015 to fourth quarter 2016 of 37.2 percent to 4.1 percent. Table 1.1 shows that, before the economic headwinds the GVA had a strong growth rate out compared to the restrained and insufficient growth rates out experienced during the economic downturn in the third quarter of 2015 to first quarter of 2017. The forecast from the World Bank of an estimated annual construction growth in Zambia of between 11 and 12 percent from 2013 through 2015 because of planned investments did not help in preparedness of the construction industry. Furthermore, the projected national economic

growth rate as of 2014 to seven percent per annum, implied that the sector would continue to be a large and growing element of the national economy (ZGJP, 2014). However, the 2015 and 2016 economic recession affected the construction sector in Zambia led by the demand of the mining industry, shopping centers, infrastructure development, residential buildings and offices. As such, the Zambian construction industry was not prepared to adequately overcome the recession.

The economic challenges that the Zambian economy faced were neither the first nor the last, thus this study is essential in outlining the impact of these challenges on sustainability of the construction industry.

1.2 Statement of Problem

The purpose of this research is to investigate the impact of the 2015 – 2017 economy recession in Zambia on the sustainability of the Zambian construction industry. Whilst previous studies that have focused on environment as one of the key elements on sustainability of the Zambian construction industry, the study will bridge that gap on the little or no research carried out on the impact of the economy especially on construction firms in Zambia despite the 2008 global economic recession.

The research focused on identifying the effects of the 2015 – 2017 economic recession on the Zambia's construction industry, assessment of the current state of the industry and propose a framework with strategies that would address these now and in the near future. The research therefore, added to the existing body of knowledge about survival strategies of the Zambian construction firms in an economic downturn.

1.3 Aim

To investigate the impact of the 2015 – 2017 Zambia's economic recession on the construction industry sustainability in Zambia and propose a framework to address the key effects identified for the industry's sustainability.

1.3.1 Objectives of the Study

The objectives of the study are to;

1. Identify and assess the effects of the 2015 - 2017 economy recession on the Zambian construction industry;
2. Assess the current state of the industry with focus on the identified micro – economic variables;
3. Identify and assess the strategies needed to survival economic recession by construction companies; and
4. Establish a framework with strategies needed to address the key effects identified so as to strengthen the sustainability of the Zambian construction industry

1.3.2 Research Questions

1. What are the effects of economic recession?
2. How did these identified effects affect the Zambia construction industry during the 2015 - 2017 economic recession?
3. What is the difference in the state of effects currently?
4. What strategies could be used to address the selected effects identified?
5. What are framework could be used to sustain the construction industry when faced with future economic downturn?

1.4 Research Methodology

Research methodology is a way to systematically solve the research problem. It is a science of studying how research is done scientifically (Kothari, 2004). The study adopted quantitative research method approach and data was collected using a questionnaire from professionals within the Zambian construction industry. Interviews were used to complement the questionnaire. Therefore, to achieve the set objectives of the research, four stages were adopted.

The first stage involved extensive literature review, a technique that focused on the findings of other researchers that were relevant to the subject. Literature review centered on the effect of the recession on the construction industry and survival strategies.

The second stage was data collection. The research adopted a questionnaire to collect data and structured interviews as follow ups from construction industry stakeholders based in

Lusaka. Respondents were assured that information gathered will be treated as confidential and will be used only for the purpose of the research. The selected methods were based on the cost, amount of training required, completion time and response rate. Other scholar like Olanrewaju et al. (2018); Scott (2011) and Wong et al. (2008) have used questionnaires and structured interviews as methods of data collection for similar researches.

The study population were clients, consultants registered with Association of Consulting Engineers of Zambia (ACEZ), contractors registered with National Council for Construction (NCC) in General Civil Engineering works, General Roads and Earthworks, and General Building and Housing. The sampling unit was geographical as such Lusaka was area of study as most companies are based in Lusaka. The sampling frame was prepared in form of physical registered list from ACEZ and NCC for consultants and contractors respectively.

Therefore, in order to obtain high quality data, the target group of both the questionnaire and interview focused on middle management to top management especially directors of construction firms. The sampling method used was stratified sampling. The method was decided because the population from which the sample was drawn did not constitute homogeneous groups (Kothari, 2004). The population comprised of three strata namely clients, contractors and consultants hence the stratified sampling technique was applied to obtain a representative sample. Kothari (2004) stated that the population was stratified into a number of nonoverlapping subpopulations or strata and sample items are selected from each stratum. The respondents were selected from each stratum based on simple random sampling as stated.

Five (5) contractors in each Grade 1-6 for each category of General Civil Engineering works, General Roads and Earthworks, and General Building and Housing were selected to a total of 90 representing the first stratum. The second stratum was 25 registered consultants with ACEZ and the third stratum clients was 15. The total population of the study became 130 participants. The selection of these was based on budgetary constraint from a practical point of view that also lead to the use of a non-probability sample (Kothari, 2004). Sample size of 112 was calculated from the confidence level of 95

percent with the Z-core of 1.96 and margin of error of 5 percent. The adopted sample size calculation was adopted from the SurveyMonkey (1999-2018).

Methodological triangulation was used as final tool. In the research, it was used as validity of data. Guion et al. (2014) defined methodological triangulation involves the use of multiple qualitative and/or quantitative methods to study the program. Results from surveys, focus groups, and interviews could be compared to see if similar results are being found. If the conclusions from each of the methods are the same, then validity is established.

The third stage was data analysis, the quantitative data from the questionnaire survey was analysed using Excel and Statistical Package for Social Sciences (SPSS) computer programs. Quantitative data from the survey was analysed using descriptive statistical techniques and Charles Spearman's coefficient of correlation. Other scholars like Olanrewaju et al. (2018); Wong et al. (2008) and Kaliba et al (2009) have used descriptive statistics on similar researches.

The fourth stage was development of a strategic framework with strategies needed to address the key challenge identified to strengthen the sustainability of the Zambian construction industry.

1.5 Significance of Study

The purpose of the study was to examine the impact of the Zambian economy on the sustainability of the construction industry. Rengelova (2015) observed that sustainability includes three components: *environment, society and economy.* Undertaking this research was the baseline for the near future on sustainability of the Zambian construction industry with focus on economic recession. The strategic framework developed when deployed adequately and efficiently should strengthen the sustainability of the Zambian construction industry when faced with sudden recessions.

1.6 Structure of Dissertation

The report is structured with Six (6) chapters.

CHAPTER 1

The chapter introduced the key elements of the research and gave a coherent view of the underlying principles. It consisted of the background, statement of the problem, objectives, research questions and the significance of study of the research.

CHAPTER 2

Literature review from various sources was analysed and particular attention was given to the definitions, concepts and variables to be encountered during the process. The sources included electronic data from the internet, journals, textbooks, and economic outlooks from financial institutions.

CHAPTER 3

The chapter outlined the methodology used, highlighting various research methodologies with the justification for the method adopted and the study population. Limitation of the study, data analysis tools and procedures also defined.

CHAPTER 4

The chapter presents the results of the research survey, the analysis of the results and discusses the findings.

CHAPTER 5

Findings from chapter 4 were used to develop the framework with factors and strategies needed to strengthen the sustainability of the Zambian construction industry.

CHAPTER 6

The conclusion highlighted the significance of the research after a framework with factors and strategies needed to strengthen the sustainability of the Zambian construction industry was developed for use in the construction industry. The chapter also presented limitations and recommendations of the study.

1.7 Summary

The chapter introduced the key elements of the research that were Zambian economy, GVA, construction industry and gave a coherent view of the underlying principles. It consists of the background, statement of the problem, objectives, research questions and the significance of study of the research, research methodology and the research structure.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter presented an overview of the impact of the 2015 - 2017 Zambian economy on the sustainability of the construction industry. The significance of study, statement of the problem and objectives were also presented. This chapter presents a review of available literature on the subject of the impact of the 2015 – 2017 Zambian economy on the sustainability of the construction industry. It will also review other researchers' findings from the existing body of knowledge, the effect of economic downturns on the construction industry and survival strategies.

2.2 Economic recession and the Construction Industry

The construction industry is one of the most significant sectors of development of any country. The state of the construction industry directly reflects the state of the economy of the country and has substantial effects on GDP growth. Cash flow is an important component of any successful construction project and money either hold the project together or makes it fall apart (Bhagatkar, et al., 2015).

The Department of Business Innovation and Skills (2013) indicated that the 2008 global economic recession that was neither the first nor the last had disproportionately affected the construction sector. Several years after the recession the construction market has had dramatic changes that led to unprecedented challenges from several effects. These included rising prices of raw materials, limited availability of funding, corporate failures arising from inappropriate management of risks, government spending cuts and falling consumer spending coupled with new accounting standards and regulatory requirements, construction firms' access to affordable credit, the effect of interest rates, public-sector capacity and cost of materials. These effects have had a great impact on how companies operate today and it is during the economic recession that investors lose faith in the economy and due to divestment, the capitalization of the construction firms' declines and eventually the industry (Bhagatkar, et al., 2015).

In 2016, the global economic growth had a lackluster outturn mainly due to the June 2016 United Kingdom's (UK's) vote to leave the European Union known as Brexit, the weaker than expected United States growth, China's refocusing of the economy towards domestic consumption and services, tight fiscal policies, and low investment (IMF, 2016). The International Monetary Fund forecasted the economic activities to pick up pace in 2017 and 2018, mostly in emerging markets and developing economies. However, the forecast had dispersion due to the uncertainty surrounding the policy stance of the United States of America (USA) administration and its global ramification (IMF, 2017).

2.3 The Zambian Construction Industry

The Zambian construction industry has been a major player of economic growth, which has seen steady growth in its GDP contribution in recent years (Mukelabai, 2016). In 2013, the construction industry contributed 29.1 percent of the national GDP by sectors (AEO, 2014). Recently, however, the Zambian economy had faced its worst economic crisis in more than ten (10) years, due to falling copper prices, pressure on the governments operating and investment budget, including an El Niño that induced lower harvest in 2015, and electricity shortages affecting the real economy (AfDB, et al., 2016). Bhagatkar, et al., (February 2015) outlined that the recession is part of natural economic cycle, were the economy which expands for a period of 6-8 years' experiences slowdown for a period of 6 months to 2 years.

The World Bank outlined that Zambia's economy was under strain in 2015 and 2016. The Gross Domestic Product (GDP) contracted by 2.1 percent in the years 2014 being 4.9 percent and 2.9 percent in 2015 (Ministry of Finance, 2017). Growth of the economy increased to 3.4 percent in 2016 and was expected to increase further to 4.1 percent in 2017 (World Bank, 2017). Due to the contraction of the economy, various potential sectors beyond copper sector including transport and communications, agriculture, and construction sectors which have over the past years driven the economic growth had been affected (Mukelabai, 2016).

Consequently, this could have had an impact on construction industry's sustainability. According the Zambia Central Statistical Office (CSO), (2015) only 182,806 were

employed in the construction sector, representing just 3.1 percent of the total labour force in the country. With employment in the construction sector ranking near the bottom of all employment sectors in terms of wages, proportion of permanent employees, social protection awareness and unionised staff, the economic downturn impacted employment however, with few studies to show how many have as a result lost jobs (Mukelabai, 2016).

The direct outcome of the economic crisis in most sectors including the construction industry is the loss of jobs. Seopan (2012) stated that during the economic crisis, the Spanish construction industry caused a loss of 1.2millions jobs in the space of four years representing more than 75 percent of job losses. The construction sector, meanwhile, has been one of the main enablers of economic growth by the Government of Zambia.

In order to assess the impact of the economic headwinds on the Zambian construction industry, some factors that construction companies had to contend with were identified to assess pre and the current state the construction industry.

2.3.1 Availability of Liquidity

Construction industry is one of the major contributors to Zambia is economic GDP. However, inadequate infrastructure is one of the key factors restraining development of the Zambia. The World Bank's Global Competitiveness Report 2012-2013, ranked Zambia 118 out of 148 countries in terms of infrastructure quality, lagging behind other major African producers of minerals (PwC, 2013). Infrastructure is essential to human and economic development and is the catalyst for magnetizing investment (El-Rufai, 2011).

Low liquidity experienced during the economic downturn was a major risk on economic output of the Zambian construction industry that include infrastructure. In addition to the decline in cash generated from operations as a result of lower profitability or project losses in the tough trading conditions, the following also have an impact on liquidity (PwC, 2013): The global economic slowdown had resulted in increased counterparty credit risk and delayed payments. That was evident in Zambia as the government delayed in payments to contractors and consultants due to the deficit experienced in 2016 (PwC,

2013). Cost of initial investment in new territories and suspension or termination of projects. Most local projects were suspended in the fourth quarter of 2016.

2.3.2 Access to Affordable Mortgage/Credit and Interest Rates

Luus (2003) showed that from the time when the global economic crisis started in late 2007, banks have become very stringent in their lending criteria, compared to the easy access to credit that characterised the period from 2001 to 2003. This was evidenced in Zambia in 2015 and 2016 as banks themselves have had encountered significant challenges arising from the global and domestic headwinds that have beset Zambia's economy (PwC, 2016). Furthermore, interest rates for both assets and liabilities increased markedly across most industries largely due to tight monetary policy as well as Government increased borrowing.

Economic recession was especially felt by the Zambian construction industry in 2016 when tight liquidity, higher interest rates, delayed contractor payments by Government and a general slowdown in the economy led to a marked increase in non-performing loans (NPLs) (PwC, 2016). Therefore, access to credit by construction firms shrunk significantly, as the banking industry shifted away from lending activities, which directly influences the number of developments constructed (Luus, 2003).

2.3.3 Increases in the Costs of Building Materials

Managing the significant cost increases encountered during 2016 was highlighted as the biggest challenge for the most industries including the construction industry (PwC, 2016). In most construction projects, materials account for as much as 60 percent of the total project costs. Therefore, the depreciation of the Kwacha drove costs and inflation was high. Zambia a country dependent on imports and businesses including construction firms took measures to meet energy shortfalls in order to ensure continued operation (PwC, 2016).

According to Van Wyk (2003), significant growth in the construction industry is dependent upon price stability in material costs, however, Cockayne (2011a; 2011b) noted the effects that increases in building material prices have on the construction industry,

including the inability of developers to deliver affordable housing, high tender valuations and poor construction industry performance.

2.4 Previous Studies on Impact of Economic Crisis on the Construction Industry and Survival Strategies.

The 21st century started with huge potential of the world largest economies to thrive and sustain their growth for as long as possible, covertly however, there were signs that dome countries would have serious problems early in and would an impact on the world economy. This was manifested in 2007 when the global economic crisis became evident and all major economies in the world showed negative growth (Olatunji, 2011). The economic, business performance and the quality of business environment are closely interconnected and are being influenced each other (Daniela, et al., 2016).

Extensive research worldwide has been conducted into the effect economic and financial global crisis on the construction industry. The effects felt by the economy as a whole and construction industry have several similarities. Different scholars have added to the existing body of knowledge and have different views on the subject as describe hereon:

2.4.1 Consequences of Economic Downturn on Construction Industry and its Remedies

Bhagatkar, et al., (2015) observed that the construction industry is an important sector for development of any country and its state directly reflects the state of economy of the country with significant effect on its GDP growth. The study indicated that money either holds the project together or allows it to fall apart; therefore, cash flow is a significant factor for any successful construction project. During recession, which is part of the natural economic cycle, investors lose faith in the economy and the due to divestment, the capitalization of construction companies declines (Bhagatkar, et al., 2015).

In economic slowdown, firms profit margins decline, jobs are lost and the construction industry experience jittery. Economic downturn causes delay in getting approvals and sometimes creates a shortfall of alternatives to fund new projects. Construction companies are put into a fix position as huge amount of capital is locked in (Bhagatkar, et al., 2015).

17

During economic downturn, firms experience testing times were some firms have no choice but to shrink profit margins and downsize on its employees. Even though reputation is a key role, reputable companies feels the subdued effect of economic downturn. Companies that do their homework, plan and have strategies for unforeseen downturns with the help of government initiatives like foreign direct investment (FDI) with liberalized policies are able sustain their business in tough times.

2.4.2 Restructuring Strategy for Construction Companies through RBV Theory

Kunnor & Hunderkar (2008) argued that reducing employee's strength cannot be a remedy to economic slowdown on construction companies. During economic recession, which has a huge effect on the construction industry, construction firms are hit by financial disastrous time and project cost overrun (Konnur & Hundekar, 2008).

It is important that companies are prepared and have restructuring strategies for their survival during economic recession. Decreasing manpower resources that most firms tend to resort to cannot to be remedy to the economic crisis, as it does not recognize the importance of employee's idiosyncratic capabilities. It is factual that the sustainability of construction firms is a risk during economic downturn and therefore, imperative that these companies are prepared in every sense.

Schroeder et al. (2002), stated that construction companies should employ Resource Based View (RBV) theory as a strategy that explores the characteristics of successful innovations impact on performance, points to important role for learning and organizational factors. RBV is a theory that a company's success is largely determined by the resources it owns and controls (Wernerfelt, 1984). Resources were defined as either assets or capabilities are valuable, rare, inimitable and non-substitutable which are a theme of RBV.

Galbreath (2005) stated that, if resources can be readily obtained in the factor markets or can be easily imitated by competitors, they cannot represent a meaningful source of economic benefit. However, further strategies must be focused on internal and external learning methods. This is further extended by examining the ability of company to build idiosyncratic capabilities in construction sector that cannot be easily duplicated and have no ready substitutes (Konnur & Hundekar, 2008). RBV presents a leap forward in strategic

18

management even though it says very little on issues of how resources can develop and change overtime.

2.4.3 Recessionary Challenges in Real Estate Business

Sahu & Menon (2011) stated that a recession is a decline in the country's GDP growth for two or more consecutive quarters of a year. Typically, an economy that grows over a period tends to slow down; growth of 6-10 years tends to go into recession for about six months to two years (Bhagatkar, et al., 2015). Economic downturn tends to slowdown the demand on construction products like other industries. Projects of real estate developers stall due to lack of funds and investors either do not have fund to invest or reluctant to do so (Sahu & Menon, 2011). Finding buyers for constructed products is a challenge and when sold it is at a lower value.

Increasing put cost leads to margin shrinkages with companies with ordinarily supply chain management have projects stalled (Sahu & Menon, 2011). However, challenging times presents an opportunity for companies to capture market shares by outperforming competitors. Strategic decisions should be taken by companies in order to survive and excel during economic downturns. The paper discussed different strategies to cope up with during economic downturns. Despite reluctance by developers to take financial decisions like reducing property prices in order to revive demand, growing pressure to cut down losses eventually led to gradual slash down in prices.

Identifying the need of developing multiple sources of revenue, some cash-rich developers vertically diversified (or attempted to diversify) their businesses into telecommunications, financial services, insurance, etc. Instead of selling off properties, developers entered into lease agreements with larger companies, for commercial space as part of a long-term strategy though at reduced rates for guaranteed a steady stream of income (Sahu & Menon, 2011).

Cost cutting was another strategy employed during the economic downturn. Capital-intensive projects that had no impact on company's revenues in the short term were either put on hold or scaled down, and even cancelled. Companies downsized their extra

manpower though in unthoughtful method, thereby putting companies on the risk of losing essential talent in exchange of short-term cost savings.

2.4.4 Current infrastructure scenario and rise in construction and allied industries in India.

Rai & Ghavate (2013) outlined that nearly all infrastructure sectors present excellent opportunity for construction, with Roads, Ports, Airports, Railways etc. with huge sums of planned investment. However, during economic slowdown, the sector was surrounded by issues such as delays in getting approvals, lack of new awards of projects, lack of alternatives to fund new projects, which all lead to slowdown in the execution.

Construction sector that grow for over half a decade to 12 percent, all of a sudden lost stream in the economic downturn due to global financial turmoil. The turmoil tremors created multiplier impact across sectors and including materials like steel, cement, power, petroleum, aluminum etc. besides bruising the economy. The study stated that government plays an important role during economic downturn by taking concrete efforts to mobilize more funds (Rai & Ghavate, 2013). Construction sector growth through infrastructure development is significant for growth across all sectors as it provides access to rural areas, easy approach to markets besides new opportunities opening up for investment (Rai & Ghavate, 2013).

2.4.5 Impact of Economic and Financial Crisis in the Construction Industry

Nistorescu & Ploscaru (2009) highlighted the impact of the economic and financial crisis in the construction industry on a European and National level, as well as outlining sustainable constructions that may represent the sector's future. According to the European Construction Industry Federation (2008), the European economy in September 2008 entered a critical phase of the global financial and economic crisis, and was rooted in the prime mortgage sub-crisis as well as high oil and commodity prices.

Several tends were observed as a result of the negative impact of the financial crisis on the construction sector. These were as outlined as: Credit conditions were tightened and obtaining credit insurance was difficult. Construction companies faced financial

difficulties and even bankruptcy in some cases, especially the fact that the construction sector composed of small and medium – sized enterprises (SMEs) (European Construction Industry Federation, 2008). During economic downturn, clients, both from private and public clients, expose construction companies to late payment (Nistorescu & Ploscaru, 2009). The non-residential market like most construction projects are influenced by the business climate that experience low investment. Employment in the construction industry was impacted during the economic and financial crisis as it experienced a decrease (Nistorescu & Ploscaru, 2009).

The future of the construction sector lied inevitably in sustainable construction, as economic crisis was not the only challenge that the construction industry was going to face (Nistorescu & Ploscaru, 2009). Global warming should be taken in account when considering suitable construction.

No European country was exempted from the economic crisis and in 2009; the production in construction decreased both in physical volume of construction works and in value of the investments volume in the sector (Nistorescu & Ploscaru, 2009). These were mainly because Government failed to fulfill a series of promises including failure to provide funding for investments, non-taxation of reinvested profits, and value added tax (VAT) collection from invoices.

2.4.6 Impact of the Global Recession on the FDI Flows in India – A Special Reference to Housing Sector

Kothari (2011) stated that the global recession had changed the pattern of foreign direct investment (FDI) flows, as in 2007, total FDI inflow in the world soared. Besides other factors, increased screening requirements and new limitations of foreign equity policies of government impaired the inflow during the global crisis. The financial crisis affected India for example from early 2009 through withdraw of capital from financial markets.

The economic downturn resulted in a decline in net capital inflows as seen from a large outflow of portfolio investment and lower external commercial borrowings, short-term trade credit, and short-term bank borrowings (Kothari, 2011). However, during economic downturns, FDI can revive the sagging economy, through policy liberalization by

government. The construction industry that was unorganized and fragmented achieved certain degree of financial stability growth and development.

The liberalized government policies made Indian economy conducive to carry out construction activity and thus attracted foreign investors. Most of the potential stakeholders considered renovation, retrofitting and maintenance of existing property as a viable option. The measures taken by government saw the delayed effect and the expectations of the constructors were unattended (Kothari, 2011).

Table 2.1 summaries some of the literature reviewed on the subject in this chapter, it provides the objectives of their study, methodology used, conclusion and comments or critiques.

Table 2.1: Content analysis of literature reviewed

Author	Country /Region	Objective(s)	Method	Conclusions	Comments, critique (if any)
Olatunji Oluwole Alfred, 2011	Australia	To explore the role of the Australian construction industry in reviving the Australian economy during a recent global financial crisis.	Reviews of official records (national economic data)	Construction is a reliable barometer for measuring economic growth.	During economic challenges, fiscal stimulus is helpful in getting out of the crisis. However, the paper did not outline how countries like Zambia with less money for payouts would use the construction industry to trigger economic growth in a crisis.
Rai & Ghavate, 2013	India	To assess the current infrastructure scenario and rise in construction and allied industries in India.	Reviews of official records	Government initiatives, friendly policies and rising investment trends in the sector during economic slowdown, offers the construction sector promising growth trends and opportunities.	Government plays an important role during economic downturn by taking concrete efforts to mobilize more funds.

Author	Country /Region	Objective(s)	Method	Conclusions	Comments, critique (if any)
Machi *et al*, 2013	Spain	To analyze the impact of economic crisis in construction from a point of view of the student of a M.Sc. in Construction Management, investigating the evolution of student's perception on unemployment and their motivation to enroll in the master degree.	Questionnaire survey	The number of unemployed students had significantly increased, however, students' motivation had suffered little change.	Economic crisis had direct impact on employment as employers tend to downsize the manpower to stay afloat. Because of new knowledge and motivation (intrinsic motivation) students have desire to study M.Sc. as means of furthering their training despite few opportunities.
Kothari, 2011	India	To analyze the flow of FDIs in real estate sector in India and the impact of the global recession on the FDI flows along with the RBI initiations for attracting more FDIs into the real estate sector.	Secondary data	India witnessed a steady growth in the economy with the FDI's inflows to revive the economy during financial global crisis.	During economic downturns, FDI can revive the sagging economy, through policy liberalization by government.

Author	Country /Region	Objective(s)	Method	Conclusions	Comments, critique (if any)
Galanis *et al*, 2016	Greece	To examine the effects of the current economic crisis to the promotion of sustainable transportation in the city of Volos	Questionnaire survey	Personal income was severely reduced due to economic crisis; unemployment rose that affected transportation habits for both utilitarian and recreational trips in favor of sustainable transportation.	Even during an economic crisis, there is an opportunity to be sustainable as was the case of Greece in Volos to use sustainable transportation that are walking, bicycling and public transportation.
Windapo and Cattell, 2013	South Africa	To examine whether there is a key challenge perceived by construction industry stakeholders as affecting the development and growth of the sector.	Semi-structured interviews	A high demand for certain types of building materials or that there is a heavy reliance on particular materials, leading to high demand without a matching supply.	More research needed to determine economic factors affecting the growth of the construction industry also further studies to examine factors responsible for increases in the costs of building materials.

Author	Country /Region	Objective(s)	Method	Conclusions	Comments, critique (if any)
Bhagatkar *et al*, 2015	India	To study the consequences of economic slowdown on construction industry and to analyze various strategic initiatives taken by different construction firms to combat such times and to come out with remedial tactics in the form of conclusion which can be referred by construction firms to sail smoothly in the grave situation of economic downturn.	Literature Review	To cope with economic downturns, construction firms could use strategies marching their resources and capabilities to overcome such times. Government should consider proposed initiatives to alleviate recessionary situations.	Economic downturn will be experienced in the firm at one point during its existence, therefore, construction firms should have strategies in place for such times depending of the resources and capabilities. Government is an important player in helping firms and the construction industry during the economic downturns.

Author	Country /Region	Objective(s)	Method	Conclusions	Comments, critique (if any)
Nistorescu & Ploscaru, 2009	Romania	To highlights the impact of the economic and financial crisis in the construction industry on a European and national level.	Reviews of official records (national economic data)	No European country was exempted from the economic crisis and in 2009, the production in construction decreased both in physical volume of construction works and in value of the investments volume in the sector	Government being the biggest Client in construction plays an important role in the construction industry recovery from economic downturn.
Konnur & Hundekar (2008)	India	To build capacity and a core competency based on Resource Based View that will induce competitive advantage and build market share of the construction companies.	Literature Review	During economic recession advocating for decrease in manpower, many companies neglect the role of one of the most important internal resource in	Downsizing of manpower is not always the first step to survive during economic headwinds. RBV can help in restructuring during recession as a strategic management but does not state how resources can develop and change over

				restructuring their organization. RBV theory represents a leap forward in strategic management.	time. Firms should have strategies to help in recession
Sahu & Menon, 2011	India	To analyse various strategic initiatives by companies to combat the existing times and sustain their businesses through future turbulent times	Secondary Data collected through Journals, Periodicals, websites and newspapers	Correction in real estate prices and re-aligning of business strategy together with stable political scenario are vital in revival of the industry during economic downturn.	Construction firms need to formulate strategies as a first step towards survival and sustainability during economic downturn. Downsizing manpower should be done in a thoughtful manner. Political stability is vital for periods of recession.

2.4 Summary

The chapter presented a review literature on the impact on the economic downturns on the construction industry. The impact of economic headwinds on the construction industry has a variety of severe flows on effect. Owing to the fact that economic crisis is part of the natural economic cycle, construction firms survival lies on the correct strategies the firms implement or have in place. The reviewed showed that despite the extensive research available on the topic of economic downturn and its impact on the construction industry, very little literature is available about the impact on the Zambian construction industry. The next chapter discusses the research methods used in this study. The merits and demerits of the various research methods are also discussed and presented.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The previous chapter presented reviewed literature on the impact of the 2015 - 2017 Zambian economy on the sustainability of the construction industry. This chapter describes the research method used to carry out the outlined study in order to achieve the aim and objectives of the study. This chapter outlines the various available methodologies for research commitments. It provides guidance on how the problem was investigated through the selection of suitable research design, how data for the research was collected and describes the characteristics of the research sample and the methods of data analysis engaged.

3.2 Research methods

Literature review shows that there are various research methods available today. Different research types also have different data gathering methods. Therefore, the data collection methods for the research were classified as:

- Primary; and
- Secondary

The study adopted quantitative research approach. However, qualitative approach was used to follow up findings from quantitative data. As stated by Patton (1990), qualitative data was used to put flesh on the findings of quantitative results and bringing the results to life through in-depth elaboration. Other scholars like Kaliba (2009), Windapo & Cattell (2013) and Wong (2008) have used a mixed approach of data collection.

Quantitative method attempts to gain an understanding of then research by quantifying empirical measurements, the use of probability sampling methods when collecting data and the use of statistical methods when analyzing data. Results of quantitative method are generalized from a sample of the population of study. VanderStoep & Johnston (2009) outlined that quantitative approaches are mostly based on the deductive reasoning, beginning from accepted theories or theoretical framework and followed by data analysis.

Quantitative research method mainly uses designs, experiments and measurements to obtain discrete numerical data and the methodological procedure is value free.

Qualitative method attempts to gain an understanding of the underlying reasons and motivations for actions in terms of how people feel about a situation or about how things are done or how people behave (Shapiro, 2002). Qualitative research data collection uses purposive sampling rather than probability sampling so that the sampling has a conceptual frame and relates to the problem under investigation. According to Cresswell (2003), qualitative research method usually entails inductive reasoning, gathering data and generally expressed in words rather than numbers. Of the many qualitative methodologies, the research adopted interviews for data collection.

3.2.1 Primary method

The method involves the researcher collecting data or information in person. There are several methods of collecting primary data, particularly in surveys and descriptive researches (Kothari, 2004). The data or information could be collected using techniques that include observations, interviews and questionnaire surveys (UNDP, 2002). The study adopted interviews and questionnaires as methods of data collection with each method having advantages and disadvantages as described.

a) *Interview Method*

The interview method is a data collection method that involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses (Kothari, 2004). The study used personal interviews and through telephone interviews. It involved asking structured oral questions aimed at getting information from either individuals or groups but more often individuals. The used structured interviews and questions were open-ended and closed (yes/no answers). The method has both advantages and disadvantages (Shapiro, 2002 & Kothari, 2004).

Its advantages being that it:

- can be used with almost anyone who has some involvement with the project;
- can be done in person, on the telephone;

- incorporates illiterate respondents;

- more information and that too in greater depth can be obtained;

- interview method can be made to yield an almost perfect sample of the general population;

- there is greater flexibility under this method as the opportunity to restructure questions is always there, especially in case of unstructured interviews;

- the interviewer may catch the informant off-guard and thus may secure the most spontaneous reactions than would be the case if mailed questionnaire is used;

- the language of the interview can be adopted to the ability or educational level of the person interviewed and as such misinterpretations concerning questions can be avoided;

- permits clarification of issues; and

- gives a higher response rate than written questionnaires

Its disadvantages include:

- requires some skill in the interviewer;

- the presence of the interviewer may influence responses;

- It is a very expensive method, especially when large and widely spread geographical sample is taken;

- there remains the possibility of the bias of interviewer as well as that of the respondent; there also remains the headache of supervision and control of interviewers;

- certain types of respondents such as important officials or executives or people in high income groups may not be easily approachable under this method and to that extent the data may prove inadequate;

- this method is relatively more-time-consuming, especially when the sample is large and recalls upon the respondents are necessary;

- the presence of the interviewer on the spot may over-stimulate the respondent, sometimes even to the extent that he may give imaginary information just to make the interview interesting; and

- effective interview presupposes proper rapport with respondents that would facilitate free and frank responses.

b) Questionnaires

This method of data collection is quite popular, particularly in case of big enquiries (Kothari, 2004). Questionnaire survey involved the administration of questionnaires to a sample selected from a population so that standardized information was collected.

Various economic and business surveys use questionnaires as a method of collecting data (Kothari, 2004). Scholars have used this method to collect data on similar researches. These include Kaliba (2009); Wong (2008); Galanis et al (2016); Machi et al (2013) and Olanrewaju, et al. (2018). The advantages claimed on behalf of this method are as follows (Achola and Bless (1988) & Kothari (2004)):

Advantages of questionnaires include:

- this tool can save lots of time if it is self-completing, enabling you to get to many people;
- there is low cost even when the universe is large and is widely spread geographically;
- it is free from the bias of the interviewer: answers are in respondents' own words;
- respondents have adequate time to give well thought out answers;
- respondents, who are not easily approachable, can also be reached conveniently;
- large samples can be made use of and thus the results can be made more dependable and reliable;
- done in this way it gives people a feeling of anonymity and they may say things they would not say to an interviewer;
- it can be less expensive than interviews i.e. when one takes self-administered questionnaires, they are less expensive;
- it does not require research assistants; and
- questionnaires eliminate bias due to phrasing because questions are phrased.

The disadvantages include:

- with people who do not read and write, someone has to go through the questionnaire with them which means no time is saved and the numbers one can reach are limited;
- it is not possible to explore what people are saying any further;
- over-use and people get tired of completing them;
- low rate of return of the duly filled in questionnaires; bias due to no-response is often indeterminate;
- it can be used only when respondents are educated and cooperating;
- the control over questionnaire may be lost once it is sent;
- there is inbuilt inflexibility because of the difficulty of amending the approach once questionnaires have been dispatched;
- there is also the possibility of ambiguous replies or omission of replies altogether to certain questions; interpretation of omissions is difficult;
- it is difficult to know whether willing respondents are truly representative;
- this method is likely to be the slowest of all;
- questionnaires piloting to ensure that questions can be understood and cannot be misinterpreted; and
- a complex questionnaire that needs computerised analysis, requires expert help in designing it.

The research used two types of questions for the interview and questionnaire surveys. These are;

- open-ended; and
- closed-ended questions.

i) *Open - ended questions*

Open – ended questions require the respondent to answer specific questions in their own way and that permits the researcher to collect one's opinion, attitude and reaction (Shapiro, 2002).

Advantages of open-ended questions include:

- issues that may not have been asked may be explored, thereby allowing the researcher to gain more information;
- information is given spontaneously and it is more likely to be true than answers which are limited to choice; and
- the information in the respondents' own way may be very useful as examples or illustrations that add interest to the final report.

Disadvantages include:

- Analysis of information collected from on open-ended questions can be time consuming.

(ii) Closed-ended questions

These structured questions offer the respondent a list of options to choose from in their response. They are usually Yes/ No and Likert scale answers (Shapiro, 2002). The questionnaire used the closed ended questions and other scholars like Kaliba (2009); Wong (2008); Galanis et al (2016); Machi et al (2013) and Olanrewaju, et al. (2018) have used closed-ended questions for similar studies.

Advantages of closed-ended questions include:

- quickly recording of the feedback; and
- analysis of answers is very easy depending on the method used.

Disadvantages include:

- they are not suitable for face to face interviews;
- the respondent should be literate;
- respondents may choose options that they might otherwise not have thought of especially if the options are not exhaustive;
- information may be missed out through lapses; and
- the respondents may lose interest and suffer from boredom and fatigue.

3.2.2 Secondary method

The method involves the collection of already existing information from other previous researches on the study relevant to the research. Literature review is the main source of information under this method of collection. Therefore, the researcher in this case is the secondary user of the information. This technique has some advantages and disadvantages as any technique (Shapiro, 2002).

Advantages include:

- it is inexpensive in that the data is already in existence and one just has to pick it; and
- it permits the analysis of trends such as traffic or population growth trends etc.

Disadvantages include:

- ethical issues of confidentiality for instance in the case of on-going government projects might make the information not to be availed to the researcher; and
- information may be incomplete and imprecise – this relates to issues of the methods employed.

a) Literature review

The above method is a secondary technique focused on the findings of other researchers that are relevant to the subject and therefore, the researcher is a secondary user of the information (Shapiro, 2002). Literature review defined as the systematic search, location, identification and analysis of sources containing information related to the research problem being studied.

How the literature review addressed the objectives

The objectives and research questions identified in Section 1.3.1 and 1.3.2 respectively were addressed through the literature review as follows:

- Identify and assess the effects of the 2015 -2017 economy recession on the Zambian construction industry;

- Identify and assess the strategies needed to survival economic recession by construction companies; and

- Establish a framework with strategies needed to address the key effects identified so as to strengthen the sustainability of the Zambian construction industry.

These were done by answering the following questions;

- What are the effects of economic recession?

- What strategies could be used to address the selected effects identified?

- What are framework could be used to sustain the construction industry when faced with future economic downturn?

The data collection methods employed in the research are summarized in Table 3.1 based on the cost, amount of training required for data collectors, completion time and response rate. These methods have successfully being using on similar researches by scholars like other scholars like Kaliba (2009); Wong (2008); Galanis et al (2016); Machi et al (2013) and Olanrewaju, et al. (2018).

Table 3.1: Comparison of Major Data Collection Methods used

Characteristic	Data Collection Method		
	Review of Program Records	Self-Administered Questionnaire	Interview
Cost	Low	Moderate	Moderate to High
Amount of Training Required for Data Collector	Some	None to Some	Moderate to High
Completion Time	Depends on Amount of Data Needed	Moderate	Moderate
Response Rate	High, if Records Contain Needed Data	Depends on How Distributed	Generally Moderate to Good

3.3 Research design

The study adopted quantitative research approach. However, qualitative approach was used to follow up findings from quantitative data. The specific methods of data collection tools used were literature review, interviews and questionnaires based on the cost, completion time and response rate. The mixed method of inquiry adopted shapes data collection for the research, methodological triangulation was used as final tool, one set of data or information from literature review, questionnaires, and interviews was being confirmed by another (Shapiro, 2002). Methodological triangulation was used as final tool. In the research, it was used as validity of data. Guion et al. (2014) defined methodological triangulation involves the use of multiple qualitative and/or quantitative methods to study the program. Results from surveys, focus groups, and interviews could be compared to see if similar results are being found. If the conclusions from each of the methods are the same, then validity is established. Therefore, above tools selected were all geared at answering the research questions, objectives and the aim of the research.

3.3.1 Sample Design

Sample design is a method used to collected data from a sample of the population. A sample is a subset of the population. Sampling was done in order to obtain information from a large population being studied within the available resources and means (Banda, 2016).

3.3.2 Population

Population in research is a set which includes all measurements of similar characteristic or interest to the researcher and subject to the study (Banda 2016). The population in this study were clients, consultants registered with Association of Consulting Engineers of Zambia (ACEZ) and contractors registered with National Council for Construction (NCC) in General Civil Engineering works, General Roads and Earthworks, and General Building and Housing.

3.3.3 Sampling frame for questionnaire

The sampling frame was prepared in form of physical registered lists from ACEZ and NCC for consultants and contractors respectively. In order to obtain high quality data, the target group of both the questionnaire and interview focused on middle management to top management especially directors of construction firms. Directors are a group of participants that deal with long term planning and formulation of strategies for their firms.

The sampling method used was stratified sampling. The method was decided because the population from which the sample was drawn did not constitute homogeneous groups (Kothari, 2004). The population comprised of three strata namely clients, contractors and consultants hence the stratified sampling technique was applied to obtain a representative sample. Kothari (2004) stated that the population was stratified into a number of nonoverlapping subpopulations or strata and sample items are selected from each stratum. The respondents were selected from each stratum based on simple random sampling as stated.

Five (5) contractors in each Grade 1-6 for each category of General Civil Engineering works, General Roads and Earthworks, and General Building and Housing were selected to a total of 90 representing the first strum. The second strum was 25 registered consultants with ACEZ and the third strum clients was 15. The total population of the study became 130 participants.

3.3.4 Sample size

The sample size was the target population of 130 participants selected as the parameter for stratification to ensure that the sampling elements were homogenous.

A confidence level of 95 percent was selected being the statistical probability that the value of a parameter falls within a specified range of values. Therefore, a confidence level of Z% meant the researcher was Z% sure that the results contain the true mean average of the designated population. According to Martin (2016), the margin of error is the maximum acceptable difference in results between the population and sample. The study

adopted five (5) percent marginal error. Table 3.2 shows confidence level translated into z-score.

Table 3.2: Confidence level and corresponding z-score.

Confidence Level (%)	z-score
90	1.645
95	1.96
99	2.58

Source: Martin (2016)

The sample was determined using the following bio statistical formula to estimate sample in a survey.

$$N = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1+(\frac{z^2 \times p(1-p)}{e^2 N})}$$

Equation 3.1: Sample size calculation

Source: SurveyMonkey (1999-2018)

Where: N is Population Size; e is Margin of error (as a decimal); z Confidence Level (as a z-score of 1.96); and p is Percentage Value (as a decimal). The sample was estimated to be 112. From the population of 130 participants, the strum sample was computed as presented in Table 3.3.

Table 3.3: Sampling frame for different strata of surveyed respondents

Stratum	Population	Sample size
Contractors	90	73
Consultants	25	24
Clients	15	15
Total	130	112

3.4 Data Collection

Data collection for the research was done through structured interviews and questionnaires that were both closed and open-ended answer responses. Other scholars like Kaliba (2009); Wong (2008); Galanis et al (2016); Machi et al (2013) and Olanrewaju, et al. (2018) have used structured interviews and questionnaires as methods of data collection on similar researches. Therefore, data obtained was analysed using an appropriate method that may produce intended results for the research.

i) Interviews

Interviews were conducted prior to and after the questionnaire surveys. The interviews were aimed at obtaining preliminary data that would enhance the questionnaire survey as such the sample did not exceed 15 participants. The interviews were a suitable method as the researcher required a higher level of in-depth information. The participants were selected to ensure that various viewpoints of the main stakeholders in the construction industry were incorporated in the questionnaire survey as such the interviews were targeted at professionals working for clients, consulting firms and contractor organisations within the construction sector in Zambia. The interviews were limited to participants within Lusaka, the capital city, due to the short time required to get preliminary data.

Open and closed ended interviews were used to obtain a clear understanding of the variables, strategies used during the economic downturn of 2015 – 2017 and if a strategic framework would help for other future unforeseeable downturns. Interviews were conducted from April to August 2018. These were follow up to the questionnaire. The interviewees were sampled based on the willingness to answer questions on behalf of their organization as well as their experience in the construction industry especially during the 2015 – 2017 period.

ii) Questionnaire Survey

The self-administered questionnaires survey was adopted as the main research instrument based on the time frame of the research, the cost and the advantages that instrument represents. The themes of the questionnaire were from interviews and literature review.

The method aimed to get views of the main stakeholders in the Zambian construction industry. The respondents were assured of anonymity which in turn helped them to be honest in their answers. In addition, bias due to personal characteristics of the interviewer was avoided. The tool allowed respondents to have time to consult if in doubt, they by answering the questions more appropriately. Therefore, these factors made this method more advantageous compared to the other methods available (Shapiro, 2002).

The above advantages of using questionnaires to collect data were used to design one that was used to answer the aim and the specific objectives of the research. The previous chapters helped in the design of the questionnaires as more knowledge was acquired from them. Therefore, questionnaires were designed to answer questions related to the set objectives. The purpose of the questionnaire survey was to measure the frequency of occurrence, severity of the factors, and rating of the strategies on construction companies. The data collected was then used as input for the strategic framework developed.

In order to analyse and discuss the results of the data collected, the questionnaire was designed, piloted and survey carried out over the period of two months from 15th June 2018 to 31st July 2018. The targeted respondents of the questionnaire survey were experienced practitioners from contractors, consultants and clients/client representatives working in the Zambian construction industry. Fifty copies of the questionnaire were distributed across the industry with a response rate of 60 percent. The number of questionnaire distributed and the response rate of 60 percent is ideal for the study as other authors like Scott (2011) and Kaoma (2016) have used 50 copies of a questionnaire in similar studies. The response was therefore good considering the fact that most professionals were busy with work.

3.5 Pilot Study

Both structured interviews and questionnaires were pilot tested before being distributed in order to eliminate the vague and unclear questions, improve the questionnaire, deficiency in the questionnaire were revealed and appropriateness of methods of analysis. The unambiguous questions were reconstructed and some removed. Respondents were encouraged to make comments and suggestions concerning clarity. A research instrument

needs to be pilot tested to detect weaknesses or errors in it from the target sample population (Basavavathappa, 2009). Three (3) pilot tests were carried out from the client and two from consultant.

3.6 Method of analysis

The questionnaire survey form was designed to verify the existing methods and processes, which are related with economic impact on construction industry. It was important at early stage to decide the method analysing the information before developing any system of data collection. Therefore, Statistical Analysis method was considered to analyse the data collected form the surveys using Statistical Package for Social Science (SPSS) and Excel. The data was collected by using measurement or likert scale method.

For assessment of the frequency and severity of the identified effects during the 2015-2017 Zambian economic recession as four-scale rating was used. The four-scale likert was used because frequency and severity of the variables did not have the undecided response from the respondent. Other scholars like Kaliba (2009) have successfully used the four-scale likert type. The likert scales provided ranged from 1 to 4 as shown in Table 3.4. The corresponding quantitative measures of the frequency and the severity were obtained using the same scale that was assigned to them.

Table 3.4: Frequency and severity weighting

Scale	Frequency (F)	Weight	Severity (S)	Weight
1	Not Frequent	1	Not Severe	1
2	Moderate Frequent	2	Weak Effect	2
3	Frequent	3	Severe	3
4	Very Frequent	4	Very Severe	4

Source Kaliba (2009)

The use of weighted averages was employed to determine the Frequency Indices as shown in Equations 3.2.

$$Frequency\ index = \frac{\sum_{i=1}^{5}(a_i x_i)}{\sum_{i=1}^{5}(x_i)}$$ *Equation 3.2: Frequency index*

Average index for five-scale rating

Where, a_i = Constant expressing the weight given to i,

 x_i = variable expressing the frequency of the response for;

 i = 1, 2, 3, 4 and illustrated as follows:

 x_1= frequency of the 'Not Frequent' response and corresponding to a_1= 1;

 x_2= frequency of the 'Moderate Frequent' response and corresponding to a_2= 2;

 x_3= frequency of the 'Frequent' response and corresponding to a_3= 3; and

 x_4= frequency of the 'Very Frequent' response and corresponding to a_4=4.

For the relationship between the two variables (Frequency and Severity), a correction was established using Charles Spearman's coefficient of correlation through simple regression equations (Kothari, 2004).

Kothari (2004) defined Charles Spearman's coefficient of correlation (or rank correlation) as the technique of determining the degree of correlation between two variables in case of ordinal data where ranks are given to the different values of the variables. The main objective of this coefficient is to determine the extent to which the two sets of ranking are similar or dissimilar (Kothari, 2004). This coefficient is determined as shown in equation 3.3:

$$Spearman's\ coefficient\ of\ correlation\ (or\ rs) = 1 - [\frac{6\sum(d_i^2)}{n(n^2-1)}]$$ *Equation 3.3: Spearman's coefficient correlation*

Where, d_i = difference between ranks of *i*th pair of the two variables;

 n = number of pairs of observations.

Clients' /client representatives, consultants and contractors used five-scales rating to determine the effectiveness of the strategies on the construction industry's sustainability. The likert scales provided ranged from 1 to 5 as shown in Table 3.5.

Table 3.5: Likert scale weighting

Scale	Frequency (F)	Weight
1	Unsatisfactory	1
2	Inconsistent	2
3	Effective	3
4	Highly Effective	4
5	Very Satisfactory	5

Al-Hammad et al (1997) explained the Average Index Method and used it to analyse data in the ordinal or ranking scale. The study adopted the Average Index Method to analyse the effectiveness of the strategies from data of survey as shown in equation 3.4:

$$Average\ index = \frac{\sum_{i=1}^{5}(a_i x_i)}{5 \sum_{i=1}^{5}(x_i)}$$

Equation 3.4: Average index

Average index for five-scale rating

Where, a_i = Constant expressing the weight given to i, x_i = variable expressing the frequency of the response for;

i = 1, 2, 3, 4, 5 and illustrated as follows:

x_1= frequency of the 'unsatisfactory' response and corresponding to a_1= 1;

x_2= frequency of the 'inconsistent' response and corresponding to a_2= 2;

x_3= frequency of the 'effective' response and corresponding to a_3= 3;

x_4= frequency of the 'highly effective' response and corresponding to a_4=4; and

x_5= frequency of the 'very satisfactory' response and corresponding to a_5 =5

3.7 Summary

This chapter presented the methodology used and carried out in the research. It outlined the usefulness and disadvantages of each method to the research on consideration of time and budget. The next chapter presents the results, analysis and discusses the results.

CHAPTER 4: DATA COLLECTION, ANALYSIS AND DISCUSSION

4.1 Introduction

The previous chapter presented the methodology used on the research and the methods employed to analyze the collected data. This chapter presents the research results, analysis and discussion of the findings. The results of the data collected through some interviews and questionnaire surveys that were targeted at the various professionals working in the construction industry are presented and discussed.

4.2 Interview data and analysis

4.2.1 Profiles of respondents

Interviews were target at various respondents in the Zambian construction industry that included consultants, contractors and clients/client representatives. Nine respondents out of the targeted fifteen targeted group were involved in the interviews. The experience of the respondents varied from five years to over fifteen years in construction projects and were middle, senior management or director in their firms. The interviews were conducted on the willingness and time of respondent as most professionals were busy with work. Four of the interviewees worked for consultancy firms, three worked for contractors and two for client.

4.2.2 Findings from Interviews

The respondents were asked to give their own views about the effects of the 2015 - 2017 Zambia's economic recession and the strategies that their company implemented to survive.

4.2.2.1 Effects of 2015 – 2017 Zambia's Economic Downturn

Some effects of the 2015 - 2017 Zambia's economic recession from respondents included, stiff competition for jobs in the private sector as the public sector was not offloading jobs. Foreign-based companies took most jobs from locals as foreign-based companies could finance public projects without Government of the Republic of Zambia (GRZ) giving

them any payment until the end. Bid prices were low to get the limited jobs available. This affected their profit margins. Most experienced construction personnel left the country, as there was little activity in the sector thereby reducing labour output.

The respondents indicated that the failure of government agencies to pay the outstanding bills has had a disastrous impact on the construction industry. Therefore, in order to bring back the confidence to the market, the domestic debt stock owed to local consultants and contractors should be liquidated as soon as possible.

4.2.2.2 Strategies used to Survive the 2015 – 2017 Zambia's Economic Downturn

Some of the strategies used effectively included; Rethink on the structure of the company's operations. Squeeze the profit margins up to the maximum reasonable possible. Focus on the work on site and take the maximum profit from equipment and labour. Revise conditions of service for employees. Sensitization of employees regarding cost saving measures and introduction of natural attrition in the system.

4.2.2.3 Need for Strategic Framework to Survive Future Economic Recession

There was a general agreement from the respondents to the idea of a framework with strategies to help companies survive during economic downturns. However, the question was a bit more than Yes/No answer, as there is no rule or magic solution to survive. Nevertheless, companies need to adjust to the change in the market economy. It was imperative that first, the key persons responsible for the companies assure that an adjustment should be considered and not only the profitable actions which are good for the growth and success of the company. The ways of thinking should be one of the first things to change.

4.3 Questionnaire data and analysis

The questionnaire was aimed at assessing the effects of the 2015 – 2017 Zambia's economic recession on Zambia's construction industry, accessing the current state of the construction industry, and investigating various strategies used to address the challenges identified in order to strengthen the sustainability of the Zambia construction industry. The analysis of the sections was as outlined in the questionnaire.

4.3.1 Respondents background information

i. Main business and sector in construction

Respondents represented different roles in the Zambian construction industry, specialized in either construction or construction management from contractors, consultants and clients/client representatives working in either the public or private sector. Other indicated that they were from civil engineering, commercial, consulting engineering, contract management and geotechnical engineering.

Figure 4.1 shows the background of the respondents by types of organization. It indicates that 50 percent of the respondents were from contractors, 40 percent from consultants, and 10 percent from clients/client representatives. It was vital to get a greater response from contractors and consultants as they were directly impacted from the economic downturns as they are the professionals that oversee the projects.
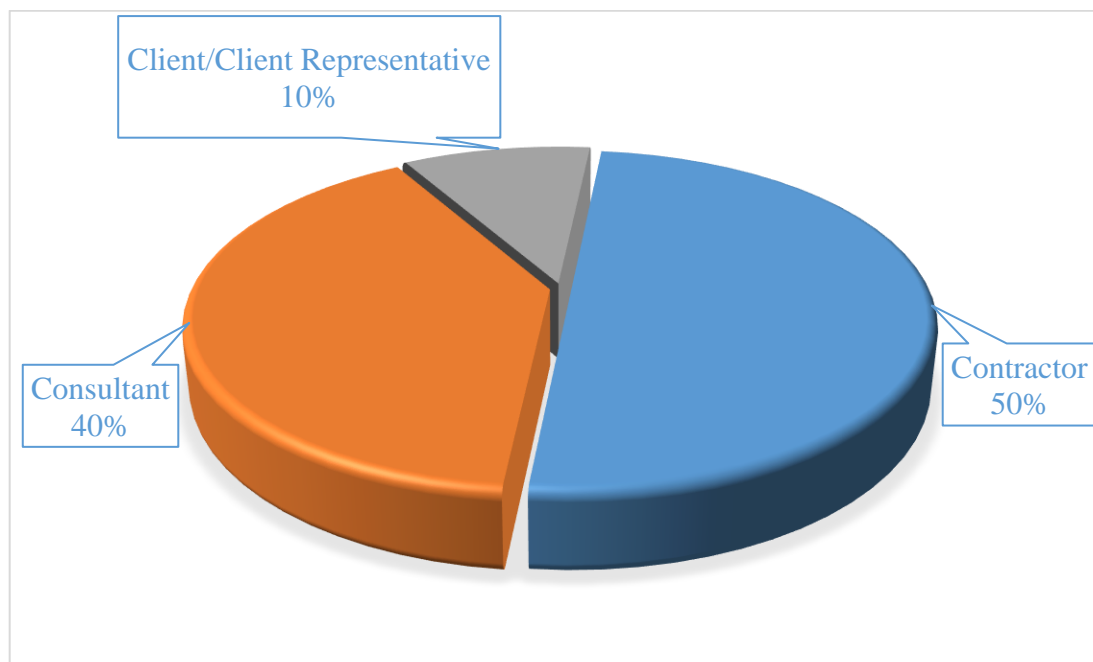
Figure 4.1 Organisation type of respondents

Figure 4.2 shows the type of sector and contracts of the respondents firms worked from and involved in respectively. Most respondents were from the private sector with 95 percent and from public sector with 5 percent. It shows that 85 percent of the contracts are

both private and public, 10 percent of only public contracts with 5 percent private contracts.
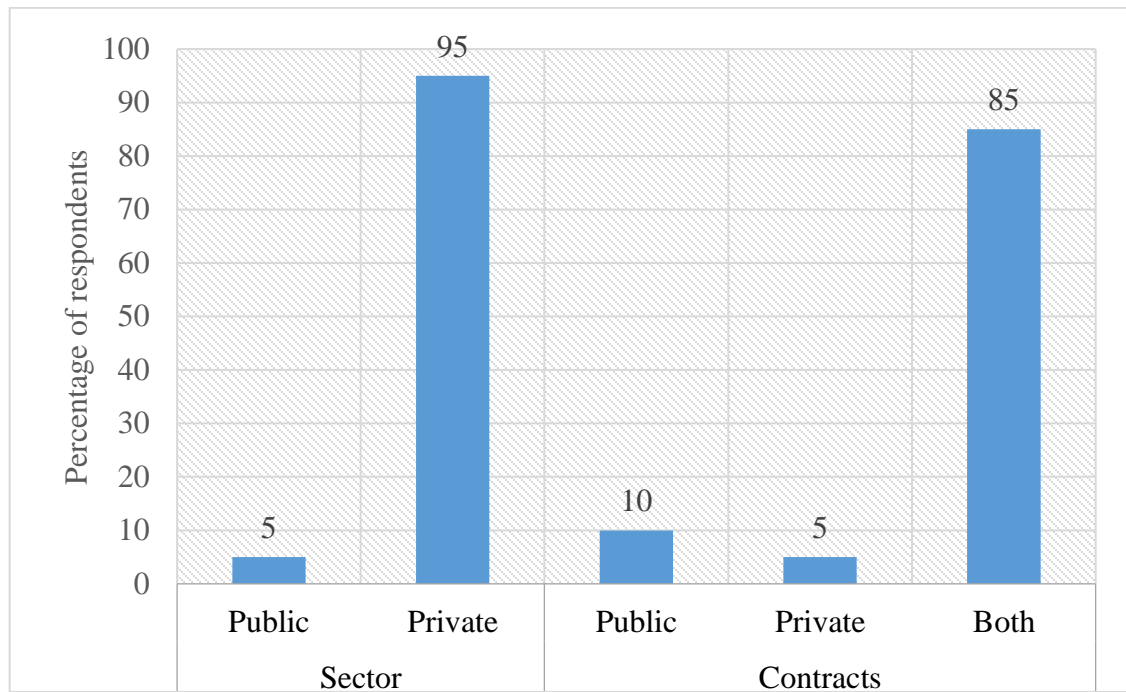
Figure 4.2: Respondents type of sector and contracts

ii.   Experience and position of respondents

Figure 4.3 shows the respondents years of experience. It indicates that the questionnaire survey did not have respondents between 0 to 5 years professional experience. Most respondents had over 5 years professional experience precisely those having 5 to 10 years at 35 percent, 10 to 15 years at 30 percent and over 15 years at 35 percent. Hence, the percentage indicates that respondents were well experienced to provide reliable information to the research.

These respondents were sampled on the basis that their company was in operation in Zambia at least before 2014 to understand the period of economic downturn of 2015 – 2017. This was important because some respondents had the relevant experience but could have been not working with the firm or in Zambia before 2014.
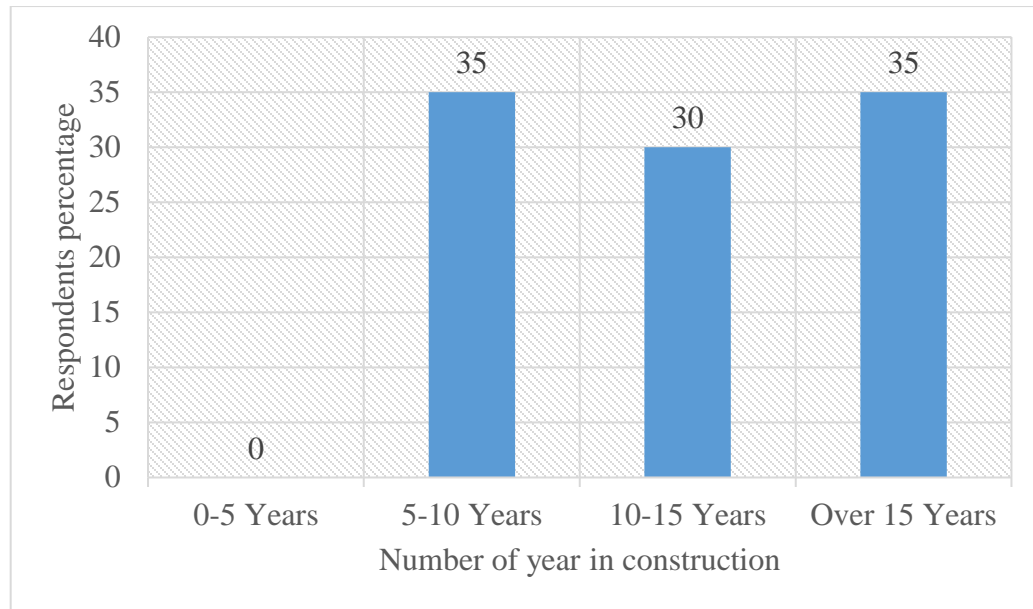
Figure 4.3: Respondents experience in construction projects

Figure 4.4 presents the respondents level of education. No respondent had a minimum of certificate indicating that 10 percent had Diploma, 60 percent Bachelor Degree, 25 percent Masters and 5 percent Doctorate.
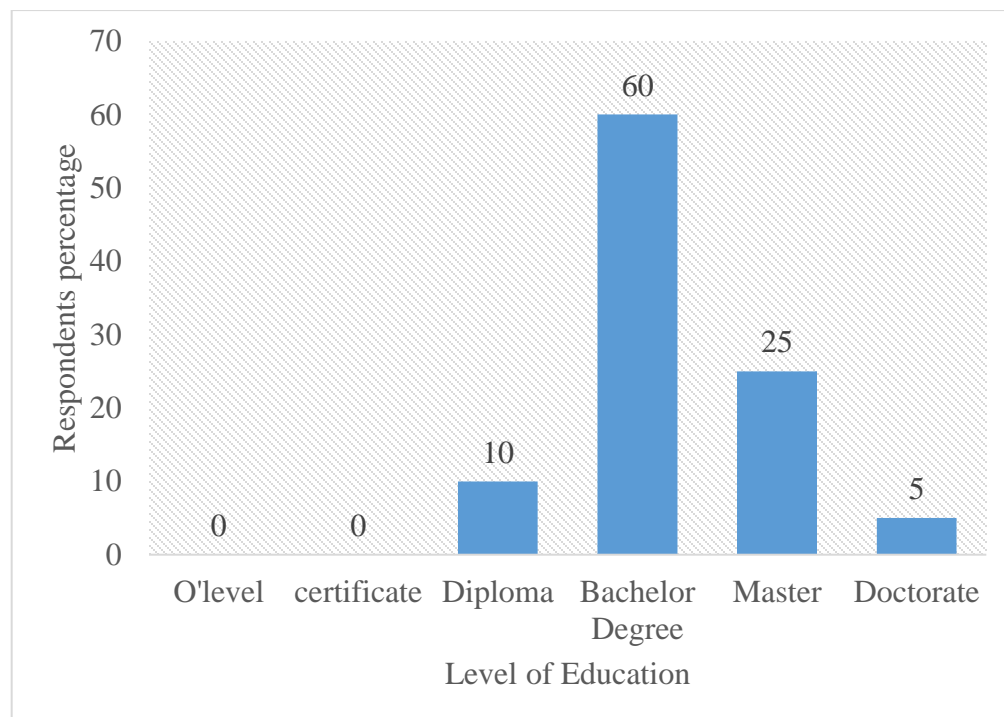
Figure 4.4: Respondents level of education.

Figure 4.5 presents the respondents position in their organisation. It indicates most respondents being directors at 45 percent, senior management at 35 percent and 20 percent middle management. The questionnaire survey did not have respondents on junior management. The high percent of directors was vital because these are the personnel who understand the firm's strategic plans at a high level to give accurate information. It was important that the respondents fitted the purpose of middle management to directors of the firms to ensure that the respondents were adequately knowledgeable about the topic in question.
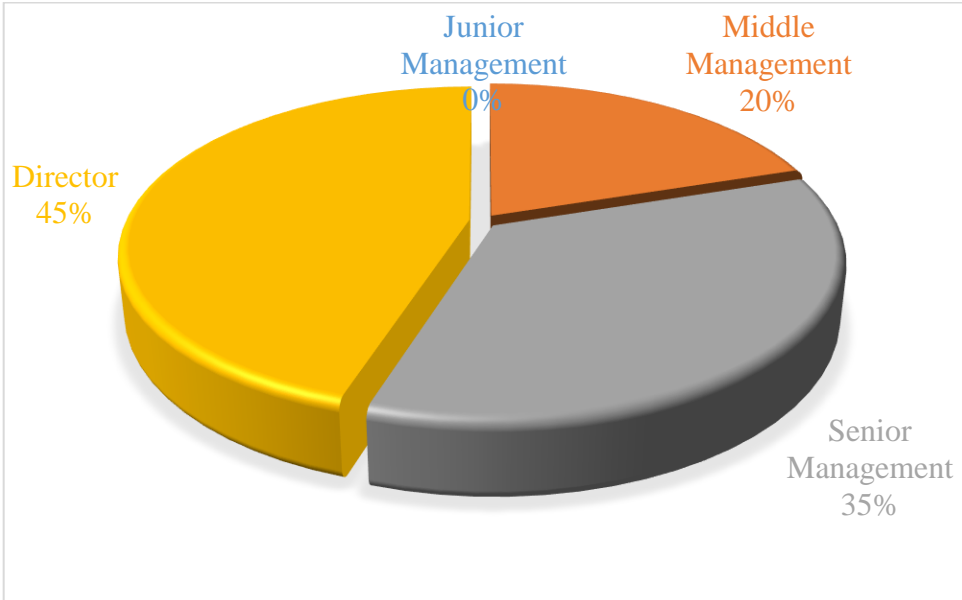
Figure 4.5: Respondents position within the organisation.

Figure 4.6 indicates the annual turnover of the companies for respondents, ranging from less than US$1million to over US$10million. 25 percent of the respondents indicated the companies had less than US$1m turnover. 30 percent of the companies' turnover was between US$1million – 5million, 5 percent between US$6million – 10million. Most companies with 40 percent had a turnover of over US$10million.
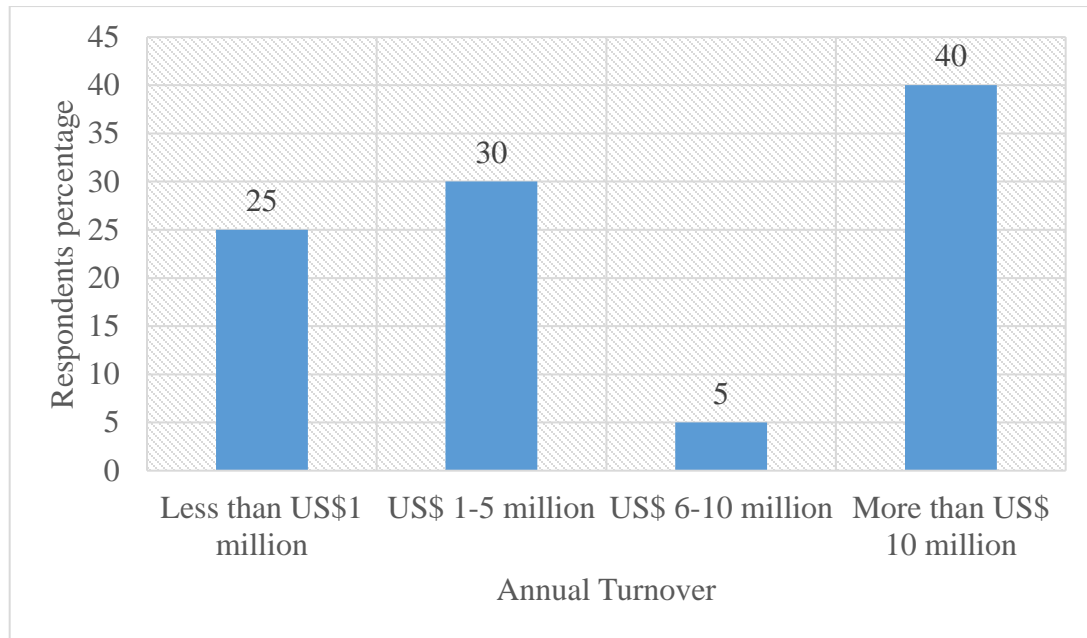
Figure 4.6: Company Turnover.

4.4 Factors during economic downturn

i. Assessment of the Zambian construction industry between 2015-2017

During economic downturns, several industries including the construction industry faced several challenges in being sustainable and construction firms that are part of the construction industry are directly impacted by such times. Literature review, face-to-face interviews and the questionnaire survey established some effects of economic downturn the construction industry.

Eighteen effects that firms face in economic downturn times were established and accessed. The section below provides some of the findings.

Respondents were asked to state which effects the construction industry had to contend with during the economic downturn of 2015 – 2017 from the perspective of their company. Respondents were also asked to rate the effects on how often or frequent the effect affected their construction firm and the effects severity on the sustainability of the construction industry. These effects were ranked in terms of their frequency during the economic downturn of 2015 – 2017. The frequency index of the effects is represented in Figure 4.7 from a dichotomies analysis of the responses.

52
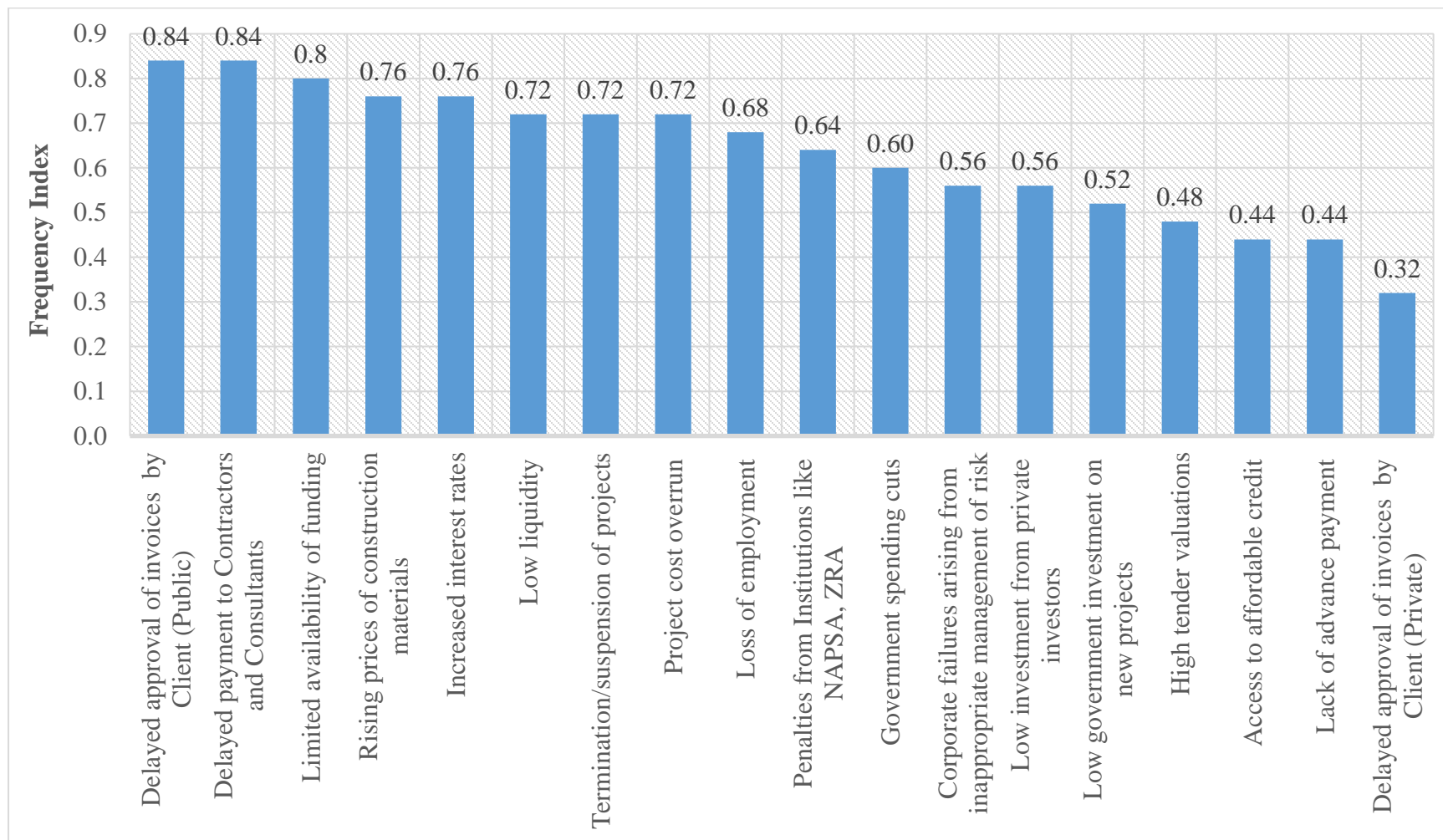
Figure 4.7: Ranking of factors during the 2015 – 2017 economic downturn by their frequency

Findings show that the most ranked effects were delayed approval of the invoices by the client (public) and delayed payment to contractors and consultants at 84 percent. Limited availability of funding was at 80 percent. Rising prices of construction materials and increased interest rates were at 76 percent. Unlike this research, Olanrewaju et al. 2018 assessed the effects of fluctuation on cost of raw materials and the effect was ranked second. The research conducted by Wan-pun (2009) had interest rate has the third most ranked factor leading to the causes of failure categorized under macroeconomic conditions of the construction industry, decision within the firm and actions of other firms. These responses agree with the literature reviewed as economic downturn causes delay in approval of invoices, payment to contractors and consultants, limited availability of funding and rise in construction materials.

Low liquidity, termination/suspension of projects and project cost overrun were at 72 percent. During economic downturn loss of employment is one of the effect directly attributed to challenging time, however, the survey indicated that at 68 percent it was not the most ranked factor. Loss of employment is one of the direct effect of economic recession. Employment – in 2008, the level of employment in overall EU construction activity was estimated to around 15.9 million workers, which represents a decrease of -1percent compared to 2007. In 2009 the employment in construction declined by -5.1 percent (Nistorescu & Ploscaru, 2009). The research conducted by Olanrewaju et al. 2018 high unemployment has the highest ranked effect of Economic Recession on Building Construction Industry in Nigeria. Zambian construction companies decreased manpower, however, they recognized the importance of employee's idiosyncratic capabilities.

Positives could be drawn from the survey, as business confidence in the industry that is usually low in times of economic downturn was not completely low as the variables low investment from private investors and low government investment on new projects were on 56 percent and 52 percent respectively.

High tender valuation was ranked at 48 percent. The second from bottom joint ranked effects at 44 percent were access to affordable credit and lack of advance payment. Difficulties in getting credit was ranked the 8th effect in the research carried by Olanrewaju et al. 2018 on of the least factors.

The least ranked factor during the 2015-2017 economic downturn was delayed approval of invoice by client (private) at 32 percent. In economic downturn were delay in getting approvals is one of the major factors, the 32 percent experienced in the Zambian construction industry showed that private investors were paying for the works executed by both contractors and consultants.

ii.   Assessment of the current state of the construction industry.

Respondents were asked to state which effects currently affected the construction industry because of the 2015 – 2017 Zambia's economic downturn. The effects were drawn from literature review, face-to-face interviews and the questionnaire survey carried out. The frequency index of the effects is represented in Figure 4.8.

Findings show that the most ranked effects is limited availability of funding at 80 percent. Indicating that despite the signs of economic recovery of the Zambian economy as projected by the World Bank, availability of the funds is still low (Worldbank, 2018). Delayed approval of invoices by the client (public) and delayed payments to contractors and consultants were jointly ranked second (2nd) at 76 percent as effects currently being experienced in the Zambian construction industry. Respondents indicated that rising prices of construction materials, corporate failures arising from inappropriate management of risk, government spending cuts, access to affordable credit, low liquidity, termination/suspension of projects and projects cost overrun were effects presently experienced at 68 percent.

From the above findings, post economic downturn is a period of recovery and effects experienced during the economic downturn are present though not severe. Increased interest rates was 64 percent and loss of employment at 60 percent. The second from bottom joint ranked effects at 40 percent were access to affordable credit and lack of advance payment. The least ranked effect at the time of the questionnaire survey was delayed approval of invoice by client (private) at 36 percent. Delayed approval of invoices by client (private) showed that post-economic downturn investors had confidence in the Zambian economy. The last two effects are the same as during the economic downturn of 2015 – 2017.
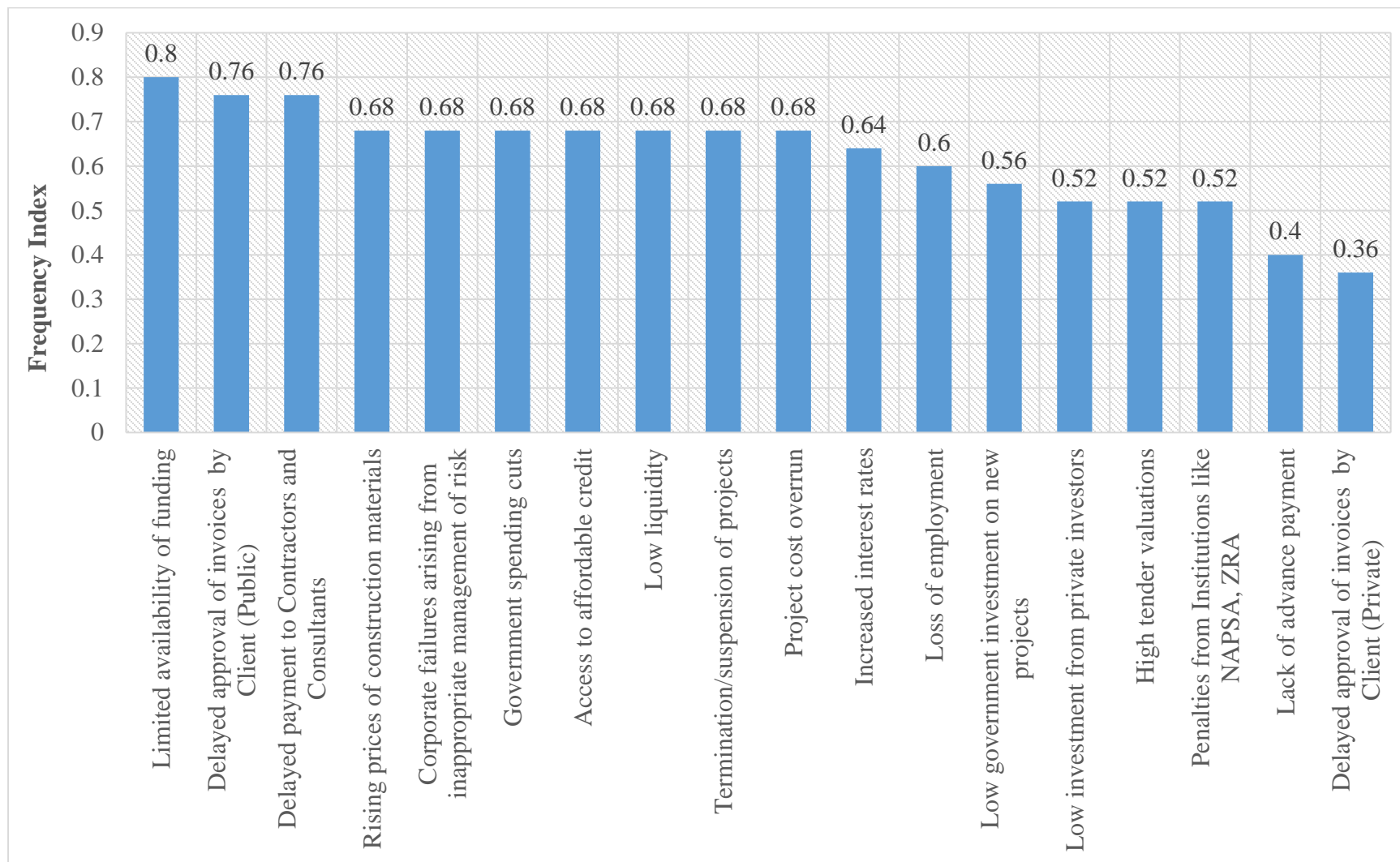
Figure 4.8: Ranking of factors at the time of the survey by their frequency

iii.   Correlation of the Variables during the 2015 – 2017 economic downturn.

Respondents were asked to rate the effects experienced during the economic downturn of 2015 – 2017. They were asked to rate the frequency and severity of the effects using the Likert scale. Spearman's correlation was used to assess the relationship between the frequency and severity of the effect as the Likert scale was ordinal data.

The correlation coefficient was used to determine the monotonic relationship between the factors and their significance. The range of the coefficient is between -1 and +1 with -1 being the perfect negative correlation, 0 as no correlation and +1 as the perfect positive correlation. Therefore, the interpretation in the strength and direction of relationship are -1 perfect, -0.75 very strong, -0.5 strong, -0.3 moderate, -0.1 weak, 0.0 zero, 0.1 weak, 0.3 moderate, 0.5 strong, 0.75 very strong and 1 perfect (SPSS BOSS, 2016). Table 4.1 shows spearman's correction table of each effect showing the correction coefficient. The significance was measured from zero (0). As indicated on the table, the effect with correlation coefficient shows the significance of the effect at 1 percent or 5 percent.

Low investment from private investors had a positively very strong relationship between its frequency and severity during the economic down turn. Implying that as the frequency of low investment from private investor increased, its severity also increased. However, from the frequency index, low investment from private investors was not the highest ranked factor. Interestingly limited availability of funding, which was the most frequent ranked factor at the time of the survey and the third (3rd) most, ranked during the 2015 – 2017 economic downturn had 0.356 correlation coefficient implying a positively moderate significance between its frequency and severity. Delayed approval of invoices by the client (public) and delayed payments to contractors and consultants were jointly ranked 1st and 2nd during the economic downturn and at the time of the survey. Their correlation coefficients were 0.679 and 0.814 respectively showing a positively strong relationship at the significant of 1 percent. This shows that the frequent of occurrence in the two (2) effects had a direct monotonic impact on the severity of the factor to the construction industry. These effects are the direct impact of economic downturn as outlined by most scholars.

Rising prices of construction materials, the fourth ranked effects during economic downturn and at the time of the survey with spearman's correlation coefficient of 0.630 had a positively strong relationship with its significance at 1 percent. The other effect with positively moderate relationship between its frequency and severity was access to affordable credit. All the effects accessed had a positive relationship between their frequency and severity with varying spearman's correlation coefficient and level of significant as shown in table 4.1.

Table 4.1: Spearman's correlation of the factors during economic downturn.

		Correlation Coefficient
Spearman's Correlation	Rising prices of construction materials	.630**
	Limited availability of funding	0.356
	Corporate failures arising from inappropriate management of risk	.434*
	Government spending cuts	.700**
	Access to affordable credit	0.338
	Increased interest rates	.547*
	Low government investment on new projects	.898**
	Low investment from private investors	.930**
	Loss of employment	.718**
	Low liquidity	.685**
	Delayed approval of invoices by Client (Private)	.857**
	Delayed approval of invoices by Client (Public)	.679**
	Delayed payment to Contractors and Consultants	.814**
	Termination/suspension of projects	.847**
	High tender valuations	.820**
	Lack of advance payment	.823**
	Project cost overrun	.574**
	Penalties from Institutions like NAPSA, ZRA	.600**
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

4.5 Survival strategies during economic downturn

The challenging business environment during economic downturn called for proper selection of survival strategy depending on the firm's financial condition and operation style. Respondents were asked to choose which strategy their firm used during the economic downturn and rate the strategy's effectiveness for their company's survival and business goal. Twenty-one strategies that could be used during economic downturn were identified from literature reviews and pilot questionnaire survey. The section below provides some of the findings.

Figure 4.9 shows the ranking of the strategies from a dichotomies analysis of the responses. The results indicated that the most used strategies were implementing stricter financial management on company cash flow at 96 percent and freezing staff recruitment at 92 percent. Employing on a contract basis, implementing stricter site management to reduce material & time wastage and bidding for more projects that are within the firm's resources and capabilities were highly ranked at 84 percent and 80 percent jointly respectively.

Most research carried on recession show that economic downturn has a dramatic effect on employment. Restructuring of firms to reflect the decrease in work available to the firms and to reduce costs are some of the reason for change in employment number (Hillebrandt, et al., 1995). From literature, one of the major effects of recession or economic downturn is unemployment and laying off employees. The research finding showed that laying off employees was at 76 percent indicating that some employees lost their job. However, comparing with the others findings positives could be drawn from it. The Zambian construction industry utilized other strategies more than focus on laying off employees. It could be that during economic downturn employee management and performance management became a key factor to progress.

The least strategies used were cutting employees' salaries and bidding for projects with tiny/zero profit margins at 28 percent. Increasing time/expenditure on marketing used at 24 percent. Acquiring projects from defunct companies was literally not used as a survival strategy at 8 percent.
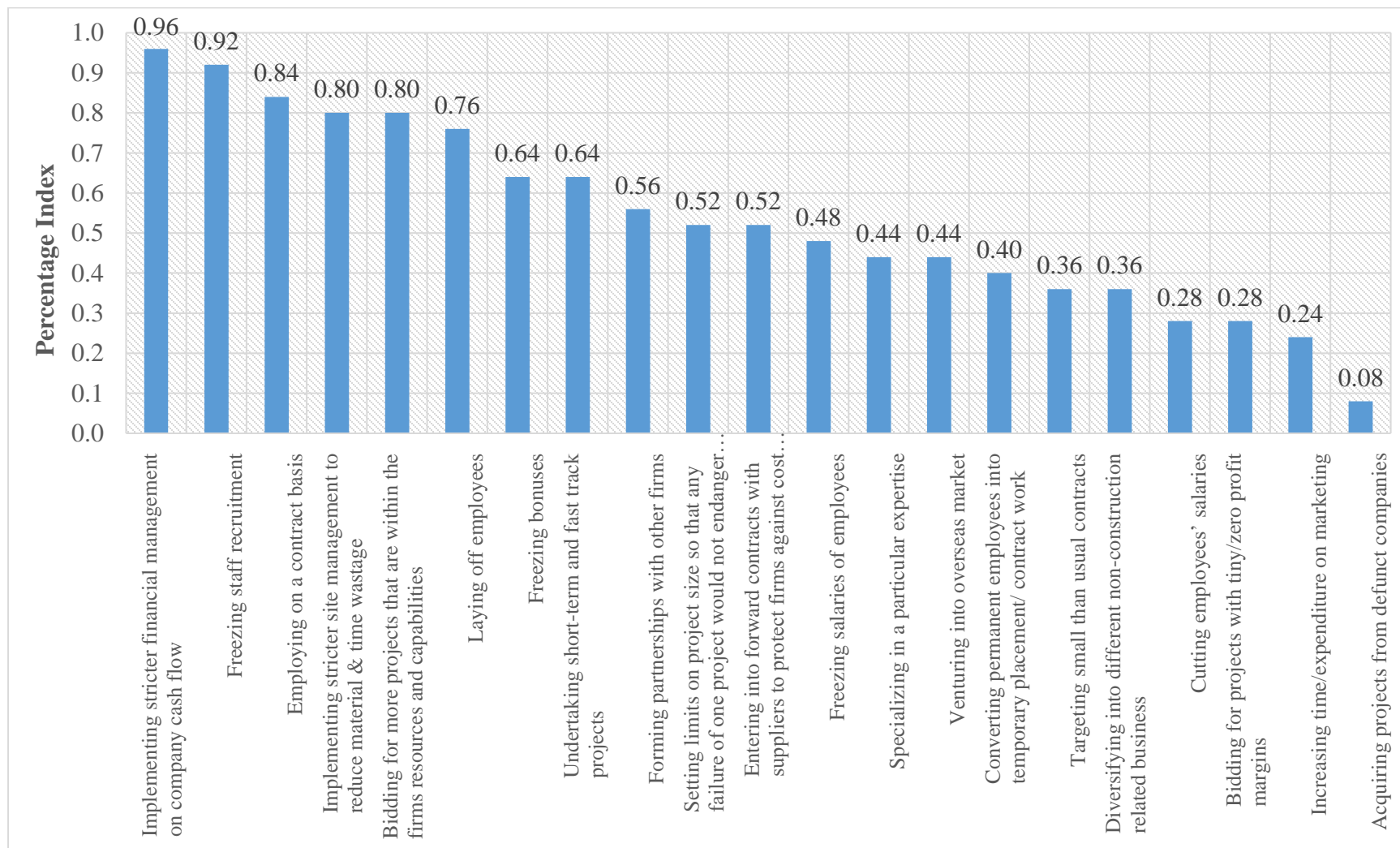
Figure 4.9: Ranking of strategies during the 2015 – 2017 economic downturn by their frequency

Table 4.2 shows the perceived applicability of the strategies during economic downturn by the respondents.

The results indicated that the most effective strategies used during 2015 – 2017 economic downturn were implementing stricter financial management on company cash flow, implementing stricter site management to reduce material and time waste and employing on contract basis with means of 3.64, 3.52 and 3.50 respectively. These are cost control strategies with similar results as the research conducted by Scott (2011). Freezing staff recruitment had mean 3.38; the research conducted by Scott (2011) showed this cost control strategy as the second bottom least utilized strategy. However, the research conducted by Lim et al. (2010) agrees with the research results, as it was one of the moist utilized strategy.

Other factors with mean of 3.00 and above were entering into forward contracts with suppliers to protect firms against cost escalation, undertaking short-term and fast track projects, venturing into overseas market, specializing in a particular expertise and laying off employees with means of 3.18, 3.17, 3.14, 3.13 and 3.00 respectively. Entering into forward contracts with suppliers to protect firms against cost escalation, undertaking short-term, and fast track projects are contract related strategies also used utilized by other countries as they agree with research conducted by Lim et al (2010) and Scott (2011). Research conducted by Wong et al (2008) found that venturing into overseas market as an effective strategy during economic recession.

The least utilized strategy during the economic downturn was cutting employees' salaries with a mean of 2.19. Zambian construction companies understood the need to keep key personnel; hence, they did not resort to cutting salaries in order to maximize profit margins. Cutting employees' salaries was the least utilized cost control strategy in the research conducted by Scott (2010). The results of the survey are similar to the researches conducted by Scott (2010) and Lim et al (2010).

Table 4.2: Perceived applicability of the identified strategies during economic downturn.

Strategies	Mean	Std. Deviation
Implementing stricter financial management on company cash flow	3.64	1.036
Implementing stricter site management to reduce material & time wastage	3.52	0.790
Employing on a contract basis	3.50	1.063
Freezing staff recruitment	3.38	0.970
Entering into forward contracts with suppliers to protect firms against cost escalation	3.18	1.053
Undertaking short-term and fast track projects	3.17	1.370
Venturing into overseas market	3.14	1.526
Specializing in a particular expertise	3.13	1.329
Laying off employees	3.00	1.103
Diversifying into different non-construction related business	2.95	1.430
Bidding for more projects that are within the firms resources and capabilities	2.88	1.296
Freezing bonuses	2.87	1.517
Setting limits on project size so that any failure of one project would not endanger the firms operation	2.87	1.290
Forming partnerships with other firms	2.76	1.221
Targeting small than usual contracts	2.59	1.368
Increasing time/expenditure on marketing	2.58	1.387
Freezing salaries of employees	2.55	1.438
Converting permanent employees into temporary placement/ contract work	2.45	1.299
Acquiring projects from defunct companies	2.45	1.317
Bidding for projects below cost	2.25	1.410
Bidding for projects with tiny/zero profit margins	2.23	1.412

Strategies	Mean	Std. Deviation
Cutting employees' salaries	2.19	1.327

Note: 1 = Unsatisfactory, 2 = Inconsistent, 3= Effective, 4 = Highly Effective, 5 =Very Satisfactory

4.6 Need for the framework

Respondents were asked to state if a systematic framework was needed to help construction firms survival in times of economic downturn. Table 4.3 indicates the results of the survey, it shows that most respondents would like a systematic framework in times of economic recessions ranked from a dichotomies analysis of the responses. 85 percent of the respondents indicated they need a framework, 4 percent said no to the framework and 11 percent not sure or did not answer.

Table 4.3: Frequency rating of a strategic framework during economic downturn

Framework with strategies to help firms in economic downturns		
		Percent
	Yes	85
	No	4
	Not Sure	11.1
Total		100.0

4.7 Summary

The chapter presented the data obtained from interviews and questionnaire survey. The analysis of the data elaborated which effects were significant ranked from dichotomies analysis and spearman's correlation of the responses for the construction firms. The chapter of discussed the finding in relation to exiting literature. The next chapter shows how the strategies were used to establish a strategic framework.

CHAPTER 5: SUSTAINABILITY FRAMEWORK

5.1 Introduction

The previous chapter presented the research results, analysis and discussion of findings on the research according to the respondents. In this chapter, findings from chapter 4 were used to develop the framework with strategies needed to strengthen the sustainability of the Zambian construction industry during economic downturn.

5.2 Strategic survival guide and framework for Zambian construction firms

Economic downturn presents construction firms or businesses with a dilemma of whether to cut costs to conserve resources or to invest in new services, products and processes to exploit competitor weakness (Adaranijo, et al., 2018). According to Hyland (2010), during an economic recession the selection of a survival strategy depends on the company's financial condition and its operating style.

Strategies help companies think through what they want to achieve and how they will achieve them. The focus is on things that matter and not distracted by events or short-term distraction, but strategically ensure that resources are allocated accordingly. Therefore, in an economic recession, it is necessary to evaluate the company's commercial environment to determine the suitable strategies for survival (Banerji, et al., 2009).

Strategies vary greatly and the implementation depend of the organisation vision and hierarchies. Figure 5.1 shows the how strategies can be implemented by a construction firm for its survival during economic downturn. The best strategic implementation is cyclic process that involves consultation, feedback, continuous learning and improvement. It is essential that strategies are adaptable, with quick feedback and effective information flow to respond to changes (CabinetOffice, 2004)

According to CabinetOffice (2004), the best strategies for government and public services that could be used in by private firms should include: clear objectives, relative priorities and tradeoffs; rich understanding of causes, trends, opportunities, threats and possible futures; creativity that includes designing and discovering new possibilities and good communication with everyone involved in the implementation.

Figure 5.1 shows the survival strategic framework guide that a construction firm can adopt. Strategic direction is the core of survival that describes the desired future and sets out what need to be achieved. Figure 5.2 will show the strategic framework to implement for Zambian construction firms' survival during economic downturns, which is the core of the strategic direction. The structure of the strategic framework (Figure 5.2) was adopted from Parambath & Udawatta (2017). Improvements include the vision of the framework and structured framework/method, from the set aims and action plans implemented using the strategic framework application in Figure 5.1.

The strategic framework application should be used with the strategic framework as a method used to define how a particular implementation strategy would support the aim in order to accomplish the set vision. Implementation strategies are from findings in the Zambia construction industry. Therefore, strategic framework includes the vision/outcome, aims and the implementation strategies needed to have the desired outcome. Policy design is for identifying how the objectives/ implementation strategies will be achieved, selecting the most suitable instrument and detailing how the instrument will work in practice (CabinetOffice, 2004).
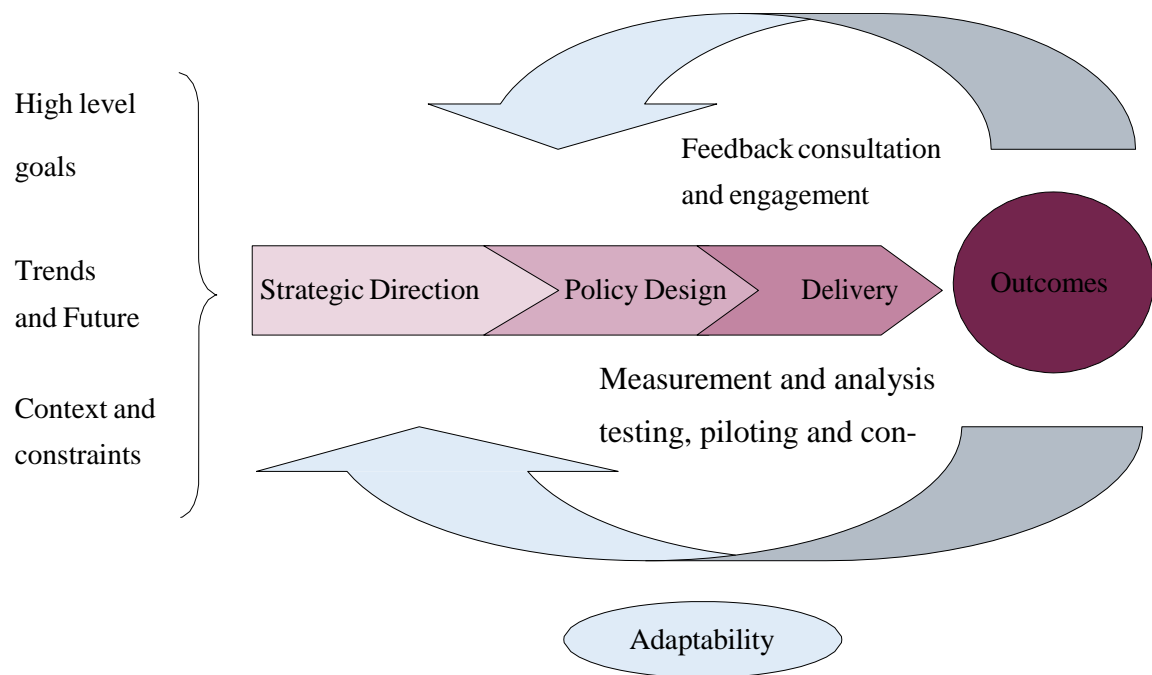
Figure 5 1: Strategic framework application

Source: CabinetOffice, (2004)

65

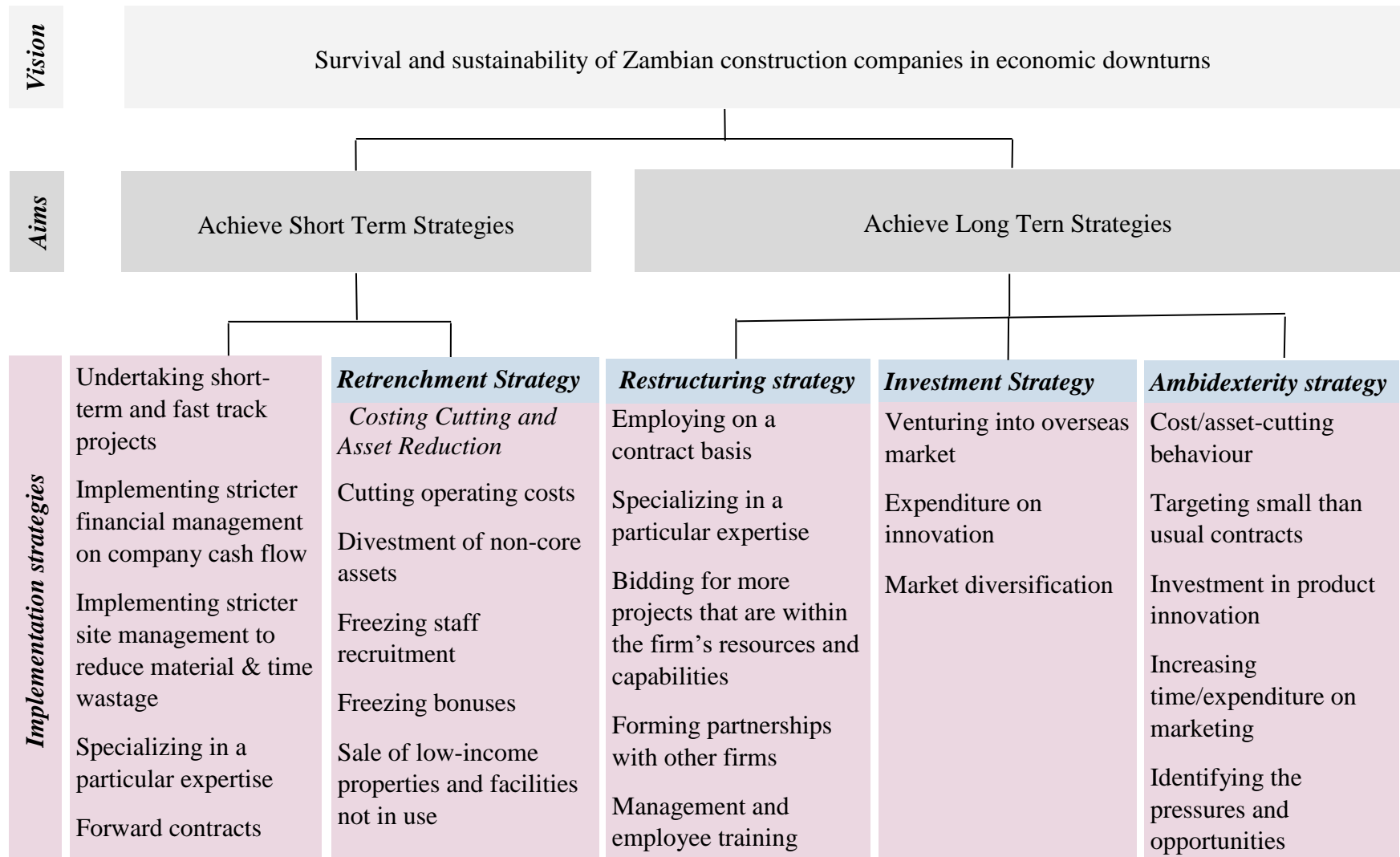| Vision	Survival and sustainability of Zambian construction companies in economic downturns				
Aims	Achieve Short Term Strategies		Achieve Long Tern Strategies		
Implementation strategies	Undertaking short-term and fast track projects Implementing stricter financial management on company cash flow Implementing stricter site management to reduce material & time wastage Specializing in a particular expertise Forward contracts	***Retrenchment Strategy*** *Costing Cutting and Asset Reduction* Cutting operating costs Divestment of non-core assets Freezing staff recruitment Freezing bonuses Sale of low-income properties and facilities not in use	***Restructuring strategy*** Employing on a contract basis Specializing in a particular expertise Bidding for more projects that are within the firm's resources and capabilities Forming partnerships with other firms Management and employee training	***Investment Strategy*** Venturing into overseas market Expenditure on innovation Market diversification	***Ambidexterity strategy*** Cost/asset-cutting behaviour Targeting small than usual contracts Investment in product innovation Increasing time/expenditure on marketing Identifying the pressures and opportunities

Figure 5.2: Strategic Framework to implement for Zambian construction firms' survival during economic downturns

Research conducted by Baneriji et al (2009) stated that survival strategies during economic downturn could be divided into short term and long term. The two strategies try to answer the challenges in terms of effectiveness and efficiency (Drucker, 1977). Efficiency means doing things right, that makes certain that day-to-day operations are managed well. Effectiveness is ensuring that the business is doing the right things and the focus of the business is correct in the context of customers, competitors and industry trends. According to Sara & Dylan (2006) efficiency ensure short-term survival and effectiveness ensures long-term survival by producing profits from existing activities or projects and focusing on projects that will continue to produce profits in the future respectively. These strategies should have defined strategic direction or desired way that provide a coherent and consistent framework to achieve the desired vision of the firm.

i. Short-term strategies

As identified by Peca (2009) and Hyland (2010) the survival strategy to be applied when entering or during economic downturn or recession will depend on the company's financial position and operating style. The research showed that most companies in the Zambian construction industry used the short-term strategies for their survival during the recent economic downturn as evidenced from the findings. These were; implementing stricter financial management on company cash flow and implementing stricter site management to reduce material & time wastage. These are cost control strategies, with results similar to the research conducted by Scott (2011) and Lim et al (2010).

Short-term strategies are strategies executed quickly by managers in order to solve a difficult situation that would include salary cuts, immediate layoffs, postponing activities, preserving money and pausing employees' development (Gupta, 2009).
Some of the short-term strategies adopted by Zambian construction firms during the recent economic downturn presented in figure 5.2 include but not restricted to were:

- Undertaking short-term and fast track projects;
- Implementing stricter financial management on company cash flow;
- Implementing stricter site management to reduce material & time wastage;
- Specializing in a particular expertise ; and

- Entering into forward contracts with suppliers to protect firms against cost escalation.

Other factors recommended by respondents include;

- Pay off debts in time to reduce debt exposures; and
- Reduce cost of advertising.

According the Bidya (2009) employee management and performance are key factors to progress during economic downturn, as the firm should clearly provide the employees a proper focus and understating of their workloads.

Retrenchment Strategies

This strategy involves cutting operating costs and divestment of non-core assets with the aim of stabilizing the company's financial situation (Adaranijo, et al (2018) & Kitching, et al (2009)). Retrenchment strategy is used during economic downturn to survive rather than achieve long-term outcomes. Construction firms believe it easier to reduce cost than generate additional revenue, hence decide to retrench (Kitching, et al., 2009). According to Pearce and Michael (2006), retrenchment involves downsizing, consolidating work and departments, decrease in employment and working hours, reduced marketing expenses, staff training and high-level control.

Some of the most ranked retrenchment strategies included in the strategic framework from results of the survey include freezing staff recruitment and freezing bonuses as the most ranked strategies. The framework also outlines some other strategies that could be used by Zambian construction companies to survive economic downturns like the recent 2015 – 2017. These strategies offer a positive perspective as they enable firms to reassess their portfolios by considering their core values and at the same time expanding productivity through reduced working expenses and divestment of non-core business.

The drawback of this strategy is that cutting cost and resource could disadvantage the firm's ability to perform well when economy expands.

ii.   **Long-term strategies**

Survival of companies during economic downturn depends their operational styles to implement major business strategies to achieve long-term goals. Before a strategic business plan could be formulated, Sara & Dylan (2006) outlined that firms have to evaluate their strategic position by understanding market pressures, threats and opportunities, assessing their strategic ability and evaluating both the enablers and limitation of the strategy selected. Some of the effective long-term strategies that Zambian construction companies could use in economic downturn include: restructuring, investment and ambidexterity.

Restructuring strategy

 Survival during economic downturn means adjusting the companies need to meet the challenges. According to Parambath and Udawatta (2017), restructuring strategy involves profitability of the company by reorganising the ownership, operational, legal and other structure plus better management of resources to meet the prevailing needs. Restructuring process covers changes in operations and production, cost and performance improvement that could be achieved by outsourcing skills and services to specialized firms (Parambath & Udawatta, 2017). Production structuring could be utilized by clients in construction industry by getting value for their money through use of specialized consultants and contractors.

The strategic framework shows the restructuring strategies used by Zambian construction firms during the recent economic downturn. The strategies include:

- Employing on a contract basis
- Specializing in a particular expertise
- Bidding for more projects that are within the firm's resources and capabilities
- Forming partnerships with other firms
- Management and employee training

Geroski and Gregg (1994) stated that lay off excess staff and training of employees is useful for effective restructuring combining them with fundamental plan to accommodate most part of old structure layers.

Investment strategy

During economic downturn, construction firms choose to adapt and purse investment opportunities in new products, services and processes to exploit competitor weakness, achieve or extend a competitive advantage during the economic downturn period and beyond (Adaranijo, et al (2018) & Kitching, et al (2009)). Therefore, this strategy should be implemented by construction firms that see economic downturn as a chance to invest, innovate and enter new markets in order to get a competitive advantage (Parambath & Udawatta, 2017). According to Norley et al (2008), many prominent companies took advantage of recession and launched successful business. Because of the risk of the strategy, many firms are usually too preoccupied with short-term survival to think about innovation and growth, or lack the resources to implement such strategies effectively, hence if the strategy is well-implemented long-term success is assured (Adaranijo, et al., 2018).

The large digital transformation that the construction industry is undergoing, it is essential to invest in new skills as the firm focus on long-term sustainability. This entail future quality of skilled workforce and not concerned about future quantity. Investment in skilled workforce by a construction firm would be vital to the rapid digital transformation, through disruptive technologies such as Building Information Modelling (BIM), wireless sensing, big data and analytics, 3D printing, and autonomous equipment (World Economic Forum, 2017).

The strategic framework developed for this study shows some of the investment strategies used by Zambian construction firms. These strategies include:

- Venturing into overseas market ;
- Expenditure on innovation; and
- Market diversification.

Attainment of sustainable future for the Zambian construction industry needs firms that see challenges as an opportunity for growth done through investment strategies, better forward planning and coordination framework. Investment strategies however, need assets, funds, administrative capabilities and technical expertise to implement them (Rumelt, 2009).

Ambidexterity strategy

This strategy is a hybrid of investment and retrenchment. During economic downturn most firms survive or adapt through judicious cost/asset cutting behaviour and through investment in product innovation and market development (Adaranijo, et al., 2018). Therefore, during economic downturn/recession when market selection pressure is severe it is important to choose the appropriate investments to make and costs to cut takes on additional importance.

Parambath and Udawatta (2017) in their study outlined that long-term success need a balance between exploration and exploitation by organisations. Raisch and Birkinshaw (2008) explained the concept of exploration and exploitation. Exploitation encompasses processes of refining and extending the current capabilities, technologies, expertise while exploration contains testing and discovering new alternatives. Gulati et al (2010) further explains that organisations with efficient management plans can survive in a recession and effective strategies can be planned by identifying the pressures and opportunities.

In times of economic downturn, adaptability as shown in the survival guide of figure 5.1 is crucial and construction firms should have ability to move quickly towards new opportunities and adjusting to the volatile markets (Kitching, et al., 2009). Nevertheless, alignment is significant as the ability to adapt because successful companies should not just go for new opportunities but should have the "ability to exploit the value of the proprietary assets and roll out existing business models quickly" (Birkinshaw & Gibson, 2004). Therefore, as a long-term strategy, ambidexterity is an attribute that includes both adaptability and alignment for a company to succeed. However, the challenge is to keep a balance between adaptability and alignment. Focus too much on alignment means short term results but changes in industry blindsides the company soon than later. At the same

time focusing too much on adaptability means building tomorrows business at the expense of today.

In other words, companies should not just aim for exploring the future, discontinuous innovation, targeting for new customers or even revolutionary change but also have to, at the same time, focus on existing customers, incremental innovations and evolutionary change (Adaranijo, et al., 2018).

The strategic framework developed for this study shows some of the ambidexterity strategies used by Zambian construction firms. These strategies include:

- Cost/asset-cutting behaviour;
- Targeting small than usual contracts ;
- Investment in product innovation;
- Increasing time/expenditure on marketing; and
- Identifying pressures and opportunities.

These strategies fall within the types of ambidexterity strategies namely: structural and contextual. These are define as (Birkinshaw & Gibson, 2004):

Structural ambidexterity is creating separate structures from different type of activities. Contextual ambidexterity calls for employees to make choices between alignment orientated and adaptability oriented activities in their context of day-to-day work.

The disadvantage of this strategy is that it is difficult to structure and operate, requires extensive planning and unsuitable for small firms.

5.3 Summary

The chapter presented the developed strategic framework with Zambian construction industry findings used to formulate it. The formulated framework could help construction companies survive economic downturns like the 2015 – 2017. It showed various strategies that could be used but they should suit the financial status and operational capacity of firms. The next chapter contains the limitations, conclusion and recommendations of the study.

CHAPTER 6. CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The previous chapter presented the strategic framework to assist Zambian construction company survive economic downturns. This chapter presents the conclusion of the research whose aim was to investigate the impact of the recent economic headwinds on the construction industry's sustainability and propose a framework to address the key challenges identified.

6.2 Conclusion

The construction industry had significant challenges during the economic downturn, which had severe impacts on construction firms, who had little choice but to focus on survival in the short-term. The research identified and investigated several effects that the industry had to contend with during the 2015 - 2017 economic downturn, if the effects were currently being experienced, investigated the strategies used during economic downturn and established a strategies framework.

6.2.1 Impact of 2015 – 2017 Zambia's economic recession

The study identified eighteen effects of economic recession to the construction industry. An assessment of the effects of the 2015 -2017 economy recession in Zambia concluded that these effects negatively affected the Zambian construction industry as evidenced from the findings. The study found that during the 2015-2017 economic downturn, the effects with more than 60 percent included delayed approval of the invoices by the client (public), delayed payment to contractors and consultants, limited availability of funding, rising prices of construction materials, increased interest rates, low liquidity, termination/suspension of projects, project cost overrun and loss of the employment. These findings agree with the reviewed literature. Spearman's correlation showed that low investment from government and private investors, delayed approval of invoices by Client (Private), termination/suspension of projects, delayed payment to Contractors and Consultants, high tender valuations and lack of advance payment as effects with a positively strong relationship at 1 percent level of significant.

6.2.2 Effects of post economic downturn in Zambia

The study assessed the state of the construction industry post economic recession by investigating the difference in the effects experienced in the 2015 -2017 Zambia's economic recession. The study found delayed approval of invoices by the client (public), delayed payments to contractors and consultants, rising prices of construction materials, corporate failures arising from inappropriate management of risk, government spending cuts, access to affordable credit, low liquidity, termination/suspension of projects and projects cost overrun as effects presently experienced at with more than 60 percent frequency. These findings agree with the reviewed literature, as most effects are present during the recovery period of the economy. The effects post economic downturn are similar to the ones during 2015 -2017 Zambia's economic recession. In conclusion, the ZCI is still experiencing the effects of the economic downturn.

6.2.3 Strategies used to survive 2015 – 2017 Zambia's economic recession and the framework

The study identified twenty-one strategies that could be used by a construction firm to survive economic recession. The study found that: implementing stricter financial management on company cash flow; implementing stricter financial management on company cash flow; employing on a contract basis, freezing staff recruitment; entering into forward contracts with suppliers to protect firms against cost escalation; undertaking short-term and fast track projects; venturing into overseas market; specializing in a particular expertise; and laying off employees as most utilised strategies by Zambian construction companies to survived the 2015 -2017 economic recession.

The strategic framework was established from strategies that Zambian construction companies utilized during economic downturn. The strategies were classified as short-term and long-term. The most utilized short-term strategies were implementing stricter financial management on company cash flow and implementing stricter site management to reduce material & time wastage. Long-term strategies were categorised as restructuring, investment and ambidexterity. Restructuring strategy was the most utilized that included employing on contract basis as the most effective. The formulated strategies should be

74

used as cyclic process with constant feedback, consultation and learning. It should be implemented based on their financial status and operational capacity.

6.3 Limitations

The research reported had some limitations. The research focused on construction firms from a holistic point of view. However, the findings might vary from one construction firm to the other. Nevertheless, the basic principles certainly encompass most forms of construction.

Despite the different challenges that the private and public sectors experienced in the construction industry during economic downturn, the results highlighted in the study are includes all forms carried out from contractors, clients and consultants in the Zambian construction industry. The strategic framework needs all levels of understanding imbedded in the organization work culture and climate from top to bottom management. Different economic downturns have different challenges, however, some factors are usually present and similar strategies could assist in the survival of construction firms.

6.4 Recommendations

1. During economic downturn, the ministry of labour should revised the short-term contract from six (6) months to at least twelve (12) months in order to have job security.
2. Economic recession should not be viewed a challenge only but as an opportunity to adapt and align a business to meet short terms at the same time building a business for tomorrow.
3. Government should introduce policies that will stabilize macroeconomic variables in economic downturns.
4. Government should liquidate contractors and consultants in economic recession to maintain desirable construction output.

6.5 Area of further Research

1. Further studies are required to understand the relationship of survival strategies and organizational operation style.

REFERENCES

Abimbola O. W. & Keith C., 2013. The South African Construction Industry: Perceptions of Key Challenges Facing Its Performance, Development and Growth. *Journal of Construction in Developing Countries,* pp. 65-79.

Adaranijo, L. O., Bakare, L. A. & Ajiteru, W. O., 2018. Exploration of Firms' Survival Strategies Amidst Economic Recession in Nigeria. *International Journal of Business & Law Research,* II(6), pp. 20-30.

AEO, 2014. *African Economic Outlook.* [Online] Available at: http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/2014/pdf/CN_Long_EN/Zambia.pdf

AfDB, OECD & UNDP, 2016. *African Economic Outlook: Sustainable Cities and Structural Transformation,* s.l.: s.n. Anon., n.d. [Online].

Banda, D. E., 2016. *Sampling Techniques and Sample Sizes.* [Art] (The University of Zambia).

Banerji, S., McArthur, N., Mainardi, C. & Ammann, C., 2009. *Recession Response: why companies are making the wrong moves.* s.l.:Booz & Company.

Bank of Zambia, 2015. *Annual Report 2015,* Lusaka: Bank of Zambia.
Bank of Zambia, 2016. *Annual Report 2016,* Lusaka: Bank of Zambia.

Bank of Zambia, 2016. *Monetary Policy Committee Statement.* [Online] Available at: http://www.boz.zm/monitory-policy-decisions.htm [Accessed 13 February 2017].

Bhagatkar, S. V. et al., 2015. Consequences of Economic Downturn on Construction Industry and its Remedies. *International Journal of Civil Engineering and Technology (IJCIET),* 6(2), pp. 79-86.

Bidya, D., 2009. A study on Performance Management through Recession Metrics during Downturn. *Advances in Management,* 2(10).

Birkinshaw, J. & Gibson, C., 2004. *Building ambidexterity into an organization.* Irvine, MIT Sloan Management Review, pp. 47-55.

CabinetOffice, 2004. *Strategy Survival Guide.* London SW1A 2WH: Prime Minister's Strategy Unit.

Central Bank of Nigeria, 2012. *Economic Recession. Understanding Monetary Policy, Series No. 14.,* Abuja: s.n.

Construction Industry Council , 2009. *The Impact of Recession on Construction Professional Services: A view from an economic perspective,* London: s.n.

CSO, 2015. *2014 Labour Force Survey Report.* [Online] Available at: http://www.zamstats.gov.zm/report/Lcms/LCMS [Accessed 13 February 2017].

Daniela, R., Mária, B. & Lucia, J., 2016. *Analysis of the Construction Industry in the Slovak Republic by Bankruptcy Model.* Dubai, UAE, Elsevier Ltd..

Drucker, P., 1977. *Management: Tasks,Responsibilities, Practices.* UK: Pan Books.

Dutta, S., 2006. *Introductory ECONOMICS (Micro and Macro). A Textbook for Class XII.* New Delhi: NEW AGE INTERNATIONAL (P) LIMITED, PUBLISHERS.

El-Rufai, N., 2011. *Still on Infrastructure Deficits. Thisday Newspaper.* [Online] Available at: www.onlinethiday.com [Accessed 20 February 2017].

European Construction Industry Federation, 2008. *Annual Report 2008,* s.l.: s.n.

Galbreath, J., 2005. Which resources matter the most to firm success? An exploratory study of resource-based theory. *Technovation ,* Volume 25, p. 979–987.

Geroski, P. & Gregg, P., 1994. *Corporate restructuring in the UK during the recession: Business Strategy Review.* 2nd ed. s.l.:s.n.

Guion, L. A., Diehl, D. C. & McDonald, D., 2014. *Triangulation: Establishing the Validity of Qualitative Studies,* s.l.: ResearchGate.

Gulati, R., Nohria, V. & Wohlgezogen, F., 2010. *Roaring Out Of Recession. Harvard Business Review.* s.l.:s.n.

Gupta, U., 2009. *Recession: causes, problems and effects.* New Delhi: Abhishek Publications.

Hillebrandt, P. M., Cannon, J. & Lansley, P., 1995. The Construction Company In and Out of Recession. In: London: Macmillan.

Hyland, P. (2010). *Organisational responses to financial crisis: An exploration study of various strategies,* SIROTA Survey Intelligence.
Iqbal, A. & Vitner, M., 2010. The deeper the recession, the stronger the recovery: is it really simple?. *Business Economics,* Volume I, pp. 22-31.

IMF, 2016. *World Economic Outlook: Subdue Demand - Symptoms and Remedies.* [Online] Available at: http://www.imf.org/external/pubs/ft/weo/2016/02/ [Accessed 13 February 2017].

IMF, 2017. *World Economic Outlook Update: A Shifting Global Economic Landscape.* [Online] Available at: http://www.imf.org/external/pubs/ft/weo/2017/update/01/ [Accessed 1 February 2017].

Iqbal, A. & Vitner, M., 2010. The deeper the recession, the stronger the recovery: is it really simple?. *Business Economics,* Volume I, pp. 22-31.

Kaliba, C., Muya, M. & Mumba, K., 2009. COST ESCALATION, SCHEDULE OVERRUNS AND QUALITY SHORTFALLS ON CONSTRUCTION PROJECTS. *International Journal of Project Management,* 27(5), p. 522 – 531.

Kaoma, C. C., 2016. *CRAFTS SKILLS GAPS IN THE CONSTRUCTION INDUSTRY IN ZAMBIA,* Lusaka: s.n.

Khare, P., Kumath, S. & Agarwal, P., 2017. Effect of Economic Slowdown on Construction Industry. *IJEDR,* 5(2), pp. 257-260.

Kitching, J., Blackburn, R., Smallbone, D. & Dixon, S., 2009. *Business Strategies and Performance during difficult economic conditions.* s.l.:Department of Business Innovation and Skills (BIS).

Konnur, B. A. & Hundekar, A. L., 2008. Restructuring Strategy for Construction Companies through RBV Theory. *IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE),* Issue 2278-1684, pp. 24-29.

Kothari, C. R., 2004. *Research Methodology : Methods and Technques.* 2nd ed. New Delhi: New Age International (P) Ltd., Publishers.

Kothari, N., 2011. Impact of the Global Recession on the FDI Flows in India - A special reference to Housing Sector. *Annals of Management Research,* I(1), pp. 28-35.

Lim, B. T. H., Oo, B. L. & Ling, F., 2010. The Survival strategies of Singapore contractors in prolonged recession. *Engineering, Construction and Architectural Management ,* 17(4), pp. 387-403.

Luus, C., 2003. *The Absa residential property market database for South Africa: Key data trends and implication. Proceedings: The IMF/BIS Conference on Real Estate Indicators and Financial Stability.* Washington DC, s.n.

Machí, C. T., Pellicer, E., Yepes, V. & Picornell, M., 2013. *Impact of the economic crisis in construction: a perspective from graduate students.* Cyprus, Elsevier Ltd.

Martin, C., 2016. *FlexMR.* [Online] Available at: https://www.flexmr.net/blog/quantitative-research/2016/2/sample-size-calculator.aspx [Accessed 28 April 2018].

Milford R., 2010. *Public capacity payment and procurement issues should be a challenge to the operations of contractors in South Africa.* Durban, South Africa, s.n.

Ministry of Finance, APRIL 2017. *2016 ANNUAL ECONOMIC REPORT,* LUSAKA: Ministry of Finance.

Mukelabai, I., 2016. *State of the economy.* [Online] Available at: http://www.jctr.org.zm/images/stories/NewsCoverage/Quarter_1_state_of_the_economy _address_to_media_houses.pdf [Accessed 9 February 2017].

Mukucha, C., Mphethi, R. & Malukele, M., 2010. *The Impact of global economic recession on the construction industry of South Africa.* s.l., ResearchGate.

Nistorescu , T. & Ploscaru, C., 2009. Impact of Economic and Financial Crisis in The Construction Industry. pp. 25-26.

Norley, L., Marshall, P. & Swanson, J., 2008. *A Practitioner's Guide to Corporate Restructuring.* s.l.:City & Financial Publishing.

Olanrewaju, O. I., Idiake, J. E., Oyewobi, L. O. & Akanmu, W. P., 2018. Global Economic Recession : Causes and effects on Nigeria Building Construction Industry. *Journal of Surveying, Construction and Property (JSCP),* 9(1), pp. 9-18.

Olatunji, A. O., 2011. Exploring the Performance of Australian Construction Industry in a Recent Global Recession. *KICEM Journal of Construction Engineering and Project Management,* 1(3), p. 2.

Parambath, Z. & Udawatta, N., 2017. A Framework for Property Developers to Survive in a Recession. *EPiC Series in Education Science,* Volume I, pp. 411-418.

Pearce, J. A. & Michael, S. C., 2006. *Strategies to prevent economic recessions from causing business failure.* s.l.:Business Horizons.

Peca, S. P., 2009. *Real estate development and investment : a comprehensive approach.* s.l.:Wiley Finance.

PwC, 2013. *SA construction: Highlighting trends in the South African construction industry,* s.l.: pwc.

PwC, 2016. *2016 Zambia Banking Industry Survey: Adapt to Thrive.* [Online] Available at: https://www.pwc.com/zm/en/assets/pdf/2016-banking-industry-survey.pdf [Accessed 7 June 2017].

Rai, S. & Ghavate, P., 2013. Current Infrastructure Scenario and Rise in Construction and Allied Industries in India. *International Journal of Science, Engineering and Technology Research (IJSETR),* 2(8).

Raisch, S., & Birkinshaw, J. (2008). Organisational ambidexterity: antecedents, outcomes and moderators. *Journal of Management*, 34(3), 375-409.

Ramachandra, T., Rotimi, J. O. B. & Rameezdeen, R., 2013. Direction of the Causal Relationship between Construction and the National Economy of Sri Lanka. *Journal of Construction in Developing Countries,* II(18), p. 49–63.

Rangelova, F., 2015. *Fundamentals of Economics in Sustainable Construction.* [Online] Available at: http://uacg.bg/filebank/att_8856.pft [Accessed 30 May 2017].

Rhodes, C., 2015. *Construction Industry: Statistics and Policy,* UK: House of Commons Library .

Rumelt, R. P., 2009. *Strategy in a 'Structural Break.* 1 ed. s.l.:McKinsey Quarterly.

Sahu, S. R. & Menon, S., 2011. Recessionary Challenges in Real Estate Business. *APJRBM,* 2(1), pp. 206-215.

Sara, C. & Dylan, J. E., 2006. *Enterprise and Small Business: Principles, Practice and Policy.* 2nd ed. Harlow: Prentice Hall/Financial Times.

Schroeder, R. C., Bates, K. A. & Junttila, M. A., 2002. A Resource-based view of manufacturing strategy and the relationship to manufacturing performance. *Strategic Management Journal,* 27(2), pp. 105-117.

Scott, M. B., 2011. *Survival Strategies of Services Subcontracting Firms in an Economic Downturn,* New Zealand: Unitec: Department of Construction.

SPSS BOSS, 2016. Spearman Correlation SSPS: Step - By - Step Guide, s.l.: Youtube.

SurveyMonkey, 1999-2018. *SurveyMonkey.* [Online] Available at: https://help.surveymonkey.com/articles/en_US/kb/How-many-respondents-do-I-need [Accessed 4 April 2018].

Tse, R. C. & Ganesan IV, S., 1997. Causal relationship between construction flows and GDP: evidence from Hong Kong. *Construction Management and Economics,* 15(4), pp. 371-376.

UK. Department of Business, Innovation and Skills, 2013. *UK Construction: An economic analysis of the sector.* [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210060/bis-13-958-uk-construction-an-economic-analysis-of-sector.pdf [Accessed 1 March 2017].

UNIDO, 2009. *Breaking in and moving up: New industrial challenges for the bottom billions and middle-income countries. UNIDO Industrial Development Report,* Vienna: UNIDO.

VanderStoep, S. W. & Johnston, D. D., 2009. *Research methods for everyday life : blending qualitative and quantitative approaches.* ISBN 978-0-470-34353-1 ed. San Francisco: Jossey-Bass.

Wan-pun, T., 2009. Adaptation strategies of contractors in response to recession, Hong Kong: THE UNIVERSITY OF HONG KONG.

Wernerfelt, B., 1984. A resource-based view of the firm. *Strategic Management Journal,* 5(2), pp. 171-180.

Wong, J. M. et al., 2008. *Reinventing the Hong Kong Construction Industry for its Sustainable Development,* Hong Kong: The University of Hong Kong and The Hong Kong Polytechnic University.

World Bank, 2017. *9TH ZAMBIA ECONOMIC BRIEF:Reaping Richer Returns From Public Expenditures In Agriculture,* Washington, DC 20433: World Bank Group.

World Economic Forum, 2017. *8 ways the construction industry can rebuild itself for the 21st century.* [Online] Available at: https://www.weforum.org/agenda/2017/05/construction-industry-recruit-talent/ [Accessed 17 August 2018].

World_Bank, 2016. *The World Bank: Zambia Overview.* [Online] Available at: http://www.worldbank.org/en/country/zambia/overview [Accessed 9 February 2017].

Worldbank, 2018. *The World Bank.* [Online] Available at: http://www.worldbank.org/en/country/zambia/overview [Accessed 20 July 2018].

ZambiaInvest, 2017. *Zambia Construction.* [Online] Available at: http://www.zambiainvest.com/constrution [Accessed 4 February 2018].

ZDA, 2014. *Infrastructure Sector Profile,* Lusaka: Zambia Development Agency.

ZGJP, 2014. *The Zambia Green Jobs Programme: Zambia Construction Analysis Report. Good Working Conditions Good Business?.* [Online] Available at: http://www.zambiagreenjobs.org/images/zambia/articoli/pdf/ [Accessed 13 February 2017].

APPENDICES

APPENDIX 1

Structured Interview Questions

The purpose of this study is to obtain a clear understanding on effects experienced during the period of economic downturn, those that currently been experienced and strategies used to survive economic downturn.

Please note:

- All information provided will be treated in the strictest of confidence.

Section 1. Personal Information

1.1. Name of interviewee's firm: …………………………………………………….

1.2. Interviewee's position in firm: …………………………………………...……………..

1.3. Years of experience in construction: …………………………………………………...

1.4. Are you a client, or contractor, consultant?…………………………………………

1.5. For how long has your organisation been involved in construction? …………………

Section 2. Factors and strategies

2.1. Do you have any idea of what economic downturn is? (YES/NO)

2.2 Having completed the questionnaires, what other effects did your firm experience during the 2015-2017 economic downturn?

2.3. How did these effects impact on the operation of the firm?

2.4. What would you attribute to cause these the effects?

2.5 Having experienced the economic downturn, what strategies did your firm utilized to survive?

2.6. Where these strategies effective? (YES/NO)

2.7. How best can the impact of economic downturn on construction companies be addressed?

2.7. What would you recommend on the topic of economic downturn and impact on construction firms?

2.8. Do you think a strategic framework is need to help construction firms survive economic downturn in the foreseeable future? (YES/NO)

The End!

Thank you for taking time to participate in the interview.

Cover letter for the Questionnaire

THE UNIVERSITY OF ZAMBIA

School of Engineering

Department of Civil and Environmental Engineering

P.O Box 32379, Lusaka.

CELL: +260979722256, Email: kalislindi@gmail.com

15th June, 2018

Dear Sir or madam

QUESTIONNAIRE SURVEY ON IMPACT OF ZAMBIAN ECONOMY ON THE ZAMBIAN CONSTRUCTION INDUSTRY.

I am currently undertaking a Master of Engineering degree in Construction Management at the University of Zambia. My topic of research is "**The Impact of the Zambian Economy on the Sustainability of the Construction Industry**''

This study endeavours to investigate the impact of the recent economic headwinds on the construction industry by accessing the current state of the construction industry and identifying the factors that the Zambian construction industry had to contend with during the economic downturn. The information obtained will be used to develop a framework that could be used to strengthen the sustainability of firms and ultimately the industry for unforeseeable future headwinds.

Attached is a questionnaire, and based on your experience in construction field, kindly take part in this survey by completing it. Please answer all questions where possible. All the information gathered will be treated as confidential and will be used only for the purpose of the research.

Should there be queries, please get in touch with the undersigned using the address provided. Thank you in advance for your time and assistance.

Yours faithfully,

Lindi Emmanuel Manzi (Master of Engineering Student)

QUESTIONNAIRE

All the information provided will be treated with the highest level of confidentiality.

The Impact of the Zambian Economy on the Sustainability of the Construction Industry

The purpose of this study is to investigate the impact of the recent economic headwinds on the construction industry sustainability and propose a framework to address the key challenge identified for the industry's sustainability.

Please respond to the following questions by choosing the appropriate answer in the space or box provided. Use a tick [√] for the box or state.

Kindly note:

  ➢ The answers should be based on your knowledge and experience in construction projects.
  ➢ All information provided will be strictly confidential.

SECTION 1:   RESPONDENT'S BACKGROUND INFORMATION

1.1   What is your field of specialization?

Construction   [   ]

Construction Management   [   ]

Other please specify…………………….

1.2. What is the highest level of education attained? Please tick

O'level   [   ]

Certificate   [   ]

Diploma   [   ]

Bachelor Degree   [   ]

Master   [   ]

Doctorate   [   ]

1.3. What is your position in the organisation?

Junior management   [   ]

Middle management   [   ]

Senior management   [   ]

Director   [   ]

1.4. What role is your organisation involved in?

Contractor   [ ]

Consultant   [ ]

Client/ Client representative   [ ]

Other please specify…………………………………

1.5. If your answer in question 1.4 is contractor, what grade is your firm according to the National Council for Construction (NCC) registration? Else go to 1.6

1-3   [ ]

 4-5   [ ]

6   [ ]

1.6. What type of sector is your firm?

Public   [ ]

Private   [ ]

1.7. What type of contracts is your firm involved in?

Public   [ ]

Private   [ ]

Both   [ ]

1.8. What experience do you have in construction projects?

Over 15 years   [ ]

10-15 years   [ ]

5-10 years   [ ]

0-5 years   [ ]

1.9. What is the approximate annual turnover of your company? Tick the number on corresponding size

More than US$ 10 million	US$ 6 - 10 million	US$ 1 – 5 million	Less than US$ 1 million

SECTION 2: FACTORS THE ZAMBIAN CONSTRUCTION INDUSTRY HAD TO CONTEND WITH DURING ECONOMIC HEADWINDS AND CURRENT STATE OF THE INDUSTRY.

2.1 Step 1: Please indicate by (**YES/NO**) the effect that your company had to contend with during the period of economic downturn from 2015 to late 2017

Step 2: If step 1 is YES rate the effect by the use of the Likert scale to indicate how it affected the construction industry and its severity and if NO rate based on your experience.

Step 3: Please indicate if the effect is **currently** being experienced by (**YES/NO**) without rating.

Where

How often or frequently does the effect affect the sustainability of the construction firm and construction industry during economic headwinds

   (1= Not frequent, 2= moderately frequent, 3= frequent, 4= Very Frequent)

For Severity on sustainability of construction industry

 (1= Not severe, 2= weak effect, 3= Severe, 4= Very Severe)

S/N	Effects	Effect experience between 2015-2017 (**YES/NO**)	Frequency				Severity				Is the effect currently experienced ?(**YES/NO**)
			1	2	3	4	1	2	3	4	
1	Rising prices of construction materials										
2	Limited availability of funding										
3	Corporate failures arising from inappropriate management of risk										
4	Government spending cuts										
5	Access to affordable credit										
6	Increased interest rates										
7	Low government investment on new projects										
8	Low investment from private investors										
9	Loss of employment										
10	Low liquidity										
11	Delayed approval of invoices by Client **(Private)**										

12	Delayed approval of invoices by Client **(Public)**										
13	Delayed payment to Contractors and Consultants										
14	Termination/suspension of projects										
15	High tender valuations										
16	Lack of advance payment										
17	Project cost overrun										
18	Penalties from Institutions like NAPSA, ZRA										
Indicate other factors not on the list below											

SECTION 3: STRATEGIES USED TO SURVIVE THE ECONOMIC DOWNTURN.

Step 1: Please indicate by YES/NO the strategy that your company utilised during the period of economic downturn from 2015 to late 2017

Step 2: If step 1 is YES rate the strategy used based on its effectiveness and if NO rate the strategy based on your experience for its effectiveness to the survival of the company/companies during economic downturn.

Rating Scale

(1 = Unsatisfactory, 2 = Inconsistent, 3= Effective, 4 = Highly Effective, 5 =Very Satisfactory)

Strategies used to Survive the Economic Downturn

S/N	Strategies	Has your firm used in strategy? (**YES/NO**)	Effectiveness				
			1	2	3	4	5
1	Implementing stricter site management to reduce material & time wastage						
2	Implementing stricter financial management on company cash flow						

3	Employing on a contract basis							
4	Freezing bonuses							
5	Freezing salaries of employees							
5	Laying off employees							
6	Freezing staff recruitment							
7	Cutting employees' salaries							
8	Converting permanent employees into temporary placement/ contract work							
9	Bidding for more projects that are within the firms resources and capabilities							
10	Specializing in a particular expertise							
11	Undertaking short-term and fast track projects							
12	Increasing time/expenditure on marketing							
13	Setting limits on project size so that any failure of one project would not endanger the firms operation							
14	Targeting small than usual contracts							
15	Entering into forward contracts with suppliers to protect firms against cost escalation							
16	Forming partnerships with other firms							
17	Bidding for projects with tiny/zero profit margins							
18	Diversifying into different non-construction related business							
19	Bidding for projects below cost							
20	Venturing into overseas market							
21	Acquiring projects from defunct companies							
Indicate other strategies used which are not on the list below								

Other Recommendations:

_____
_____
_____
_____
_____
_____
_____
_____
_____

_____
_____
_____
_____
_____
_____

SECTION 4: FRAMEWORK FOR ECONOMIC DOWNTURNS

4.1   In times of economic downturns, do you think there should be systematic framework with strategies to help companies survive?

YES   [   ]

NO   [   ]

Thank you for completing the questionnaire