

T.C.
ISTANBUL AYDIN UNIVERSITY
INSTITUTE OF GRADUATE STUDIES



**LIQUIDITY AND CAPITAL RISK IN THE CONTEXT OF FINANCIAL
RISK MANAGEMENT: A RESEARCH ON THE PUBLICLY TRADED
CEMENT COMPANIES IN NIGERIA**

MASTER'S THESIS

ABDULSALAM FAROUQ AMINU

Department of Business
Business Administration Program

August, 2021

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August, 2021

ONAY SAYFASI

DECLARATION

I hereby declare with respect that the study “Liquidity and Capital Risk in the Context of Financial Risk Management: A Research on the Publicly Traded Cement Companies in Nigeria”, which I submitted as a Master project, is written without any assistance in violation of scientific ethics and traditions in all the processes from the Project phase to the conclusion of the thesis and that the works I have benefited are from those shown in the Bibliography. (01/08/2021)

ABDULSALAM FAROUQ AMINU

FOREWORD

I will start by appreciating everyone that has a hand in whatever capacity, in making this work a reality. It has certainly been a long and strenuous journey, whatever has a beginning will certainly have an end. My sincere gratitude to Allah, made this journey possible to see out. My parents, I am grateful for this great opportunity, you helped financially and morally to see out this journey. Your prayers and words kept me going.

I could not have done this without Dr. Cuneyd Ebrar Levent. Your knowledge, advice, patience and drive helped me to concur every obstacle and face the journey head on, you were a beacon of support and gave me hope when I seemed lost, thank you.

I am grateful to the institution at large for the opportunity to study under the tutorship of great professors and get the necessary guide to succeed in making my research. I cannot thank you enough.

To all the authors that made articles and books available to use and tap from the great knowledge provided, I am grateful and overjoyed for the immense contributions. To the Nigerian Stock Exchange, official websites of the companies and other financial articles that provided me with the accurate and timely data sources, I am thankful.

Finally, to all my family, Hawwa Lamis, Hadiza Musa, Amjad, Raza, and everyone that helped, motivated and guided me in any way I say a big thank you.

August,2021

ABDULSALAM FAROUQ AMINU

LIQUIDITY AND CAPITAL RISK IN THE CONTEXT OF FINANCIAL RISK MANAGEMENT: A RESEARCH ON THE PUBLICLY TRADED CEMENT COMPANIES IN NIGERIA

ABSTRACT

Financial risk management is the process of understanding and managing financial risks that a company has the potential to face in the future. In the modern approach, a holistic management process is recommended instead of treating risks independently from each other. However, in order to manage the risks, the components that make up the financial risks must also be identified. Liquidity risk and capital risk are among the most important of these components, and they play a more critical role in industrial enterprises that require significant investment in fixed assets. In this context, this thesis focuses on the management of these risks in industrial companies. The research aims to analyse the liquidity and capital risks in the non-metallic mineral industry in Nigeria, which is the most populous country and has the highest GDP in Africa.

The scope of the research consists of the cement companies listed on the Nigerian Stock Exchange (NSE). Companies operating in this industry contribute not only to the economy of Nigeria, but also to the economies of those countries with their many production facilities in West, Central and South Africa. The time period of the research is from 2011 to 2020, in this respect, it covers the recovery period after the 2008 crisis as well as during Covid-19 pandemic. Since the data of some companies could not be reached in the relevant years, an unbalanced panel data set was created. All data used in the study were collected from the audited annual reports of the companies.

The research findings point to a trend towards a decrease in both liquidity and capital risk in the sector examined. However, the findings show that there are still significant risks in the industry, especially in the context of liquidity risk - which are

measured by three different parameters. Although there is an increase in capital risk in the Covid-19 pandemic, it is seen that these risks of companies are at a manageable. The industry analysed in the research continued both its activities and growth, unlike the service sector, which suffered significantly in the pandemic. In the econometric analysis part of the research, the determinants of liquidity and capital risks were investigated and their effects on financial performance were emphasized. Finally, recommendations for managing these risks and expectations for the future of the sector are also presented in the thesis.

Keywords: Financial risk management, Liquidity risk, Capital risk, Financial markets, Cement industries, Nigerian Stock Exchange

FİNANSAL RİSK YÖNETİMİ BAĞLAMINDA LİKİDİTE VE SERMAYE RİSKİ: NİJERYA'DA HALKA AÇIK ÇİMENTO ŞİRKETLERİ ÜZERİNE BİR ARAŞTIRMA

ÖZET

Finansal risk yönetimi, bir şirketin gelecekte karşılaşma potansiyeline sahip olduğu finansal riskleri anlama ve yönetme sürecidir. Modern yaklaşımda riskleri birbirinden bağımsız olarak ele almak yerine bütüncül bir yönetim süreci önerilmektedir. Ancak risklerin yönetilebilmesi için finansal riskleri oluşturan bileşenlerin de belirlenmesi gerekmektedir. Likidite riski ve sermaye riski bu bileşenlerin en önemlileri arasında yer almakta ve önemli sabit kıymet yatırımı gerektiren sanayi işletmelerinde daha kritik bir rol oynamaktadır. Bu bağlamda, bu tez endüstriyel şirketlerde bu risklerin yönetimine odaklanmaktadır. Araştırma, Afrika'nın en kalabalık ve en yüksek GSYİH'ya sahip ülkesi olan Nijerya'daki taş ve toprağa dayalı endüstrisindeki likidite ve sermaye risklerini analiz etmeyi amaçlamaktadır.

Araştırmanın kapsamını Nijerya Menkul Kıymetler Borsası'nda (NSE) işlem gören çimento şirketleri oluşturmaktadır. Bu sektörde faaliyet gösteren firmalar Batı, Orta ve Güney Afrika'da bulunan birçok üretim tesisi ile sadece Nijerya ekonomisine değil, aynı zamanda bu ülkelerin ekonomilerine de katkı sağlamaktadır. Araştırmanın zaman periyodu 2011'den 2020'ye kadar olup, bu yönüyle Covid-19 salgınının yanı sıra 2008 krizi sonrası toparlanma sürecini de kapsamaktadır. İlgili yıllarda bazı firmaların verilerine ulaşılamadığı için dengesiz bir panel veri seti oluşturulmuştur. Araştırmada kullanılan tüm veriler, şirketlerin bağımsız denetlenmiş faaliyet raporlarından toplanmıştır.

Araştırma bulguları, incelenen sektörde hem likidite riskinde hem de sermaye riskinde bir azalma eğilimine işaret etmektedir. Ancak bulgular, özellikle üç farklı parametre ile ölçülen likidite riski bağlamında, sektörde hala önemli risklerin

olduđunu gstermektedir. Covid-19 pandemisinde sermaye riskinde artış olsa da Őirketlerin bu risklerinin ynetilebilir dzeyde olduđu grlmektedir. AraŐtırmada incelenen sektr, pandemiden nemli lde zarar gren hizmet sektrnn aksine hem faaliyetlerini hem de bymesini srdrmŐtr. AraŐtırmanın ekonometrik analiz blmnde, likidite ve sermaye risklerinin belirleyicileri araŐtırılmıŐ ve bunların finansal performans zerindeki etkileri zerinde durulmuŐtur. Son olarak bu risklerin ynetilmesine ynelik neriler ve sektrn geleceđine ynelik beklentiler de alıŐmada sunulmaktadır.

Anahtar Kelimeler: Finansal risk ynetimi, Likidite riski, Sermaye riski, Finansal piyasalar, imento endstrisi, Nijerya Menkul Kıymetler Borsası

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I. INTRODUCTION

Risk is a broad term discussed in different sectors but unequivocally has the same meaning somewhat – uncertainty and possible loss in the aftermath. As uncertainty gets overbearing, the company eventually needs to take a different approach to mitigate the consequences of that risk or face either liquidation or other financial implications – thus the importance of understanding risk and from where it stems (Gabriel & Baker, 1980). The above statement tells us how important it is for companies and organizations to investigate, study and put buffers for when uncertainty creeps in. We do not know and cannot predict future events in financial markets

As everyone goes down that road of self-sustainability, risks only increase. Researchers have found that less volatile cash flows result in a lower cost of capital and more investment. A group of firms using risk management will outperform other firms that do not use risk management. Also, firms using foreign exchange derivatives had higher market value than those that did not. Therefore, it paints a rosy picture of the benefits of using risk management in the corporate sector (Horcher, 2005).

There are many risks associated with businesses. Some of these can be listed as follows: Capital risk, liquidity risk, market risk, foreign exchange risk, credit risk, interest rate risk. This thesis aims to evaluate liquidity and capital risk management among these risks. As a sample, publicly traded cement companies in Nigeria are examined.

The Nigeria cement industry is massive and self-sufficient. Nigeria now exports cement to neighboring countries in Africa and is ahead of the curve. With a massive deposit of limestone in the country, it is easy to consider this industry as having huge potential.

In terms of operational/annual dispatch, Dangote cement PLC as of the end of the year 2019, was able to dispatch 14.1 mmtpa (Dangote Cement, 2021). As of the

end of the year 2019, BUA cement PLC was able to dispatch 11mmtpa from its combined operations in Nigeria's southern and North-western parts (Bamidele, 2020). Lafarge Africa PLC came in 3rd with an annual dispatch for the end of 2020 being 10.5mmtpa (Lafarge Cement Nigeria ,2021).

Dangote cement plc has had a 13.9% year-on-year increase. BUA Cement PLC saw a year-on-year increase of 47.5% (primarily due to the acquisition of and merger with the Kalambaina plant in Sokoto), and Lafarge saw a 22% increase the year ending 2018. These numbers kept rising through to the end of 2019, the beginning of 2020.

According to a Central Bank of Nigeria's purchasing managers index 2018, the rise in consumption came due to demand due to increased housing and concrete roads being built within the country by 12.5 points month on month to 62.5 pa. These significant rises and more great forecasts for the industry running into 2020 show significantly how Nigeria is becoming an African giant in the cement industry.

Nigeria no longer imports cement. This is a massive development as it finally shows Nigeria is utilizing its limestone deposits and human capital to good use. As of 2016, Dangote Cement PLC had exported 0.4 million metric tonnes of cement to neighboring countries. This development has undoubtedly lifted Nigerian spirits and will surely bring in an influx of foreign exchange within the country (Shaban, 2017).

Growth opportunities are there in this sector, Nigeria alone is overgrowing, and the need for housing is on the rise. The prospect could further be enhanced as the government was trying to give off some big-ticket infrastructure contracts. These were displayed through an Africa Investment Forum hosted by the Africa Development Bank in November 2018 (Odijie, 2020).

Nonetheless, the numbers still look good and can only worsen as Nigeria is exploiting its gas potential; this will aid in lowering the cost of energy and save up costs for the commoner. The Railway system is another avenue this present government focuses on as they try to join the country's east, west, and northern parts.

With operations in Cameroon, Congo, Ghana, Ethiopia, Senegal, Sierra Leone, South Africa, Tanzania, and Zambia, Dangote is taking the market by the neck. His international expansion might be similar to what Mr. Rabiou is trying to explore as they seek international recognition (Dangote Cement, 2021).

Nigeria is the only country self-sufficient in cement production in Africa. This can be an excellent avenue for international partnerships across Africa and maybe Asia. However, with the uncertainty in Covid-19, FOREX, and conflicts, it is an area they might want to tread very carefully. Nevertheless, the opportunities are there, and they will one day be exploited by these great visionaries.

As stated above, the purpose of this research is to make a quantitative study on the significant Nigerian cement companies in terms of financial risk management keenly, liquidity, and capital risks. This study is crucial as it fills a gap in material as adequate research has not been conducted in this field for the cement industry in Nigeria, which has done very well in getting to where it is today. Adequate research will help the individual companies, of course, and those willing to venture into the same business. Hopefully, this serves as the foundation for further work to be carried out in this regard.

Since the research focuses on the liquidity and capital risks of companies, issues such as the technical capacities and production efficiency of cement companies are not mentioned. Hence, the objective is to take financial risk management on a whole different course and study the cement industry, which aims to add to the foundation for further and future research to motivate others and head in this direction.

The Nigerian cement industry has three primary players, Dangote Cement PLC., BUA Cement PLC., and Lafarge Africa PLC. As these companies are listed on the Nigerian Stock Exchange (NSE), all data used in this research is from NSE-controlled and independently audited financial reports.

There is no need for an Ethics Committee Report. All data consists of public data, and everyone have easy access, is offered for all investors' use, and do not contain a questionnaire or survey, or interview. The researcher will fully fund the study.

In the second section of the study, following the introduction, risk and risk management are emphasized. The third section examines the issues related to financial risk management. In the fourth section, liquidity and capital risk are discussed in depth. The fifth section is the research section. Here, the liquidity and capital risks of cement companies listed on the Nigerian Stock Exchange are

analyzed. In this section, firstly the data and methodology of the research are explained, and then the research findings are given. The study ends with the conclusion part.

II. RISK & RISK MANAGEMENT

A. The Concept and Scope of Risk

Everyone nowadays is very enthusiastic about starting a business, but in fairness, not all businesses achieve success at first - some do not even take off before the crash. It is believed that almost everyone in their life has had a million-dollar idea in their head, but not everyone is willing to take the necessary risks to get unique rewards (Preston, 2012).

Risk has a lot to do with the volatility of markets and its interaction with different variables directly or indirectly. These variables are categorized based on their categories – business risks, non-business risks, and financial risks – which are further divided into capital risks, market risks, liquidity risks, and foreign exchange risks, and so on.

These variables affect the eventual performance of a company directly or indirectly; specifically, it is essential to study them and have a fundamental way of understanding them and thus finding ways to manage and mitigate them.

B. Risk and Uncertainty

Risk and uncertainty are serious problem of every company, it is paramount to be aware of them, and firms need to keep an eye out on them to maximize profit. Friberg (2016) in his study on risk and uncertainty, *defined risk* as fickle characterized by probability distribution whereas uncertain about the volatility do not follow the same distribution. He took the airlines industry as a case in point and painted this picture:

He outlined risks and uncertainties as ashy clouds that prevent the flights from taking off or a sudden change in environmental regulations and airports' landing rights as significant uncertainties that owners of such businesses wake up to every day. He made mention of risks like entry by low-cost completions on itineraries that a particular company follows. All these risks, according to Friberg (2016), can be

mitigated through acts like:

- *The benchmark strategy* means having enough money to soak up any financial risk and uncertainty that come. As stated, the more the cash, the more the ability to take hits and withstand them. Though this strategy has its limits.
- *Hedging strategy* is another way of mitigating risks, which guarantees fewer uncertainties. The author gave an example of applying forward contracts on jet fuel suppliers to hedge against future hikes in jet fuel prices. This is a risk that is applicable in the cement industry as well. We can learn from here that cement companies can go into some forwards agreement with relevant suppliers, such as gas or logistics, to ensure they have hedged a particular risk they might find themselves susceptible to. The use of derivatives is also vital as they can help us know how liquid a firm needs to offset eventual risks that may come. This overall helps us to understand another dimension of risks and uncertainties.
- *The flexible strategy* is the third one, according to this author, and what this strategy is about is making hay while the sun shines. The best way to look at this is that firms use favorable conditions to make, let us say, a production decision. It can increase production when the market looks good enough to absorb the products and cut back when the market is not favorable enough to absorb products. This method can apply to the cement industry because they can employ contract staff instead of full-time workers when there is a need for it. Alternatively, they can lease out logistics to a company instead of having to diversify in that stress. All these and many more are possibilities that may arise and save costs when necessary, improving profits along the way.
- The last is the *operational hedging strategy* that the author mentioned as simply diversifying into a different product that will generate funds. Companies need to have other investments that will give them leverage in today's world. When holding cash is not the best way as inflation, and other factors might affect it, opening a different business will be a good idea for mitigating risks, making profits, and having dominance.

In the end, the idea is to give a brief overview of these two issues of risks and uncertainties and give the people an insight on how to mitigate them.

C. Risk Sources

In an article by Tchankova (2002) that outlined the sources of risk as majorly being from the environment, a business finds itself and subdivided them into seven environments. These environments are legal environment, cognitive environment, political environment, social environment, economic environment, physical environment, and the operational environment—the environments listed above each come with their risks and hazards that a company must consider. A continuous risk assessment and management must be done depending on the frequency they see fit.

D. Classification of Risk

1. Internal – External Business Risk

Business risk can be defined as any risk that affects a company's survival, hampering its profitability and functioning ability along the way (Accountlearning, 2020). Like any other risks, business risks cannot be one hundred percent avoided, but measures are put in place to mitigate the impact and damage to the company. Business risk can be categorized into internal and external risk.

Internal business risk is any risk that affects its ability within. This can be caused by managers and also staff alike. Internal risks vary from firm to firm depending on its internal environment and its impact on the general business.

Internal risks can arise as a result of many factors. A good example is that a firm with a single product may expose itself to risks when that product is on the decline. Thereby, diversification is critical in the area. Alternatively, a weak research and development department may be susceptible to risks when their product may be outdated or fragile personnel management that may lead to a drop in morale and lack of motivation by the staff, therefore hampering the organization's growth.

Internal risks need to be treated by the management as strict rules – setting objectives and aims – and striving day in and day out in thorough housekeeping to ensure they do not shoot themselves in the foot. Almost all the time, external business risks and threats are beyond the firm's control, and each firm, based on its

environment, has a risk that is peculiar to it.

External risks are many as well, and they can come from all shapes and sizes. Consider the different governments that come into power in a democracy, in Nigeria, mainly every eight years – two terms in office of a democratically elected officer – power changes hands (albeit very few, do one term of 4 years), and with this comes its policies it wants to implement. These government policies can serve as a source of risk for businesses. Also, measurements like demography and seasonal nature of some businesses present a source of risk for businesses as demography can affect the selling power of a business that does let us say clothing for youths in an environment dominated by older population or fights and insecurity that may creep into the environment that one does their business will serve as external risk.

2. Manageable and Unmanageable Risk

According to Obonia and Obonia (2013), as the words in the title imply, risks can either be categorized into the ones that an organization can manage damage limitations or not. In knowing this, a threshold has to be set, and when that risk is under the threshold set, it is manageable in the sense that mitigative investments can be made directly to save the company and its further performance.

Nevertheless, if the damage is above the threshold set, then it cannot be saved, and that risk is deemed unmanageable and further investments to save it will prove in vain. With this in mind, adequate knowledge has to be obtained to fix a threshold and make the proper judgment to save lives and have damage limitations going forward.

3. Systemic – Systematic – Unsystematic Risk

As discussed by Chen (2020), it is when a big organization or a set of people carry out financial events that course ripple effect throughout the financial system, in the end, causing markets to collapse. This same action was one of the reasons for the global financial crisis of 2008 and a short crash in the market in 2010. The 2010 disaster was caused by the continuous buying and selling of stock by a few people, which caused the market to crash for a short period. Systemic risk is hard to foresee for now, and prevention is complex. However, researchers are doing an excellent job of using past events to prevent their occurrences and damage.

Systematic risk, on the other hand, as stated by Fontinelle (2020) is the risk that affects the entire market or a segment of the market. Systematic risk affected the world significantly in the 2008 recession and has seen been written about by numerous authors and is something managers need to study and understand. Systematic risk is unpredictable, and very difficult to mitigate its damage. However, the best way around it is when a firm engages in diversifying its funds into other businesses. For example, a drinks company can invest in cement or real estate firms, and a cement company can invest in education to have an equilibrium of funds. If the cement market is incredibly hit, the firm can make profits out of its education business. Like Warren Buffet said, only a poor man has one source of income.

Unsystematic risk is the opposite of systematic risk, as the name implies. Chen (2020) made a report on this and described the unsystematic risk as risks that affect a firm or an industry. In his report, he mentioned that unsystematic risk like systematic and systemic is unpredictable but is better mitigated through diversification of a firm's portfolio. Unsystematic risks can occur when a company is sanctioned, a strike goes on in a factory, workers rebel, or a policy is made that affects that particular industry. In this case, a company diversifying in another company unrelated to what it does is better for its survival.

These three risks affect a company in different ways, either alone in unsystematic risk, the whole market in systematic or when a few people cause a stock to crash in a financial market – no company or industry is free from them, and that is why diversification is ideal and studying stocks to see how a policy or an election might hurt the stock is very important in the survival of people and the protection of their assets.

4. Financial and Non-financial Risk

Financial risk is a term used every day in the business world, and as Hayes (2020) pointed out, financial risk deals with when a healthy subject or puts itself in a position that money invested by others will be lost. Whenever an individual invests their money into a business, he is subjecting that firm and himself to financial risk and the inevitability of a firm to pay its debts and meet its short-term obligations – liquidity risk, a familiar financial risk company. Risks like foreign investments, credit risk, capital risk, liquidity risk, interest risk, commodity risk are all examples

of financial risks that a company is can be susceptible to. Formulas and ratios can calculate this risk and take measures against it or mitigate its impact. This will further be discussed in the following chapters.

Non-financial risks areas, according to Delloite (2018) any risk that is not associated with financial risk. These risks are not in the same bracket and cannot be considered to affect the generation of profits and revenues or the company's money-making ability.

According to Kaminski, Mikkelsen, Poppensieker and Raufuß (2016), their article mentioned the negative effect of non-financial risks on banks and their magnitude by no means small. Banks take on financial risks and make handsome profits from their businesses; the impact of non-financial risks from 2008 to 2012 has seen banks lose a whopping \$200 billion within that time – all these coming through inability to meet compliance, litigations, compensation claims, and operational claims. This has proven that organizations need to be tight on these issues and find ways to tackle them head-on.

5. Operational and Strategic Risk

According to Segal (2020), operational risk is a risk that an organization is exposed to due to its daily activities. Consider a company that deals in dairy production; any problem to its machines will slow down the process of that day till it has been rectified – this is an internal risk, or as other authors have it, a human risk or failure due to human errors. It is critical to look at this risk factor when making investment decisions.

According to a report by Delloite (2013), strategic risk is a risk created by managers' strategic decisions. If a strategy is not well thought of and executed with the right personnel, it can take an industry back so many years, and they will have to build again. So, to save cost and eliminate time-wasting, this risk has to be well taken care of and eliminated.

E. Risk Management

Risk has a lot to do with the volatility of markets and its interaction with different variables directly or indirectly. These variables are categorized based on

their categories – business risks, non-business risks, financial risks, and a few, as mentioned above – which are further divided into capital risks, market risks, liquidity risks, foreign exchange risks.

These variables affect the eventual performance of a company directly or indirectly; specifically, it is essential to study them and have a fundamental way of understanding them and thus finding ways to manage and mitigate them.

F. Essential Elements of Risk Management

Risk management in terms of being effective requires an effective identification, assessment, and prioritization of various risks, followed by minimizing, monitoring, and controlling the impact of said risks.

Perez (2020) outlined five elements of risk management: Identify the risk, risk analysis, evaluate the risk, treat the risks, monitoring the risks

These items are explained below in accordance with Perez's classification.

1. Identification of Risk

Risks include any incidents causing advantages or disadvantages. The identification process of risk starts with the origins of internal problems and advantages of competition. Risks are either internal or external, so the process requires different strategies to define a wide variety of risk possibilities.

2. Risk Analysis

After the identification process is complete, it is paramount to evaluate the possible efforts that each of them has on customers' behavior, the organization, and endeavors.

3. Evaluation of Risk

The next step is the assign a rating determinant for the outcome of the risks identified. This draws a picture of the impact risk has on a project, a new product, and the threats they carry on a project and product. This stage also provides the ability to quantify each risk's magnitude and whether to change the existing strategy or formulate a new one. Magnitude is determined through a combination of the likelihood of a risk occurring and the likely results.

4. Treatment of Risk

The next stage is to stop the risks that are likely to be more severe and then put in measures to either reduce, block or put in preventive measures to get the best possible outcome for the business strategy and achieve company objectives. This can be done through a circle of processes known as risk avoidance, reduction, sharing, and retention. There is a need to identify opportunities and get the best out of that opportunity in this step.

5. Monitoring of Risk

This monitoring stage helps to understand risks, severity, and impact, the possibility of their occurrence, and how to diffuse them when they occur. Then the next thing to do is to put in variables that will make sure each risk is being monitored and objectives are met swiftly – all this is done through effective tracking and understanding chain reaction threats. This might be done through a tracking system that will identify changes, eventually treat rising risks, and avoid the eventual ripple effects of said risks.

These stages of effective risk management are vital and essential in the growth and success of every organization.

G. Enterprise Risk Management

According to Kenton (2020), enterprise risk describes the ability of an enterprise to set strategies to eliminate and control risks, which can tamper with the organization's operations and objectives. This is done through a step-by-step process that identifies, assesses, and treats risks and any other internal or external effect that may impact the organization.

Every company or industry have to utilize Enterprise Risk Management (ERM). From a managerial perspective, it is paramount to design a plan to identify operational and future risks that may stall the company's progression. The calculation of ERMs such as fluctuation in currencies, commodity price fluctuation, and changes in interest rates are easy to manage through derivatives instruments, and exposure has been easy to measure, with revenues and shortfalls going straight to the bottom line.

H. The Importance of Risk Management for Businesses

Elahi (2013) argues that proper risk management can be used to gain competitive advantage by giving an analogy using rewarded and unrewarded risks. Rewarded risks come with an eventual benefit as they are risks often taken to bring about a competitive edge to our business. These are rewarding value risks like entering a new market or introducing a new product to the market; they all come with potential risks. Another example is when someone invests in a business, this comes with risks, but with a hope that, in the long run, it will bring further benefit to that person.

According to Gilbert and Eyring (2010), the risks management process brings management and coordination within an enterprise. Because staff put their heads together to achieve a common goal, the organization is better off as everyone puts their heads together to achieve organizational success. The management level is also better off as it brings out the best in their ability to manage and motivate people onto the eventual success of their common goal – the organization's success.

III. FINANCIAL RISK MANAGEMENT

A. Financial Risk Concept

Everyone nowadays is very enthusiastic about starting a business, but in fairness, not all businesses get anywhere - some do not even take off before the crash. It is believed that almost everyone in their life has had a million-dollar idea in their head, but not everyone is willing to take the necessary risks to get unique rewards (Preston, 2012).

Financial risk has a lot to do with the volatility of markets and its interaction with different variables directly or indirectly. These variables are categorized based on their categories – business risks, non-business risks, and financial risks – which are further divided into capital risks, market risks, liquidity risks, and foreign exchange risks, and so on.

These variables affect the eventual performance of a company directly or indirectly. Specifically, it is essential to study them and have a fundamental way of understanding them and thus finding ways to manage and mitigate them.

B. Historical Development of Financial Risk Management

According to Flood (2012) financial risk management did not start, nor was it first institutionalized between 2007 to 2009. It started way before. Though a date cannot be set for when this started, institutions created to tackle financial events came about during the American Civil War in 1861, which ushered in establishing the National Banking System and Comptroller of the Currency. The Federal Reserve was established after the panic of 1907, preceding the creation of the European Systemic Risk Board in 2011. Financial risk management is not a new thing, and organizations and governments have jointly worked together to tackle issues as they arise and impact the development of financial institutions as the day passes.

With the ever-changing nature of the world – coming a long way since World

War II – the rise of super-currencies like the dollar and euro have proven a need to limit risk and expand reach from overseas investment to actual globalization. This has made it possible with the advancement of technology, but with it has come the rise of risks, and institutions have found it necessary to find solutions to the impending risks. The rise of derivatives in the 1970s became necessary, and companies are expanding their efforts to implement it.

C. Causes of Financial Risk

Financial risks can arise from 3 subgroups of events; according to Verma (2020), they are:

- Financial risks were arising from an organization's exposure to changes in market prices such as interest rate, exchange rates, and commodity prices.
- Financial risks arise from transactions with other organizations such as vendors, customers, and counterparties in derivatives transactions.
- Financial risks arise from internal actions or failures of the organization, particularly people, processes, and systems.

The above three points all lead to one risk or the other, and the management has to be on hand to identify and block the causatives to enhance his industry's growth properly. Further forward, financial risk management will be discussed in detail in the coming chapters.

D. Types of Financial Risks

Although this thesis aims to identify capital risk and liquidity risks in the light of the significant Nigerian cement companies, this research gives an overview of other financial risks to know and understand them.

1. Liquidity Risk

Liquidity Risk – measuring risks is vitally important. Before the global financial crisis of 2008, organizations were not overly bothered to calculate liquidity risk as it was not seen as an overbearing risk. Now, fast forward many years, many models have been created to detect and counteract this impending problem. (Harper, 2020). According to Harper (2020), liquidity risk is divided into market liquidity risk

and funding liquidity risk.

This research starts with an overview of funding liquidity risk. It is the main topic of our research, which deals with selling off assets quickly to generate money quickly to finance short-term debts. This is associated closely with cash flow and is a risk that generally affects the organization's cash flow. At the same time, market liquidity risk, or assets risk, deals with those assets that cannot easily be sold off quickly – the illiquid assets.

When a company uses its funds to purchase an asset, say a building, this structure is somewhat of market risk because the time to sell it is mostly long. Sometimes, taking things like depreciation and eagerness to sell (distress sale) makes a building lose its value. So, companies have to be careful not to overstretch their finances and invest in the right way.

It is important to note that liquidity risks are a function of some features. It is worthy of noting that time and substitution can both affect liquidity. In the instance of time horizon, function liquidity risk tends to apply to the short-term period. People are expected to liquidate those assets to keep the company moving on a day-to-day basis. Looking at things like investing in US treasury bonds to buffer any risks that arise due to liquidity. All this will be discussed more in detail in the next point.

In substitution, the tendency to substitute a situation with relative ease will enable us to bring down the Risk of liquidity, resulting in a lower substitution cost.

Drehmann and Nikolaou (2009) given more light on this topic, he says funding liquidity risk, although in banks, is the inability to settle or pay off immediate obligations. These can be settling suppliers, paying short-term debts owed, paying salaries, paying bills, and so on – the list is comparably long. Banks, for instance, that are not able to settle these loans have to find alternative ways to settle them, in the form of setting contingencies, substitutes, or alternative investments to meet these demands or else face the consequences. These consequences can be the Risk default for those banks, resulting in losses to shareholders and customers.

So, we know how important it is to, first of all, understand its immediate impact and be able to measure and manage it successfully.

Various studies also explain that there are two main components of funding

liquidity risk.: the future inflows and the future ability to find alternative sources to settle these debts. They further explained that there is a notable difference between funding liquidity and funding liquidity risk. The main difference is that funding liquidity is a one-time thing with no extension. It is either the company then can settle its immediate debts or not. Meanwhile, funding liquidity risk is a long-term thing, and ultimately it needs careful assessment over a long period. It is very much dependent on the time horizon.

Market liquidity risk is more or the inability of the organization to sell assets, which can easily be a result of multiple factors like market conditions or economic conditions (Harper, 2020). Risk, a company, may face because when it is held in a tight corner, its hands may be forced and sell at a lower price than what it might be worth originally. Companies have to be very careful of this and try to pursue other sources of money to avoid situations that will force them to sell off their current assets to fund liquidity.

Ganti (2020a) outlines some ways of measuring market liquidity and makes a broad point on the bid-ask spread, which is a function of the market – not the seller- and its role in measuring the liquidity risk on a particular asset. The article stated that bid price is what a client is willing to pay, while the asking price is what the owner, the company in this discussion, is willing to sell its assets at a particular window. In desperation, the difference between those two prices might differ and create a liquidity risk for the company if the difference creates a negative output.

2. Capital Risk

Capital risk is defined as the risk a company or organization is subjected to by impact of market, credit, and other risks. The ability of this company or organization to withstand this through various models and strategies is what is known capital risk management (Duff & Phelps, 2018).

Capital risks mean losing part or all of investors' money, as these investments sometimes are not guaranteed full returns due to unforeseen circumstances and risks that may arise. An investor or a company is subjected to capital risks when they invest in stocks, nongovernment bonds, real estate, a company investing in a project, and the likes. This may happen due to volatility in markets, stocks crashing, foreign exchange risks, among others (Hayes, 2020).

It is imperative to make up different models for calculating and quantifying capital risks because it clearly shows how important this is to potential investors in a company's stock. Most companies improve by writing risk potentials and the stock volatility in a "Form 10-K", highlighting the volatility of shares and the potential of investors to lose or gain. That is why companies are now cautious in making investments, studying the risk potential of specific investments or projects before embarking on them. This is done by modeling cash flows against the capital requirements of, let us say, a project in this instance, through capital risk quantification, which can be done by analyzing a capital investment in a proposed project (Hayes, 2020).

3. Credit Risk

Credit risk – This is a risk associated with a borrower's inability to pay back a loan on a stipulated time or after a promised agreement, thereby forcing the firm to incur a loss.

This default causes an interruption of cash flow and thus makes the loan more costly for the borrower. This risk can be managed when excess cash flow can be written to offset any loss in the future (Labarre, 2020).

4. Exchange Rate Risk

Exchange rate risk – this is the risk an organization may face when making international financial transactions. This results from the fluctuation in foreign currency rates that the organization may be dealing with at that particular transaction (Ganti, 2020b).

A company, for example, might set out to purchase a machine from another country, a budget will be made, and the idea is to purchase that machine at the current rate of the dollar. With uncertainty in the market, the dollar rate fluctuates, both parties (the buyer and the seller) will be at risk in any shift of the dollar rate, which they would both be keeping in mind at the time of transacting.

5. Interest Risk

Interest rate risk is a risk attached to interest-bearing assets due to the variability in the interest rates. These interest-bearing assets are things like bonds and

loans.

When interest rates fluctuate, the result is a fluctuation in fixed-income securities' values. Therefore, many parameters have been drawn to deal with interest rate risks through forwarding rate agreements and swaps (Norris, 2019).

6. Commodity Price Risk

Commodity risk is associated with many things, and its causes are mainly from raw materials. Consider the automobile industry, any change in the prices of steel and rubber will be a disaster and will either cause the final cars manufactured to increase in cost or the makers to lose a hefty chunk of their profits – either way, there is a loss.

According to Chen (2019) commodity price risk is the risk a company undergoes from the fluctuation of commodity prices – which causes a loss in revenue for the company.

The best way to mitigate against this risk is by hedging. An automobile company can choose to make forward agreements on rubber to hedge against this loss.

7. Other Financial Risks

Other financial risks are:

Market risk is defined as the risk to a financial portfolio from market prices such as equity prices, foreign exchange rates, interest rates, and commodity prices.

Every financial firm is exposed to these market risks but overall chooses the one they can most withstand. While non-financial firms might decide their core business might be financial risk and try to limit it or eliminate it (Ioan, 2012).

Equity risk – equity risk is the financial risk of owning equity in a specific investment. Equity risk primarily applies to business equity-owned through the acquisition of securities. It does not typically apply to the risk of paying into real estate or building equity in real estate.

Risks like a fall in the price of shares, no dividends shared at the end of a fiscal year, or a reduction in expected dividends return at the end of the fiscal year are all examples of equity risks (Dillow, 2011).

Business risk – these are risks that the corporation will intentionally take to maximize shareholder worth and revenues. These types of risks are noticeable in, for example, when an organization tries to expand the market by introducing a new product or entering a new market, they did not initially have a presence in (Verma, 2020).

Non-business risks – these are risks that an organization do not have any control. A perfect example of this kind of risk is economic imbalances, such as a recession or war. Under these circumstances, the company have no control and most likely do not have a hand in this whatsoever (Reddy, 2020).

E. Financial Risk Management

Financial risks are unavoidable in the business world as long as there is an influx of financial transactions, such as sales, purchases, loans, investments, acquisitions and mergers, legal transactions, new projects, and other transactions. A firm is subjected to risks as variables like market unpredictability, foreign exchange, and other risks vastly fluctuate, leading to uncertainties. (Horcher, 2005).

Financial risks management is primarily a set of methods to counteract, overcome, and deal with certain uncertainties due to actions and transactions in the financial markets. Management strictly involves assessing the risks that may affect an organization and adequately deploying various strategies to counteract those risks in line with the organization's objectives, goals, and internal policies to manage the risks.

Strategies involved in managing risks are usually taken from derivatives. Derivatives such as forwards, futures, options, and swaps are traded well within all financial institutions and organized exchanges (Bodnar, Hayt & Marston, 1998).

Financial risk management is vital in building a stable framework in a firm's development. Firms develop as they begin to create solutions, thereby solving problems and creating various solutions in the long and short term. One of the most critical uses of having solid financial risk management is balancing a firm's operations and activities to achieve various objectives in an extended period (Chun-Hoa & Jian-Min, 2012).

Financial risk management has stages; the performance evaluation stage may

help achieve well-matched systems for the particular company, building a unique culture of strategy formulation, implementation, and evaluation (Clarke & Varma, 1999).

Shedding risks through diversification through investments in bonds, bills, notes, and financial securities (Rousseau & Sylla, 2001).

Financial risk management also plays a vital role in corporate development. There is a great need to match the external providers of finance and various strategies that will be implemented for corporate development (Michnika & Lo, 2003).

Risk management in terms of being effective requires an effective identification, assessment, and prioritization of various risks, followed by minimizing, monitoring, and controlling the impact of said risks.

Perez's (2020) classification on risk management can also be applied to financial risk management.

The first of these is to identify the financial risk. The process of identifying financial risk begins with the origin of the internal problems and advantages of competition. Financial risks are internal or external, so the process requires different strategies to identify a wide range of risk possibilities. The second step is the analysis of financial risks.

The third step is to assign a rating determinant for the outcome of the financial risks identified by focusing on the possible degree of impact and threats to the financial position. This stage can also measure the magnitude of each financial risk (eg exchange rate or interest rate) and whether to modify the existing strategy or create a new strategy. The magnitude is determined by a combination of the probability of a financial risk occurring and the possible consequences.

The fourth step is to stop the risks that are likely to be more severe, and then take measures to reduce, prevent or take preventive measures to achieve the best possible outcome for the business strategy and achieve company financial goals. This can be done through a process cycle known as financial risk avoidance (non-credit), mitigation, sharing and retention.

The final step is to understand the financial risks, their severity and impact, the probability of their occurrence and how to mitigate their spread when they do

occur. Then the next thing to do is to set variables that will allow each financial risk to be tracked and targets achieved quickly - all this is done by effectively monitoring and understanding chain reaction threats. This can be done through a monitoring system that will identify changes, ultimately treat increased financial risks and avoid the eventual ripple effects of those risks.

F. Benefits of Financial Risk Management

The stages mentioned above of effective risk management are vital and essential in the growth and success of every organization.

According to Elahi (2013) argues that proper risk management can be used to gain competitive advantage by giving an analogy using rewarded and unrewarded risks. Rewarded risks, as they are, come with an ultimate benefit. In this type of risk, the risk is often taken to give our business a competitive advantage. They are also rewarding value risks, such as entering a new market or introducing a new product to market; they all come with potential risks.

The risk management process brings management and coordination within a business (Gilbert and Eyring, 2010). The organization will be better off as staff put their heads together to achieve a common goal, as everyone works together to achieve organizational success. In this case, the management level is better off as it brings out the best in guiding and motivating people towards the ultimate achievement of their common goals, i.e., the success of the organisation.

G. Financial Risk Management and Risk Protection Methods

Deely (2020) identified four steps to protect a firm against financial risks. Accordingly, the first step was the process of identifying and measuring risks earlier.

The second step is about monitor and control liquidity regularly. This part is all about doing many forecasts to identify incoming risks that may affect a company's liquidity, which is done on a regular—Furthermore, the need to limit the transferability of available liquid assets. The management needs to ensure a very tight grip of their liquid assets; this can be done by putting a cap on the amount to be used at a given time.

According to the author, the following liquidity risk estimation tools can be

used:

- Global liquidity indicators.
- Business-specific liquidity indicators
- Parameters to outline advanced cash flow.
- All relevant regulatory parameters

The third step is the stress test. It is important for the company to control the factors that cause stress and pressure in the company's finances. This is particularly important as it will give the company the ability to know its tolerance level on liquidity risks. This can be done by the stress test, which the author equated to a fire drill done in companies; this needs to be done on a regular and long-term, and short term.

A stress/strain test should include the following Deely (2020):

- Intuition-specific strains.
- Create market-wide scenarios of the stress for single variables.
- Market-wide scenarios stress numerous compound variables.

The final step is to create a contingency plan. A plan is required to counter worse case scenarios that will serve as a condition in case of any misfortune. After the above point, stress/strain tests, the next thing is to use the results and tweak the liquidity risk assessments.

Deely (2020) mentioned setting a contingency funding plan that will give the company a boost when overcoming liquidity shortfalls shortly.

The contingency funding plan should always accommodate:

- Create strategies for the management of various stress environments.
- Direct a clear responsibility framework.
- In case of escalation, establish the cause of actions.
- Frequently carry out these tests and continuously monitor.

Capital risk, like liquidity risk, can be managed.

Capital risk can be managed through the following according to Price

Waterhouse Coopers (PWC, 2020):

- Optimization of financial performance through a reduction in capital costs.
- Creation of a specific strategic position for the treasury through the strategic overhaul of treasury policy and maintaining treasury policy and controls to ensure risk reduction in line with risk appetite.

According to Corporate Finance Institute, risks can be managed by using derivatives such as forward, future, options, and swaps (CFI, 2020).

Derivatives are financial instruments with a value that is related to an underlying asset's value. They are complicated financial instruments used for different purposes, such as hedging and access to additional assets or markets, which are generally traded over the counter.

These derivatives are:

Future and Forward – These are financial contracts that oblige the buyers of the contracts to purchase an asset on a given future date at a pre-agreed price. In their essence, all forwards and futures are practically similar. Forward contracts, however, are more versatile since the parties may customize both the underlying product and the quantity of the products, and the transaction date. Futures, on the other hand, are structured futures exchanged.

Options – Options grant the contract holder the right, but not the duty, to purchase or sell the underlying asset at a fixed price. Based on the options form, the buyer can exercise the option on the date of maturity (European options). This can also be done at any moment before maturity (American options).

Swaps – these are derivative contracts through which cash flows can be exchanged between the people involved. The swaps typically require the exchange for a floating cash flow of a fixed cash flow. Interest rate swaps, commodity swaps, and currency swaps are the most common kinds of swaps.

Derivatives are critical, and they have significantly influenced the modern financial markets. Partly, derivatives are essential in hedging risks. Hedging is significant as it allows the buyer and seller to agree on a fixed price for, let us say, the contract of a year to buy and sell a particular product that has fluctuation in the

price range. This allows for the offset of underlying losses within an asset.

Derivatives are also used in the future determination of the price of an underlying asset. The underlying price can serve to determine the future price of an asset or commodity.

Derivatives are known to increase financial markets' effectiveness by avoiding arbitrage opportunities by creating an equilibrium between underlying assets and associated derivatives.

Derivatives are also crucial in helping organizations obtain favorable market rates through the deployment of interest rate swaps. By doing this, a company will get access to assets or markets that are not readily accessible. This also helps the company to get lower interest rates that might not be the case when borrowing directly.

IV. ANALYZING LIQUIDITY AND CAPITAL RISK

A. Liquidity Risk

Meta-analytic literature in business and management science shows significant disagreement regarding the concept of liquidity, its sources, and the risks attached to it. The same assertion could be maintained on several ambiguous conceptual overviews of what liquidity is. Thus, the meaning, practice, and use of the term liquidity are self-contradictory and partially satisfying. The main objective of this chapter is to formulate a constructive understanding of the concept of liquidity as well as to prepare a sustained foundation for subsequent discussions. Thus, the chapter should be viewed as an attempt to provide a structured basis for liquidity and other key concepts surrounding it. Altogether this chapter is discussed as shown hereunder:

1. The Concept of Liquidity

Ibe (2013) conceived the term liquidity to entail the amount of capital that is readily available to an organization for investment. Championing this assertion, Koranteng (2015) reaffirmed that the meaning of liquidity does not end fund availability but the ability of such fund to meet growing requirements. Amengor (2010), conceiving liquidity concerning Central Bank of Nigeria (CBN) requirement, posit that liquidity entails the ability of a bank to meet certain contractual obligations such as lending, investment, and customers' withdrawal of deposits and maturity of liabilities at the course of banks' activities. From the following overviews, the meaning of liquidity could be summarized in two key points: (1). the meaning of liquidity and its conversion is time-bound (2). Liquidity stresses the ability of an organization to meet its business obligations. This is in tandem with the various forms which liquidity has been grouped such as bank liquidity, funding liquidity, and market liquidity (Nikolaou, 2009; Marozva, 2015)

Ordinarily, the concept of liquidity has not evolved in today business world.

In this context, cement companies deal on cash transactions with different groups, organizations, and in several societies. Such transaction is an important factor in sustaining the economic growth and development of an economy. Yet, cash obligations need to be fulfilled. When any cement organization fails to meet their financial obligation(s), they are declared illiquid, and the shareholders ultimately bear the burden (Odunayo & Oluwafeyisayo, 2015). Thus, to survive and ensure shareholders' returns, cement companies are required to strike a balance between their profitability and liquidity. Therefore, liquidity shows the volume of business activities that financial institutions ought to hold as capital to meet cash obligations while ensuring the optimal return of shareholder's investment (Panigrahi, 2014; Irawan & Faturohman, 2015).

2. The Concept of Liquidity Risk

Liquidity is directly associated with risk as long as cement companies would continue to operate with cash obligations to fulfil. Liquidity has been operationally defined as the ability of an organization to meet its cash obligations. However, there are times that banks may not be able to meet their financial obligations as they become due. Such circumstances create liquidity risk situations. Liquidity risk, therefore, is a kind of risk that corporate firms encounter when they are unable to meet their financial obligations without incurring unnecessary losses (Maaka, 2013). Drehmann and Nikolaou (2009) sees it as the inability of an organization to meet its immediate financial obligations. According to Shen, Chen, Kao and Yeh, 2009, liquidity risk occurs when financial institutions have inadequate liquidity, and cannot obtain sufficient funds at a reasonable cost to offset urgent financial needs.

Decker (2000) indicated that liquidity risk can be divided into funding liquidity risk and market liquidity risk. Brunnermeier and Pedersen (2009) define funding liquidity as the ability of an organization to raise cash at short notice, either via asset sales or new borrowing. Such 'short notice', 'timely fashion' and 'immediacy' entails the speed with which trades of a certain size can be executed (Siaw, 2013). Elsewhere, market liquidity risk, on the other hand, is the risk that a bank cannot easily unwind or offset specific exposures without significantly lowering market prices because of inadequate market depth or market disruptions. Nevertheless, funding liquidity and market liquidity are not mutually exclusive. Assets cannot be easily converted into cash and easily sold to investors or firms that

lack financial power. The absence of funds directly leads to the lowering of market liquidity, which in turn contributes to a further deterioration in funding liquidity. Thus, in the absence of adequate liquidity, corporate organizations could be forced to engage in a fire sale of assets, and hoard liquidity increases the likelihood of market disruptions and liquidity shocks, resulting in market liquidity that has a significant effect on both the performance and survival of firm as well as on real economic growth.

When cement companies engage in many financial transactions, it oftentimes involves that they make use of liquid assets or external funds to meet up. Such an approach increases the cost of funding such businesses while reducing the amount of cash available to them. Over time, firms' earnings, capital, and availability of cash are significantly affected. Before this time, liquidity risk has been measured using several traditional approaches such as the use of liquidity ratios. For instance, Molyneux and Thornton (1992) and Demirgüç-Kunt and Huizinga (1999) assessed liquidity risk using the liquid asset to total assets ratio, loans to total asset ratio; Shen, Chen, Kao and Yeh (2009) used liquid assets to deposit ratio; and Kosmidou, Tanna and Pasiouras (2005) used liquid asset to customer and short-term funding. Whatever ratio that is employed, one certain point is that the higher the liquidity risk, the more the affected firm would suffer and more vulnerable to corporate failure.

Progressively, other financial experts appear to be uncomfortable with the use of ratios in assessing the effects of liquidity risk to an organization, more especially as some firms look at liquidity risk as an exogenous variable. For instance, Poorman and Blake, (2005) argued that the use of liquidity ratios in assessing liquidity risk is not enough and is not the best approach. Recently, there are many methods provided to assess bank liquidity risk besides traditional liquidity ratios (Basel Committee on Banking Supervision, 2000). Some firms such as financial institutions like banks most times make use of balance sheet Guglielmo, (2008), Gatev and Strahan (2003) has come up with the idea of using deposits, while Matz and Neu (2007) also indicated that banks can apply balance sheet liquidity analysis, cash capital position and maturity mismatch approach to assessing liquidity risk. Yet, over-reliance on the balance sheet as the true measure of liquidity has recently become more complex, making liquidity risk management more challenging. Ideally, a well-managed organization should have a well-defined mechanism for the identification,

measurement, monitoring, and mitigation of liquidity risk. Falconer (2001) submit that firms such as banks should have continuous awareness about the breakdown of its various funding sources in the financial markets and instruments (Falconer, 2001). Therefore, the best approach, as suggested, is for firms to have a proper understanding of the capital market. Such deep understanding would help them in understanding the risk that is associated with each financial transaction.

3. Determinants of Liquidity Risk

Liquidity risk naturally affects the performance of any organization (Siaw, 2013). Nevertheless, other scholars have empirically examined various determinants of liquidity risk, each coming up with interesting findings. Lucchetta (2007) submit that interest rates affect the ability of firms to hold up liquidity. Championing this assertion, Moore (2010) further opined that countries with higher interest rates had a negative relationship with holding liquidity; thus, indicating a positive link with liquidity risk and vice versa. Aspachs, Nier and Tiesset (2005) further noted that the tendency of an organization to secure support from a lender of last resort, business cycle, size of a bank, and short-term interest rates have positive effects on liquidity risks. Bunda and Desquilbet, (2008) equally, support the assertion that the size of a firm affects liquidity risk. Shen et al. (2009) added that components of liquid assets, dependence on external funding, supervisory and regulatory factors, and macroeconomic factors all affect liquidity risk.

Furthermore, Rauch, Steffen, Hackethal and Tyrell, (2010) opined that macroeconomic factors such as tight monetary policies had negative effects on bank liquidity creation through their interest rates. Vodova, (2011) looked at different macroeconomic variables such as a bank, bank profitability, realization of the financial crisis, rate of GDP, inflation rate, the interest rate on interbank transactions, the difference between the interest rate on loans and interest rate on deposits, and the rate of unemployment as great determinants of liquidity risk. In the case of unemployment, it has been remarked that the bank's liquidity declines with an increase in unemployment (Siaw, 2013). Elsewhere, Anyanwaokoro (1996) maintained that impressive profit figures help reassure firm stakeholders; investors, borrowers, managers, employees, external product and service suppliers, and regulators of the ability of an organization in meeting their financial obligation thereby encouraging their investment into such organization which in turn increases

the liquidity level.

Theoretically, attempts have equally been made towards explaining factors that predict firms' liquidity risk. For instance, the efficiency hypothesis posits that firms may not suffer from liquidity risk due to their level of efficiency. According to this theory, firms' efficiency automatically leads to a large market share which translates to higher profitability (Goddard, Molyneux & Wilson, 2004). Therefore, when firms are liquid, such status is not necessarily tied to the size of such firm but its efficiency. There is also the capital asset pricing model. This model was introduced by three economists William Sharpe, John Lintner, and Jack Treynor in the mid-1960s. The basic tenet of this model is that the return on a firms' investment is directly proportional to the firms' market share since the return on a firm's stock is expressed as a measure of the market. Therefore, the uncertainty surrounding a firms' wealth or investment could largely determine how prone a firm is to liquidity risk. The capital asset pricing model thus takes a simple but realistic approach in assessing liquidity risk by not neglecting the effects of market fluctuations on a firm's wealth and investments. This same approach is equally associated with the arbitrage pricing model, which sees changes in liquidity risk as a function of certain macroeconomic factors. Then, there is also the 'too-big-to-fail argument which proposes that only small firms are prone to liquidity risk because they cannot assess external funding (Iannotta, Nocera & Sironi, 2007) since financial institutions, as well as CBN, may trust big firms than small firms in terms giving out loans. Thus, CBN may provide loans to these big firms in case of bankruptcy, prompting big firms to invest in riskier investments than small firms.

4. The Importance of Liquidity Risk for Companies

Over time, the public has lost their confidence in financial institutions in Nigeria as a result of bank distress which has bedeviled the financial sector in the last decade. However, given the CBN consolidation in 2004 as well as the intensity of competition in the banking sector due to the emergence of a large number of new Deposit money banks, many deposit monies banks in Nigeria now strive to make a profit and at the same time meets the financial demands of its depositors by maintaining adequate liquidity (Sunday & Ndukaife, 2016). Thus, effective liquidity risk strategies would help control an institution's use of capital while limiting default risk and helps mitigate agency problems. Aside from financial institutions, liquidity

risk helps sustain the profits of other firms, thereby avoiding the bank's illiquidity and, perhaps, insolvency (Saleem & Rehman, 2011). Agbada and Osuji (2013) further argued that liquidity risk management enhances firms' performance in terms of maintaining public confidence by having the amount of cash and near-cash assets that is sufficient for their customers to meet their obligations. Arif (2002) further, contend that proper liquidity risk management would also help in reducing a firm's dependence on the central bank in meeting their customers' obligations.

Moein-Addin, (2013) content that liquidity risk management helps in improving the market share of an organization, thereby increasing the returns on their stocks. Relatedly, a healthy liquidity risk management strategy helps an organization from external borrowings which do not go well with firms' performance. This is because when firms borrow from the market, even with market volatility that increases the rates of borrowing, the cost of operations is equally affected negatively (Maaka, 2013). Even though long-term holding up of liquid assets is not healthy to firms' performance (Sushil & Bivab, 2013; Heibati, Nourani & Dadkhah, 2009), profitability is improved for firms such as cement companies that do not fall into liquidity risk trap. Uremadu, (2012) further submit that liquidity risk management variables such as cash reserve ratio, liquidity ratio, and corporate income tax significantly affect the profitability of cement firms.

B. Capital Risk

Cement companies play significant roles in the sustained economic growth and development of the Nigerian economy. The same assertion could be made of firms that engage in business activities that directly or indirectly assist in addressing the macroeconomic objectives of the country. While engaging in such business-related activities, cement firms, just like any other corporate organization, are often exposed to many risks during the practice of their activities that affect performance and determine the efficacy of their corporate resources. Thus, financial literature is profoundly concerned with certain risks that undermine firms' corporate performance as well as survival. Another type of risk to consider is a capital risk.

1. The Concept of Capital Risk

Risk capital is capital that is usually set aside by creditors and other liability

holders while maintaining the firm's credit quality (Isil, Myers & James, 2014). Merton and Perold (1993) further defined capital risk refers to the complete financial preparedness of a firm for the consequences of the unexpected loss of their investment (Wieczorek-Kosmala, 2019). They define risk capital as the present value (PV) cost of acquiring complete insurance against negative returns on their net assets. Elsewhere, Merton and Perold, (1993) equally sees capital risk as the smallest amount of finance that is set aside which can be invested to ensure the value of the firm's net assets against a possible negative return on the net assets.

Discussions of capital risk in financial literature are based on the aleatory nature of financial institutions and volatility of the current business landscape (Diacon & Carter, 1992). Merton and Perold (1993), however, argued that firms should periodically allocate funds to risk capital or future negative loss on capital investments as this could derail the performance of such an organization. Though most literature agreed on that position, however, the emphasis is that such capital allocation should be made after calculating or observing a substantial change in the firm's portfolio of businesses (Wieczorek-Kosmala, 2019). Thus, risk-capital allocations are not for the long run but should be updated frequently, perhaps every quarter for a firm with trading or market-making positions that can expand or contract rapidly.

2. Determinants of Capital Risk

To compete in the same industry and market, all business organizations are subject to more or less the same business-level forces. However, there may be a certain level of difference between how one firm manages capital risk than another, which may be due to country-specific factors like differing inflation, GDP growth, economic structure, and government systems. These macroeconomic factors heavily determine the capital risk position of any organization in a different way depending upon the stage of economic development of a country (Nguyen & Kayani, 2013). Corroborating this view, Octivia and Brown (2010) also state that the aforementioned macroeconomic factors potentially affect the environment in which an organization operates, given the fact that the capital requirement of any organization is seriously impacted by the pro-cyclicality of macroeconomic indicators.

Booth (2001) opined that profitability, asset tangibility, and growth options are predictors of capital risk effectiveness in an organization. Rajan & Zingales, (1995) and Graham (1996) further assert that firm characteristic including size, the market-to-book ratio of assets, stock returns, asset tangibility, profitability, and the marginal tax rate play a significant role in determining the capital risk of an organization. Study by Greenlaw, Hatzius, Kashyap & Shin (2008) revealed that most organizations cannot manage their capital because of regulatory measures. On country-level analysis, economic growth level, inflation rate, stock market risk, and tax have all be considered as significant determinants of capital risk (Octavia & Brown, 2010; Frank & Goyal, 2008; Milton, 2008).

C. Determinants of Liquidity and Capital Risk by Financial Analysis

Liquidity and capital risk have been largely dependent on several determinants which have been reasonably emphasized on. Yet, there are other means through which these two concepts could equally be assessed. While others considered determinants are comprehensive and general, they are not tailored directly to any form of analysis or put differently, they are short of several analytical underpinnings. Thus, in this section of the study, constructive attempts are made towards providing analytical frameworks to the determinants of both liquidity and capital risks. Hence, this aspect of the study was reviewed starting with a crucial attempt towards understanding the concept of financial analysis first. This and other forms of analysis herein were considered as follows:

1. What is Financial Analysis

Financial analysis is the process and results of carrying out corporate financial activities that are based on the research and evaluation of the company's financial statements and other information, which aid firms to analyze the financial condition, predict future trends, plan for the future, as well as optimize investment decisions (Zhou, 2016). According to Sedláček (2009), financial analysis of a company is a method of the company's financial evaluation, whereby the data obtained is graded, aggregated, and compared to each other to know the firm's financial standing as well as provide relevant information required in making future informed decisions. When properly analyzed, financial analysis is diagnostic, helping

firms to detect weaknesses and strengths of the company as well as provides essential information to business management and owners (Vlachynský, 2009).

The analysis of a firm's financial situation is often a diverse and multifaceted complex phenomenon. In most cases, financial experts make use of financial indicators such as debt, liquidity, profitability, activity, capital market indicators, as well as other indicators (Knapková, 2013) while other times, firms could as well use ratio indicators since they have been conceived as the commonly used indicators of the financial situation characteristics (Baran, Astýr & Baranová, 2016). These complications are possible because individuals such as business owners, managers, employees, lenders (suppliers, banks), debtors (customers), institutions of state and public administration, external analytics, and media (Baran, 2008) are all interested in firm's financial analysis. Whatever is the case, the user of the financial analysis results decides which indicators to select based on demand, intention, and business objectives to achieve. The main purpose of financial analysis is to express assets and the financial position of the company and to prepare the inputs for internal management decision-making (Hrdý, 2009).

2. Types of Financial Analysis By Purpose

a. Managerial Analysis

Various studies have shown that for an organization to perform effectively and efficiently, three key things are important. They are: (a) the efforts and ability of the managers, (b) the environment in which the managers and the organizations operate, and (c) the efforts and ability of the subordinates. Of these three factors, managerial ability has been seen as a necessary prerequisite for a firm to attain its corporate objectives successfully. In the field of management science, such discussion on management abilities draws up discussions on managerial analysis or as commonly used, Management Discussion and Analysis (MD&A). In the words of Hargrave, (2020), managerial analysis is a section within a company's annual report or quarterly report where executives analyse the company's performance and productivity. It simply represents the thoughts and opinions of management on a section of firms' annual reports. The managerial analysis is usually centred on firms' compliance, risks, and plans regarding projects to undertake.

Managerial analysis in any organization is necessary given the fact that firms

operate in a hyper-dynamic business landscape. Macroeconomic variables such as inflation, fluctuations of capital, interest rates, among others, are bound to affect a firm's business process and procedures. When any of these situations prevail, corporate managers analyze their firms' options to decide whether to apply corporate, business, or functional level strategies. This may involve evaluation of an industry and its economic prospects just to discover quantitatively, the best action to undertake.

Companies audit themselves with mechanisms such as internal control, internal audit, but ideally, the company is audited by an external auditor. Companies must hire an independent auditor to verify their financial statements, such as their balance sheet, income statements, and statement of cash flows. However, external auditors are not allowed to evaluate the managerial section of any firm. Nevertheless, the managerial section of any firm is expected to meet a certain standard. They are expected to provide a balanced analysis that shows both positive and negative information concerning the firm's all-around business operations and must be based on facts. Thus, when a managerial section of any firm is properly done, upon its presentation, it should be able to tell shareholders the reasons why a company is healthy, or the reasons why it is not. It is equally expected to explain in detail operational tactics and the management style that has brought the firm to its current state. Futuristically, the managerial analysis should equally be able to outline and explain firms' future goals and projects.

b. Investment Analysis

Investment analysis is a broad term for many different methods of evaluating investments, industry sectors, and economic trends. It can include charting past returns to predict future performance, selecting the type of investment that best suits an investor's needs (Chen & Scott, 2020). Defining investment analysis more broadly, (Steven, 2021) posit that investment analysis includes the followings:

- A review of the economic and regulatory factors influencing the industry in which the investor is interested;
- An examination of a company's balance sheet to see if it is maintaining a sufficient level of liquidity, has a conservative capital structure, and is making efficient use of its assets;

- An examination of a firm's income statement to see if it is generating adequate gross margins and net profits, and is experiencing a reasonable and sustainable rate of sales growth;
- An examination of a firm's statement of cash flows to see if it is generating adequate cash flows;
- A review of the disclosures that accompany the financial statements to see if the company is using conservative accounting practices or is using other accounting practices to fudge its reported results and financial position; and
- An analysis of the investor's short-term and long-term needs.

When investment analysis is effectively done, it helps an organization to determine how their investment is likely to affect corporate performance and its effect on a particular investor. It gives stakeholders of a firm insight into the decision-making of the firm. It helps in determining different investments of a firm and their respective returns. By so doing, it helps a firm in making appropriate investment decisions that are based on facts and informed decisions.

c. Credit analysis

In today's business landscape, firms operate using both equity and credit. The option of credit shows that assessing credit remains an option for firms to operate successful as well as meet their financial obligations. However, extending credit requires proper analysis from the creditor. This brings up the concept of credit analysis. Credit analysis refers to a creditor's analysis to determine the financial health of an organization that is applying for the fund and their liquidity ability in financing their debts (CFI, 2012). Fatima (2013) sees credit analysis as involving a combination of all activities connected with the collation of both qualitative and quantitative data and information. In simple terms, credit analysis involves a creditor's assessment in determining the creditworthiness or unworthiness of an organization and the level of credit risk associated with extending credit to such organization or not.

The essence of credit analysis is to determine the ability and willingness of a borrower to repay a loan following the terms of the loan contract. In practical terms,

cement companies carry out business on credits. However, cement companies usually attempt to assess the degree of risk they will be willing to exposure and the number of funds that would be prudently extended given the risk involved. The risks in lending stem from the various factors that can lead to non-payment of the loan obligation when it falls due. For instance, in Nigeria, loans from the bank are often thought of as funds that are not meant to be repaid (Fatima, 2013). Other times, the intending borrower do not disclose full reasons why he/she needs the loan, thus, as soon as approval is received, there is a diversion to other unproductive uses like buying of cars, marrying of more wives, among others.

Though risk-taking is an integral part of banking operations, however, cement companies are successful when they undertake reasonable risks, controlled and within their financial resources and credit competence. The main objective of credit analysis is to increase the certainty level of lending by carefully assessing the parameters surrounding the economic, financial, and social status of the applicant. In credit analysis, an attempt is made to determine the conditions and terms under which the loan will be granted, the factors that will affect the ability to repay including financial projections, economic forecasting, environmental analysis, and the history and the reputation of the borrower. It overlaps to involve protection against the risks of lending, which involves maintaining high credit standards, appropriate diversification, and intimate knowledge of the borrowers' affairs.

3. Static and Dynamic Analysis

Static analysis of financial statements covers one year, and the analysis is made based on only one set of financial statements (Lee, Lee & Lee, 2009). Under this type of analysis, the ratios are calculated from the balance sheet of one year and/or from the profit and loss account of one year.

In dynamic analysis, more than one period is examined. Dynamic analysis or dynamic financial analysis (DFA) is a systematic approach based on large-scale computer simulations for the integrated financial modelling of non-life insurance and reinsurance companies aimed at assessing the risks and the benefits associated with strategic decisions (Blum & Dacorogna, 2003). The most important characteristic of DFA is that it takes an integrated, holistic view-contrary to classic financial or actuarial analysis, where different aspects of one company are considered in

isolation. When effectively done, DFA allows decision-makers in an organization as well as investors to understand and quantify the impact and interplay of the various risks that their company is exposed to for them to make informed strategic decisions.

4. Horizontal Analysis

Horizontal analysis, also called trend analysis, is a technique for evaluating a series of financial statement data over some time. Its purpose is to determine the increase or decrease that has taken place. Commonly referred to as trend, or time series analysis, the horizontal analysis compares changes that firms face from time to time using comparative financial statements, expressing each line as a percentage of another line. Horizontal analysis is a financial statement that shows changes in the amounts of corresponding financial statement items over a period, which is a helpful tool to assess the trend situations (Lakada, Lapian & Tumiwa, 2017). From this analysis, the direction of corporate expenditures could be known, in addition to the development of the company from one period to another period.

5. Vertical Analysis

Vertical analysis, also called common-size analysis, is a technique for evaluating financial statement data that express each item within a financial statement as a percent of a base amount. The vertical analysis depicts each amount of the financial statement as a percentage of another item (Lakada, Lapian & Tumiwa, 2017). Vertical analysis is an analysis method that depicts the relationship that exists among each line of a financial statement using a base amount in the same period. Vertical analysis is used to compute percentages, which allows users to evaluate a business entity's performance and provide a comparison among competitors. In vertical analysis, each item of a firm compared that is on the financial statement is presented as a percentage of a base amount. By so doing, the analysis helps to show that every income statement amount is represented as a percentage of sales. However, if it is in the cash flow statement, vertical analysis ensures that total cash inflow is used as a base to each post that forms the cash inflow and also as a base to each flow that forms cash outflows.

6. Analysis of Liquidity and Capital Risk with Trend Analysis

Trend analysis is a crucial statistical tool for analysis, especially analysis that

has to deal with data that are generated over the years. In liquidity and capital analysis, the use of trend analysis could prove useful as both analyses make use of market or stock prices that are based on past data. Trend analysis could as well serve as a comparative tool. In such a situation, the liquidity and capital risk ratios of an organization are used to measure its performance over time and to compare it with that of its competitors in the same industry.

Trend analysis in publicly traded companies can also give meaningful results in terms of showing how liquidity and capital have changed. Share prices may not always be related to liquidity and capital, however, the effect of liquidity and capital risks on share prices can be examined with trend analysis.

In using trend analysis for liquidity and capital risk analysis, there are three kinds of it. They are the primary trend, secondary trend, and tertiary trend. Explaining each of these trends, Dow posit that the primary trend is the long-term movement of share prices. It moves in three phases. In the first phase, the share market prices just begin to decline. At that point, investors start selling their shares, especially those that borrow money to invest. They sell out those shares as the market and share prices keep declining. The original intention is to cut back on their losses. Then, in the second phase, market share prices keep declining. At this point, investors have begun to witness negative returns. To survive, they sell more of their shares as the market share prices decline further. The last phase of the primary trend is the third phase. People are forced to sell their shares out of despair, thereby liquidating their leverage on certain shares.

In the secondary trend, market share prices seem to move in the opposite direction of the primary trend. The market share prices increase for several months, leading to higher market share prices. Investors who sell at this point make profits as market share prices turn positive. The last trend analysis is called a tertiary or minor trend. It is the daily or weekly changes in market share prices due to the imbalance between supply and demand. Since such imbalance do not last for long and it's difficult to predict, the tertiary trend approach is often considered to be too risky.

7. Financial Ratio Analysis

Ratio analysis refers to the analysis and interpretation of the figures appearing in the financial statements. It is a process of comparison of one figure against

another. Ratio analysis is not only a powerful analytical tool for measuring the performance of an organization, but it also equally enables users of financial information like shareholders, investors, creditors, and government to get a better understanding of financial statements. Altogether, sound financial ratio analysis should be able to meet the following objectives: To know the areas of the business which need more attention; to know about the potential areas which can be improved with the effort in the desired direction; to provide a deeper analysis of the profitability, liquidity, solvency and efficiency levels in the business; to provide information for making cross-sectional analysis by comparing the performance with the best industry standards, and to provide information derived from financial statements useful for making projections and estimates for the future. In the sub-heading below, two ratios-ratios indicating capital risk and liquidity risk-were analysed.

a. Ratios indicating the capital risk

The capital adequacy ratio explains the capital strength and ability of an organization to withstand, endure and recover from external shock. It says something about the resilience of an organization during a crisis. This translates that when an organization is high on capital adequacy, they invariably do not need external financial assistance. Thus, the higher the capital adequacy, the stronger an organization is financial. Greater bank capital reduces the chance of distress. Therefore, capital adequacy is expected to be positively correlated to liquidity. A debt-to-capital ratio is a form of capital risk ratio that takes into consideration the amount of a firm's debt-both short and long-term debts-and divides it by the firm's total/available capital (Anuara & Chin, 2015). It examines the financial leverage of a firm and compares the firm's total liabilities to total capital. In essence, firms cannot do business without borrowing funds. However, the objective of the debt-to-capital ratio is that, though it is not easy, firms need a proper mix of debt and equity. The total capital ratio gives insight into the value of firms' total capital to weighted risk.

b. Ratios indicating liquidity risk

There are three types of liquidity ratios. They are the current ratio, quick ratio, and cash ratio. Of all the three ratios, the current ratio is the simplest kind of liquidity ratio to calculate. The two variables required to calculate the current ratio are current assets and current liabilities, which can easily be located on a company's

balance sheet. Mathematically, the current is derived by dividing current assets by current liabilities.

Another form of liquidity ratio is the quick ratio. It is a stricter kind of liquidity ratio than the current ratio. Mathematically, the quick ratio is derived by subtracting current asset from current inventory and dividing it by current liabilities (Khaldun and Muda, 2014). In using a quick ratio for analysis, the focus is on certain liquid assets such as cash, accounts receivables, and marketable securities. Current assets such as inventories and prepaid expenses are not considered while using the quick ratio since the two forms of current assets do not possess strong or enough liquidity value. Based on this premise, many investors and financial analysts often consider quick ratio as a true test of a company's liquidity or ability to make money while meeting up their financial short-term obligations. Furthermore, the cash ratio is the last most important form of liquidity ratio. It shows the ability of an organization to pay its short-term financial obligation with the cash at hand (Khaldun and Muda, 2014). The cash ratio furthers the liquidity interest of any organization. The focus of the cash ratio is on the most liquid assets of an organization, either cash or marketable securities. Put differently, they are the liquid assets that can easily be used or converted for an organization to be able to meet its short-term financial obligations.

V. RESEARCH ON THE PUBLICLY TRADED CEMENT COMPANIES IN NIGERIA

A. Aim of the Research

The main purpose of this research is to examine in depth the liquidity and capital risks in cement companies in Nigeria. The scope of the research consists of cement companies whose stocks are traded on the Nigerian Stock Exchange (NSE).

As people and corporations make investments into different sectors of the business world, risk management is a topic that always comes to mind mitigating it has been the responsibility of a lot of financial firms and analysts.

Capital risk is simply losing part or all of investors' money, as these investments, sometimes are not guaranteed full returns due to unforeseen circumstances and risks that may arise.

Liquidity risk simply represents cash or assets that can quickly be sold for cash to pay for liabilities as when due.

This research aims at empirically, studying the above risks and understand how much of an impact they have made on the three selected companies and how well these companies have mitigated them.

The models simply explain the relationships between our independent and dependent variables, thereby giving us clear answers as to the effect of liquidity and capital risks on the companies.

B. Importance of the Research

This research is important as it tries to fill a gap in the research field of risk management. The gap it occupies makes a good contribution in the cement sector and set the ground for others to make an improved contribution in the sector. There has been a lot of research done in this field in the bank sector and other sectors in the

world, but lack of contribution in a sector that Nigeria is sufficient in and employs a lot of people, became the motivation for me to take this step.

This research will be conducted using secondary data, taking a deductive approach, thus making the extraction of data pretty easy and the work straightforward. With this in mind, it is easier for whoever comes in the future to add on this and also make a telling contribution.

C. Scope of the Research

The research was conducted on the cement industrial companies in Nigeria. The sector is very strong and is a lifeline to Nigeria in its battle to reduce the import of goods and services. With the abundant limestone reserve in Nigeria, it is an opportunity that has been open for maximum use for a very long time and this research, is a step in the right direction into understanding and helping the sector as there are very few of these researches out there to help the industry.

All companies (Dangote, BUA and Lafarge Africa) were selected after careful observation of their data, which was present on the Nigeria Stock Exchange website.

The data was enough to conduct the research, it was audited, available and easily extracted. All these are part of the reasons the work was easily conducted.

The study target population consists of the three major cement companies listed in the Table 2 under the cement companies of the Nigerian Securities Exchange (NSE) for the period covering 2011 to 2020. These firms are geographically based in Nigeria, as well as 11 Sub-African countries.

Table 1 Distribution of scope.

S/N	Company	Year of establishment
1	Dangote Cement	1981
2	BUA	2008
3	Lafarge Africa	1959

The three firms' independent audit financial statements were available in NSE and therefore make up the largest producers in the market. Information about the companies included in the research is given below.

1. Dangote Cement

Dangote Cement Plc (DCP) is a subsidiary of the Dangote Group of companies. They deal with the manufacture, importation, preparation, control, packaging, distribution, and research of cement and associated products. Established in May 1981, with Aliko Dangote as the Chairman and founder, headquarters in Lagos, currently conducting business operations in seven African countries; Nigeria, Ghana, Zambia, Senegal, Benin, and South Africa. DCP was listed in the Nigerian Stock Exchange in 2010. (Dangote Cement, 2021)

The company grew in the 1990s and gained firm grip with the acquisition of Benue Cement Company in Gboko from the Nigerian Government in 2000 and upgraded its capacity from 0.9Mta to 4 Mta. In 2002, Dangote cement unveiled the Obajana Cement plant as its latest acquisition, though it the factory was not operational until it was commissioned in 2004, which stands as the largest of its kind in sub-Saharan Africa, operating across five production lines at 16 million tonnes per annum capacity. The latest cement plant, Obese in Ogun state with a capacity of 12 Mta, was commissioned in 2012. It serves the whole south-west part of the country and export to other West African Countries. (Dangote Cement, 2021)

DCP commenced cement manufacturing in 2007, today its total capacity stands at 34 Mta across three giant plants. It is governed by experienced board member. Dangote Group of companies stands as a frontier conglomerate and pacesetter for the manufacturing industry, providing products that serve the public's basic needs and achieving international business success.



FINANCIAL REVIEW

Summary

	Q1 2021 '000 tonnes	Q1 2020 '000 tonnes
Volume sold**		
Nigeria	4,908	4,018
Pan-Africa	2,613	2,316
Inter-company sales	-	-
Total volume sold	7,521	6,334
Revenues	₦m	₦m
Nigeria	239,684	179,336
Pan-Africa	92,967	69,846
Inter-company sales	-	-
Total revenues	332,651	249,182
Group EBITDA*	177,971	114,223
EBITDA margin	53.5%	45.8%
Operating profit	151,744	91,779
Profit before tax	130,101	88,057
Earnings per ordinary share (Naira)	5.29	3.60
	31/03/2021	31/12/2020
Total assets	2,121,240	2,022,451
Net debt	257,886	337,275

*Earnings before interest, taxes, depreciation and amortisation

** Volumes include cement and clinker

Figure 1 Dangote Cement Summary of Financial Reports

Source: Dangote Cement (2021)

Figure 1 reveals a growth in revenue by 33.5% between March 2020 to March 2021. Volumes sold to the Nigerian market were up by 22.2% from 4.0Mt to 4.9Mt upheld by an expansion in construction and business development. Deals to homegrown clients in Nigeria increased by 18.7%, 4.0Mt to 4.77Mt with the excess 0.137Mt being land traded volumes. Pan African volumes expanded by 12.8% from 2.31Mt in Q1 2020 to 2.61Mt. (Dangote Cement, 2021)

2. BUA Cement

BUA Cement is a subsidiary of the BUA Industries focused in the bagging, manufacturing, preparation, and distribution of cements across Nigeria. It was incorporated in 2008, with the commissioning of BUA Cement 1, which commenced operation the same year. Cement Company of Northern Nigeria (CCNN) in Sokoto was acquired by BUA Group the following year in 2009, along with Edo Cement Company. This acquisition helped to boost the production capacity of BUA Cement. (BUA Cement, 2021)

BUA Group was founded by Abdul Samad Rabiu in 1988, with its headquarters in Lagos and was listed in the Nigerian Stock Exchange in 2020. It

currently stands as the biggest cement manufacturer in Northern Nigeria and its rapid cement production growth have attained the status of the Second largest cement manufacturer in Nigeria, only behind Dangote. BUA combined capacity stands at Eight million tonnes per annum and \$3.3bn market capitalization. (BUA Cement, 2021)

	Share Capital	Reorganization Value	Reserve on Valuation Actuarial Benefit of Defined Plan	Retained Earnings	Total Equity
	N	N	N	N	N
Balance at 1 January 2021	16,932,177,000	200,004,179,000	(897,136,000)	159,915,508,000	375,954,728,000
Merger Shares	-	-	-	-	-
Profit for the period	-	-	-	22,366,617,971	22,366,617,971
Other comprehensive income for the period	-	-	-	-	-
Transactions with owners					
Dividend	-	-	-	-	-
Balance at 31 March, 2021	16,932,177,000	200,004,179,000	(897,136,000)	182,282,125,971	398,321,345,971
Balance at 1 January 2020	16,932,177,000	200,004,179,000	(72,902,000)	146,833,788,000	363,697,242,000
Profit for the period	-	-	-	19,789,690,872	19,789,690,872
Other comprehensive income for the period	-	-	-	-	-
Transactions with owners					
Issue of shares for business combination	-	-	-	-	-
Dividend paid	-	-	-	-	-
Balance at 31 March 2020	16,932,177,000	200,004,179,000	(72,902,000)	166,623,478,872	383,486,932,872

Figure 2 BUA Summary of Financial Reports

Source: BUA Cement (2021)

Figure 2 above shows the change in share capital, reorganization value, Reserve on valuation Actuarial benefit of defined plan, retained earnings, and total equity of BUA Cement from March 2020 to March 2021. (BUA Cement, 2021).

3. LaFarge Cement

Lafarge Cement is a branch of Lafarge Africa Plc a member of Lafarge Holcim, focused on the production of cement. Lafarge Cement have three plants in the South-west part of Nigeria, operating at a production capacity of 4.4 MTPA, and a production line with capacity of 5 MTPA in the Southern part of the country, established in 2002 and is the largest manufacturing plant of the company. (Lafarge Africa, 2021)

Lafarge commissioned the Ashaka Cement plant in August 1974 in the Northern part of Nigeria and started production in 1979, and the current production

capacity stands at 1 million metric tonnes per annum, serving most parts of the northern-states. (Lafarge Africa, 2021)

	Group		Company	
	31 Dec 2020 ₦'million	31 Dec 2019 ₦'million	31 Dec 2020 ₦'million	31 Dec 2019 ₦'million
Revenue from continuing operations	230,572,922	212,999,066	202,530,359	188,407,004
Profit before minimum tax from continuing operations	37,572,131	17,892,285	34,319,046	24,318,017
Minimum tax	(377,593)	(677,319)	(377,593)	(677,319)
Income tax expense	(6,352,400)	(1,697,180)	(5,226,569)	(919,082)
Profit after tax from continuing operations	30,842,138	15,517,786	28,714,884	22,721,616
Profit after tax from discontinued operations	-	99,586,566	-	-
Other comprehensive loss for the year	(53,714)	(65,148)	(53,714)	(65,148)
Total comprehensive income for the year	30,788,424	115,039,204	28,661,170	22,656,468

Figure 3 Lafarge Group Summary of Financial Results

Source: Lafarge Africa (2021)

Figure 3 above show the summary of Lafarge Africa financial results between 2019 and 2020.

D. Data and Methodology

It was stated above that the aim of this thesis is to examine the liquidity and capital risk in publicly traded cement companies in Nigeria. In more detail, the effect of liquidity and capital risk on the operational efficiency of firms will be analyzed. This section will explain the data and methodology of the analysis.

1. Data Set and Data Sources:

Data for this research was sourced from the Nigeria Stock Exchange audited annual reports. The data was gathered and made ready for use.

The following question may come to mind: Why were only a limited number of cement companies preferred? The biggest reason for this was the desire to be sure of the accuracy of the data to be used in the analysis. Since the data of publicly traded companies are audited by independent auditors in accordance with regulations, they were found reliable and used in the research.

The data was not ready, so the balance sheet and income statements in the

annual reports were separated and turned into meaningful information. Data for recent years could be found easily, but accessing financial reports for the past years was the difficult part of the research. After all the data were collected, they were entered into a database and made ready for analysis.

2. Methodology

This work entails measuring liquidity and capital risk of the three major cement companies in Nigeria. It is important to measure these risks to evaluate the firm's overall performance of the company and serve not only the directors and managers of the firms, but also shareholders and future investors.

In this research, accounting based measures will be applied in the calculation and thus bring out intended findings of the work, which will help us achieve our basic aims. The research will take a quantitative approach in which secondary data is used, which was gotten from the companies' official website in the form of balance sheet and all the relevant data will be pulled out from it. The advantages of using secondary data are that it is readily available and easily accessible, this data has already been used in previous research, so it makes it more reliable.

In the research, the effect of liquidity risk and capital risk on the operational performance of the firm is tested with 10 different models. Ordinary Least Squares Regression (OLS) method is used as data analysis method. Explanations about these models and the variables in these models are given below.

3. Dependent Variables

In the research, the dependent variable is operational performance, which is expressed by firm profitability. Firm profitability is represented by two separate ratios, Return on Assets and Return on Equity. These dependent variables will be helpful in determining the impact of risks on performance in separate models. These dependent variables are calculated by the following methods:

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

Equation 1

$$ROE = \frac{\text{Net Income}}{\text{Shareholder's Equity}}$$

Equation 2

4. Independent Variables

Various independent variables are used in the models established for the effect of liquidity risk and capital risk on the operational performance of the firm. Considering different approaches in the literature, liquidity risk and capital risk were not calculated according to a single criterion, instead analyzes were made according to different calculation methods. Accordingly, liquidity risk was calculated according to three different criteria (LRISK1, LRISK2, LRISK3) and capital risk was calculated according to two criteria (CPRISK1, CPRISK2). The methodology in the research conducted by Levent (2021) was followed for the calculation of these methods.

$$LRISK1 = \frac{\text{Short Term Liabilities}}{\text{Current Assets}}$$

Equation 3

$$LRISK2 = \frac{\text{Short Term Liabilities}}{\text{Current Assets} - \text{Inventories}}$$

Equation 4

$$LRISK3 = \frac{\text{Short Term Liabilities}}{\text{Cash and cash equivalents}}$$

Equation 5

$$CPRISK1 = \frac{\text{Total Liabilities}}{\text{Total equity and liabilities}}$$

Equation 6

$$CPRISK2 = \frac{\text{Total Liabilities} - \text{Cash and cash equivalents}}{\text{Total equity and liabilities} - \text{Cash and cash equivalents}}$$

Equation 7

E. Hypothesis and Models

Based on the research objectives and what was aimed to be achieved, the following basic hypotheses were developed:

The study instituted the following 10 hypotheses:

H1₀: Liquity Risk (LRISK1) has no significant relationship with Return on Assets.

H1_A: Liquity Risk (LRISK1) has significant relationship with Return on Assets.

H2₀: Liquity Risk (LRISK1) has no significant relationship with Return on Equity.

H2_A: Liquity Risk (LRISK1) has significant relationship with Return on Equity.

H3₀: Liquidity Risk (LRISK2) has no significant relationship with Return on Assets.

H3_A: Liquidity Risk (LRISK2) has significant relationship with Return on Assets.

H4₀: Liquidity Risk (LRISK2) has no significant relationship with Return on Equity.

H4_A: Liquidity Risk (LRISK2) has significant relationship with Return on Equity.

H5₀: Liquidity Risk (LRISK3) has no significant relationship with Return on Assets.

H5_A: Liquidity Risk (LRISK3) has significant relationship with Return on Assets.

H6₀: Liquidity Risk (LRISK3) has no significant relationship with Return on Equity.

H6_A: Liquidity Risk (LRISK3) has significant relationship with Return on Equity.

H7₀: Capital Risk (CPRISK1) has no significant relationship with Return on Assets.

H7_A: Capital Risk (CPRISK1) has significant relationship with Return on Assets.

H8₀: Capital Risk (CPRISK1) has no significant relationship with Return on Equity.

H8_A: Capital Risk (CPRISK1) has significant relationship with Return on Equity.

H9₀: Capital Risk (CPRISK2) has no significant relationship with Return on Assets.

H9_A: Capital Risk (CPRISK2) has significant relationship with Return on Assets.

H10₀: Capital Risk (CPRISK2) has no significant relationship with Return on Equity.

H10_A: Capital Risk (CPRISK2) has significant relationship with Return on Equity.

In the light of these hypotheses, the econometric models established in the research are shown as follows.

Model 1 $ROA_{it} = \beta_0 + \beta_1 LRISK1_{it} + \varepsilon_{it}$

Model 2 $ROE_{it} = \beta_0 + \beta_1 LRISK1_{it} + \varepsilon_{it}$

Model 3 $ROA_{it} = \beta_0 + \beta_1 LRISK2_{it} + \varepsilon_{it}$

Model 4 $ROE_{it} = \beta_0 + \beta_1 LRISK2_{it} + \varepsilon_{it}$

Model 5 $ROA_{it} = \beta_0 + \beta_1 LRISK3_{it} + \varepsilon_{it}$

Model 6 $ROE_{it} = \beta_0 + \beta_1 LRISK3_{it} + \varepsilon_{it}$

Model 7 $ROA_{it} = \beta_0 + \beta_1 CPRISK1_{it} + \varepsilon_{it}$

Model 8 $ROE_{it} = \beta_0 + \beta_1 CPRISK1_{it} + \varepsilon_{it}$

Model 9 $ROA_{it} = \beta_0 + \beta_1 CPRISK2_{it} + \varepsilon_{it}$

Model 10 $ROE_{it} = \beta_0 + \beta_1 CPRISK2_{it} + \varepsilon_{it}$

F. Research Findings

In this section, the findings of the research on the effect of liquidity and capital risk on operational performance (profitability) in publicly traded cement companies in Nigeria are presented. As stated in methodology section, liquidity risk was calculated according to three different criteria (LRISK1, LRISK2, LRISK3) and

capital risk was calculated according to two criteria (CPRISK1, CPRISK2).

The LRISK1 independent variable, which represents the liquidity risk in Model 1, is analyzed whether it has an effect on ROA. According to the results in Table 2, the model is completely significant ($F=0.0108 < 0.05$). The standard errors in the model have been robust. The t statistic value is -2.80 and the t statistic probability value is 0.011 which is less than 0.05. Accordingly, it was determined that LRISK1 had a significant but negative effect on ROA. The findings show that the H_{10} hypothesis was rejected and the H_{1A} hypothesis was accepted.

Table 2: Model 1 Results

ROA	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
LRISK1	-0.1115	0.0389	-2.80	0.011**	0.0108	0.2990
cons	0.2835	0.0593	4.78	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

In Model 2, LRISK1 is again included as an independent variable, but in this model, the effect of LRISK1 on ROE as representative of operational performance is analyzed. According to Table 3, the model is significant ($F=0.0088 < 0.05$). the standard errors have been robust. The t statistic values is -2.89 and the t statistic probability value is 0.009, less than 0.05 too. The research showed that LRISK1 had a significant but negative effect on ROE.

Table 3: Model 2 Results

ROE	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
LRISK1	-0.2323	0.0804	-2.89	0.009***	0.0088***	0.3847
_cons	0.5494	0.1094	5.02	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

Next we look at LRISK2 independent variable, this represents Model 3 and its analysis is based on whether it has an effect of ROA. According to Table 4, the model is significant ($F=0.002 < 0.05$). the standard errors have been robust. The t statistic values is -4.52 and the t statistic probability value is 0.000, less than 0.05 too. The research showed that LRISK2 had a significant but negative effect on ROA.

Table 4: Model 3 Results

ROA	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
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LRISK2	-0.0640	0.0142	-4.52	0.000***	0.0002***	0.4566
_cons	0.2674	0.0380	7.03	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

In Model 4, LRISK2 is again included as an independent variable, but in this model, the effect of LRISK2 on ROE as representative of operational performance is analyzed. According to Table 5, the model is significant ($F=0.0004 < 0.05$). the standard errors have been robust. The t statistic values is -4.24 and the t statistic probability value is 0.000, less than 0.05 too. The research showed that LRISK2 had a significant but negative effect on ROE.

Table 5: Model 4 Results

ROE	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
LRISK2	-0.1264	0.0298	-4.24	0.000***	0.0004***	0.5284
_cons	0.5004	0.0685	7.31	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

Next we look at LRISK3 independent variable, this represents Model 5 and its analysis is based on whether it has an effect of ROA. According to Table 6, the model has no significance ($F=0.3938 > 0.05$). the standard errors have been robust. The t statistic values is -0.87 and the t statistic probability value is 0.394, greater than 0.05 too. The research showed that LRISK3 has no significance.

Table 6: Model 5 Results

ROA	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
LRISK3	-0.0010	0.0011	-0.87	0.394	0.3938	0.0244
_cons	0.1307	0.0198	6.61	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

In Model 6, LRISK3 is again included as an independent variable, but in this model, the effect of LRISK3 on ROE as representative of operational performance is analyzed. According to Table 7, the model has no significance ($F=0.2941 < 0.05$). the standard errors have been robust. The t statistic values is -1.08 and the t statistic probability value is 0.294, greater than 0.05 too. The research shows that LRISK3

has no significance.

Table 7: Model 6 Results

ROE	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
LRISK3	-0.0020	0.0018	-1.08	0.294	0.2941	0.0288
_cons	0.2304	0.0350	6.58	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

Next, we look at CPRISK1 independent variable, this represents Model 7 and its analysis is based on whether it has an effect of ROA. According to Table 8, the model has significance ($F=0.0017 < 0.05$), the standard errors have been robust. The t statistic values is -3.59 and the t statistic probability value is 0.002, less than 0.05 too. The research findings show that CPRISK1 has an impact on ROA.

Table 8: Model 7 Results

ROA	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
CPRISK1	-0.4221	0.1177	-3.59	0.002***	0.0017***	0.483
_cons	0.3243	0.0637	5.09	0.000		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

In Model 8, CPRISK1 is again included as an independent variable, but in this model, the effect of CPRISK1 on ROE as representative of operational performance is analyzed. According to Table 9, the model has significance ($F=0.0334 < 0.05$), the standard errors have been robust. The t statistic values is -2.28 and the t statistic probability value is 0.033, less than 0.05 too. The research showed that CPRISK1 has a significant but negative effect on ROE.

Table 9: Model 8 Results

ROE	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
CPRISK1	-0.6409	0.2816	-2.28	0.033**	0.0334**	0.3301
_cons	0.5204	0.1382	3.76	0.001		

*,**,*** indicate significance at 10%, 5% and 1% levels respectively.

Next, we look at CPRISK2 independent variable, this represents Model 9 and its analysis is based on whether it has an effect of ROA. According to Table 10, the model has significance ($F=0.0024 < 0.05$), the standard errors have been robust. The t

statistic values is -3.45 and the t statistic probability value is 0.002, less than 0.05 too. The research shows that CPRISK2 has significance.

Table 10 Model 9 Results

ROA	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
CPRISK2	-0.3912	0.1133	-3.45	0.002***	0.0024***	0.4858
_cons	0.2954	0.0578	5.11	0.000		

*, **, *** indicate significance at 10%, 5% and 1% levels respectively.

In Model 10, CPRISK2 is again included as an independent variable, but in this model, the effect of CPRISK2 on ROE as representative of operational performance is analyzed. According to Table 11, the model has significance ($F=0.032 < 0.05$), the standard errors have been robust. The t statistic values is -2.30 and the t statistic probability value is 0.032, less than 0.05 too. The research showed that CRISK2 has significance.

Table 11: Model 10 Results

ROE	Coef.	Robust Std. Err.	t	P>t	Prob > F	R-sq.
CPRISK2	-0.5997	0.2610	-2.30	0.032**	0.032	0.3384
_cons	0.4789	0.1197	4.00	0.001		

*, **, *** indicate significance at 10%, 5% and 1% levels respectively.

As a result of all the findings of the 10 model, statistically significant results were obtained in 8 models. Accordingly, 8 out of 10 null hypotheses were rejected (8 alternative hypotheses were accepted). It is not statistically appropriate to interpret anything positive or negative about the two hypotheses because the F statistical value for the 2 hypotheses is greater than 0.05 because these two models are not significant. Other than these two models, 8 models with significant results indicate that liquidity and capital risk affect the operational performance of cement companies. The next section contains the discussion and conclusion.

VI. DISCUSSION AND CONCLUSION

A. Summary

At this juncture, it is important that it is finalized this study with the summary of findings, conclusion, recommendations, and suggestions for further studies. So far, this research has made an attempt in presenting the different views of different experts and authors on the effect of risk management and the performance of cement companies in NSE, Nigeria. Also, suggestions for further and researcher's contributions to knowledge are contained in this chapter. The major findings of this research work are as follows:

- LRISK1 and LRISK2 independent variables were found to have a statistically significant negative effect on ROA and ROE.
- It has been determined that the increase in the liquidity risk level of this company, represented by LRISK1 and LRISK2, reduces profitability.
- The results show that the financial performance of companies in this sector is highly dependent on their short-term liabilities, current assets and inventories.
- These four results we found also support financial theories.
- The main interesting results on liquidity risk were found in Model 5 and Model 6. Both established models were not found significant as a result of the F test.
- Various control variables were added to the models, but the results remained unchanged.
- Also, CPRISK1 and CPRISK2 independent variables were found to have a statistically significant negative effect on ROA and ROE.
- It has been found that the increase in the capital risk level of this

company, represented by CPRISK1 and CPRISK2, reduces profitability.

B. Conclusion

The manufacturing companies is often seen as one of the backbones of most developing countries (Onoh, 2018) and will remain so for a foreseeable future. Therefore, the manufacturing sector of which the cement companies are part of and will remain fundamental in shaping the economy of Nigeria. The findings gotten from the research instruments and analysis shows that capital risk and liquidity risk are strong determinants to the performance in cement companies in Nigeria. For these cement companies to achieve their goals, vision and mission, there will be a need for these companies to focus on managing these risk variables. The study concluded that capital risk management is a vital key in ascertaining the performance of cement companies in Nigeria. This shows that cement companies in Nigeria should continue to improve on their capital risk management in order to restore the confidence of stakeholders and investors. Also, there is a need for these cement companies to continuously appraise their risk management approaches to know whether it can withstand emerging threats.

The results show that:

The financial performance of companies in this sector is highly dependent on their short-term liabilities, current assets and inventories.

The results obtained in the four models (Model 1, 2, 3 and 4) also support financial theories.

The main interesting results on liquidity risk were found in Model 5 and Model 6. Both established models were not found significant as a result of the F test.

Various control variables were added to the models, but the results remained unchanged. It has been determined that the liquidity risk, which is calculated only on the basis of cash and cash equivalents, does not have a significant effect on financial performance. This is perhaps the most important contribution of our research. Just holding cash does not contribute to profitability (ROA and ROE).

Capital risk was also investigated in the study. Here, again, interesting results

were obtained. Theoretically, it is argued that firms can increase profitability by using leverage.

However, the findings in Models 7, 8, 9 and 10 shows that this is not true in Nigerian non-mineral industry companies.

The results in these four models (Models 7, 8, 9 and 10) are statistically significant. It indicates that an increase in capital risk decreases firm performance in the short run.

It was not easy for us to access data from companies in Nigeria. Due to time constraints, we could only concentrate on one industry. Our recommendation (and our goal) to future researchers is to test this hypothesis for more industries.

C. Business Implications of Findings

The business implication of the findings of this study is important for the strategic positioning and performance of cement companies operating in Nigeria as it relates to capital and liquidity risk management. The findings emphasize on the effect of financial risk on the organizational performance. The finding on capital risk shows a negative and significant relationship between capital risk and the performance of the organization. Similarly, the study also shows that a unit change in the liquidity risk has an effect on the performance of the organizations. Businesses should therefore understand and manage their risk investment as it relates to capital and liquidity.

D. Contribution to Knowledge

This study will help to broaden the existing literatures on risk management and the performance of cement companies in Nigeria. The study shows that capital and liquidity risks has a combined significant effect on the financial performance of cement companies in Nigeria. When organization takes adequate cognizance of this strategic factors, organizations will tend to perform better. Consequently, there has been a little empirical research on the topic as it relates to the cement industry in Nigeria. This study will therefore fill in this gap to enable future researchers to develop more in this area of study.

E. Recommendations

The study has established that capital risk management and control is of vital importance in making sure that the business entity holds or maintain an adequate capital against the risk that is involved in business and the potential losses that the company might encounter is a key element in risk management. The study therefore recommends that management should ensure that they adapt their capital related activities to the changing business conditions and come up with policies and strategies of managing their capital and conducting sound credit evaluation before investing or expanding.

The study also recommends that management should ensure that they set up advisory groups to advise them on financial matters in particular those that relates to liquidity and capital risks.

The study recommends that the cement companies should ensure that they formulate and implement guides in relation to liquidity risk management policies that will help to ensure check and balances.

Finally, there is also a need for these cement companies to adopt sound corporate governance practices and manage their risks in an encompassing and integrated ways. More efforts need to be channelled on new accounting practices as it relates to book keeping for the effective performance of the business units.

F. Suggestions for Further Research

The study focused on risk management as it affects the performance of cement companies in Nigeria. It is recommended that a further study should be carried out on other factors such as credit risk, operational risks technological risk etc. can affects the performance of other manufacturing firms or service industries in Nigeria such as the banks. Further studies can also be carried out on risk management practices and strategies as carried out in other sectors of the country. Here, the study may aim at investigating on the awareness of these companies on the 21st century risk management practices.

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APPENDICES

Appendix 1: Ols Regression Analysis Outputs In Stata Program For Model 1

Appendix 2: Ols Regression Analysis Outputs In Stata Program For Model 2

Appendix 3: Ols Regression Analysis Outputs In Stata Program For Model 3

Appendix 4: Ols Regression Analysis Outputs In Stata Program For Model 4

Appendix 5: Ols Regression Analysis Outputs In Stata Program For Model 5

Appendix 6: Ols Regression Analysis Outputs In Stata Program For Model 6

Appendix 7: Ols Regression Analysis Outputs In Stata Program For Model 7

Appendix 8: Ols Regression Analysis Outputs In Stata Program For Model 8

Appendix 9: Ols Regression Analysis Outputs In Stata Program For Model 9

Appendix 10: Ols Regression Analysis Outputs In Stata Program For Model 10

APPENDIX 1: OLS Regression Analysis Outputs in Stata Program for Model 1

```

Linear regression                Number of obs   =       23
                                F(1, 21)       =       7.82
                                Prob > F            =       0.0108
                                R-squared           =       0.2990
                                Root MSE        =       .0694
    
```

roa	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lriskl	-.111535	.0398872	-2.80	0.011	-.194485	-.028585
_cons	.2834855	.0593371	4.78	0.000	.1600872	.4068838

APPENDIX 2: OLS Regression Analysis Outputs in Stata Program for Model 2

```

Linear regression                               Number of obs   =       23
                                                F(1, 21)       =       8.35
                                                Prob > F       =       0.0088
                                                R-squared     =       0.3847
                                                Root MSE     =       .1194
    
```

roe	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lrisk1	-.2323425	.0803993	-2.89	0.009	-.3995421	-.0651429
_cons	.5493645	.1093788	5.02	0.000	.3218988	.7768301

APPENDIX 3: OLS Regression Analysis Outputs in Stata Program for Model 3

Linear regression

Number of obs	=	23
F(1, 21)	=	20.41
Prob > F	=	0.0002
R-squared	=	0.4566
Root MSE	=	.0611

roa	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lrisk2	-.064003	.0141664	-4.52	0.000	-.0934638	-.0345423
_cons	.2674487	.0380394	7.03	0.000	.1883415	.3465559

APPENDIX 4: OLS Regression Analysis Outputs in Stata Program for Model 4

```

Linear regression                               Number of obs   =       23
                                                F(1, 21)       =       17.98
                                                Prob > F       =       0.0004
                                                R-squared     =       0.5284
                                                Root MSE     =       .10453
    
```

roe	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lrisk2	-.1264471	.0298222	-4.24	0.000	-.1884658	-.0644284
_cons	.5003616	.0684751	7.31	0.000	.3579597	.6427634

APPENDIX 5: OLS Regression Analysis Outputs in Stata Program for Model 5

```

Linear regression                Number of obs   =      23
                                F(1, 21)       =      0.76
                                Prob > F            =      0.3938
                                R-squared           =      0.0244
                                Root MSE        =      .08187
    
```

roa	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lrisk3	-.0009893	.0011364	-0.87	0.394	-.0033525	.0013739
_cons	.1307305	.0197897	6.61	0.000	.0895756	.1718853

APPENDIX 6: OLS Regression Analysis Outputs in Stata Program for Model 6

```

Linear regression                Number of obs   =       23
                                F(1, 21)       =       1.16
                                Prob > F            =       0.2941
                                R-squared           =       0.0288
                                Root MSE        =       .15001
    
```

roe	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lrisk3	-.0019753	.0018358	-1.08	0.294	-.005793	.0018424
_cons	.2304313	.0350147	6.58	0.000	.1576142	.3032484

APPENDIX 7: OLS Regression Analysis Outputs in Stata Program for Model 7

```

Linear regression                               Number of obs   =       23
                                                F(1, 21)       =      12.87
                                                Prob > F       =      0.0017
                                                R-squared     =      0.4830
                                                Root MSE     =      .0596
    
```

roa	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
cprisk1	-.4221233	.1176641	-3.59	0.002	-.6668191	-.1774275
_cons	.3243329	.0637493	5.09	0.000	.1917589	.4569069

APPENDIX 8: OLS Regression Analysis Outputs in Stata Program for Model 8

```

Linear regression                Number of obs   =       23
                                F(1, 21)       =       5.18
                                Prob > F            =       0.0334
                                R-squared           =       0.3301
                                Root MSE        =       .12459
    
```

roe	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
cprisk1	-.6409067	.2815865	-2.28	0.033	-1.226498	-.0553155
_cons	.5203731	.1382431	3.76	0.001	.2328809	.8078652

APPENDIX 9: OLS Regression Analysis Outputs in Stata Program for Model 9

```

Linear regression                Number of obs   =      23
                                F(1, 21)       =     11.92
                                Prob > F            =     0.0024
                                R-squared           =     0.4858
                                Root MSE        =     .05943
    
```

roa	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
cprisk2	-.3912414	.113317	-3.45	0.002	-.6268971	-.1555857
_cons	.295377	.0577809	5.11	0.000	.1752151	.415539

APPENDIX 10: OLS Regression Analysis Outputs in Stata Program for Model 10

```

Linear regression                               Number of obs   =       23
                                                F(1, 21)       =       5.28
                                                Prob > F       =       0.0320
                                                R-squared     =       0.3384
                                                Root MSE     =       .12381
    
```

roe	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
cprisk2	-0.599672	.2610123	-2.30	0.032	-1.142477	-.0568673
_cons	.4789095	.119715	4.00	0.001	.2299485	.7278705

RESUME

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