INVESTEMENTS IN LONGTERM ASSETS AND FINANCIAL PERFORMANCE OF LISTED CEMENT PRODUCING FIRMS IN KENYA

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DECLARATION

Student Declaration

This research project is my original and has not been submitted for the award of a degree in any other university

Signature ……Date……..

EDWIN MATOKE OMBEGA

This research project has been submitted for examination with my approval as the university supervisor

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I thank the almighty God for the providence of good health, knowledge and perseverance to study, collect data and make meaningful conclusion for the industry in this project. I further thank my supervisor for the time and the guidance he took with me to see I complete this project in time.

DEDICATION

This project is dedicated to my father and mother and my entire family member for their prayers and encouragement.

May the almighty bless them and enlarge their territories.

ABSTRACT

Firms in the cement industries are engaged in processes that convert limestone to cement. This requires investments in capital goods like plant and equipment to carry out activities to deliver finished goods. On the other hand firms can opt to purchase semi-processed raw materials called clinker and get cement out of it. In the past decade cement firms in Kenya have invested large sums of money in expansion projects that target clinker plants and other product lines. This has seen the cement industry awash with various brands and products for construction activities. This study sought out to establish if investments in these capital goods pay off in terms of their financial performance.

The study considered investment in fixed assets as measured by the book value of long-term assets form the statement of financial position. The financial performance was measured by Return on Assets. The study focused on listed cement companies for the period 1993 to 2016. Secondary data was gathered from audited annual reports that were filed with the Capital Markets Authority. Panel data analysis using regression was adopted for the study.

The result revealed a unit increase in fixed assets leads to a 17% growth in financial performance measured by ROA. Other control variables were introduced namely age, Firm Size and debt ratio. It was noted that age had no impact on financial performance while firm size was strongly positively correlated. On the other hand the debt ratio was inversely related to financial performance. This should inform cement industries to opt for alternative financing than debt while investing in capital goods.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Organizations set up for commercial gain require investment in productive assets. These include land, plant and machinery, buildings, furniture and fittings and motor vehicles among others to enhance the productivity of the firm. Asset utilization is a competitive strategy that firms employ to keep others at bay and increase their offering. This offering is then put to the market in the right manner in efforts to increase the value of the firm.

A firm requires plant and machinery to produce therefore, efficiency in the use of long-term investments should be compared to sales. Pandey (1999) argued that in order to measure this efficiency the rate of assets conversion to sales should be employed. This shows the adequacy of sales in comparison to investment in capital goods. Thus it can be concluded that efficient use of capital goods in generating sales is indicated by a high turnover ratio. On the other hand the reverse is true for a low ratio.

Capital budgeting, involves investment opportunities in long-term assets, is crucial in capital investments (Peterson and Fabozzi, 2002). For a firm to increase its competitive edge the ability to effectively utilize installed capacity is of paramount importance. Thus, It is difficult to sustain a competitive edge when the firm does not operate above 70% capital utilization rate

The cement industry much like other processing industries requires large investment in capital goods. This makes cement companies to commit a lot of funds in capital investment. Thus efficient utilization of fixed assets is an important part of a cement company in creating value for shareholders. The purpose of a production entity is to reduce the cost of production and maximize profits. This is achieved by employing prudent operations strategies for the product to reach the end consumer.

1.1.1 Investments in Fixed Assets

Capital budgeting deals with the process of appraising and decisions on investments for the long term, which will create value in line with wealth maximization. Brigham and Weston (2005) indicated that this includes decisions making about incurring expenses to acquire buildings, land and plant whose benefits go beyond a period of one year. These goods affect the firm for a long time and since funds are paid immediately the benefits on the other hand are realized over the years. Thus they are long-term investments, which are not intended to be converted into cash or used within one year. They include plant, equipment, land, buildings and furniture and fittings. They are found in the balance sheet statement as non-current assets or long-term assets.
Utilization of these assets to generate sales is important to affirm as it affects its competitiveness in the market. This goes a long way in the competitive strategy of a firm as it seeks to increase its market share.

Capital budgeting, which is analyzing investment opportunities in long-term assets, is crucial in capital investments (Peterson and Fabozzi, 2002). For a firm to increase its competitive edge the ability to effectively utilize installed capacity is of paramount importance. Thus, It is difficult to sustain a competitive edge when the firm does not operate above 70% capital utilization rate.

Thus investments in fixed assets will be measured by Value of long-term investments, Asset Turnover Ratio and production efficiency. Where production efficiency refers to total output per unit installed production capacity. Asset turnover ratio will be measured by total sales per unit shilling invested in long-term assets. The long-term assets will adopt a measure of growth rate of capital investment year on year on.

1.1.2 Financial Performance

A Firm's financial performance is interested in the economic wellbeing of a firm expressed in financial measures according to Pandey (2004). Firms achieve this by value addition and returns on investment in assets .The primary goal of a firm is not to increase financial ratios and measures as Earning per share or net income but to maximize shareholders value (Brigham & Houston 2007). Thus the most important measure in the view of shareholders is their stock returns. This is measured by a financial ratio such as Return on Equity (ROE) that is the net income per unit stockholder equity. Data to compute ROE is gathered from the income statement and balance sheet of the entity. The ROE reports to the stockholder the rate at which

the firm is generating returns on their investment. This rate determines the stock price in that a higher ROE leads to higher stock prices in similar manner measures that increase ROE also increase the price of stocks.

The main objective that makes shareholders invest in a firm is that they may grow their wealth. It's from this objective that adequate financial performance measures should report on all of the effects of investment on the wealth of shareholders (charreaux, 1997)

Return on Assets (ROA) also measures the financial performance of a firm. This ratio is computed as after tax Net profit per unit of capital goods employed in production. ROA measures how efficient a firm is in generating income from its capital goods (Ahmad and Abdullah, 2012)

This study will use Return on Assets to establish its impact on the financial performance of cement companies in Kenya.

1.1.3 Investment in long term Assets and Financial performance

Manufacturing firms use capital goods to convert raw materials to finished goods thus creating value that generates returns for the firm (Brigham, et all, 1999). The utilization of these assets presents a competitive edge to firms which when exploited efficiently generates value.

A study by Olatunji, Toyin (2014) on investment in long term capital goods and profitability of a firm as depicted by Banks in Nigeria concluded a positive correlation exists between Net Profit and investments in buildings, information communication and technology, machinery, leasehold land and furniture and fittings.

Previous studies have shown that investment in long-term capital goods may have an important effect on the performance of an entity. Ibam (2007) demonstrated that a company's long-term investment is conditioned by the industry it operates in. According to IBam fixed assets turnover ratio when compared to that of competitors gives a measure of productivity of a firm. The higher the number of times turned over, the better for a firm.

Okwo et al (2012) did a study on investment in long-term capital goods and profitability as shown by the brewing industry in Nigeria. Secondary sources like annual financial reports

formed the backbone of data from select brewery firms in a period of five years to 2009. These breweries were listed at the Nigerian stock exchange. The results of the tested hypothesis showed that the role-played by long term investment is not significant in affecting profit of the listed breweries.

Zein Ahmed (2012) in his study sought to find out if there is any correlation between capital investments and firm performance in the banking sector in Kenya. This study employed a census survey and all commercial banks operating in Kenya formed the population. Secondary sources of data were used and the study used multiple linear regressions for data analysis. In the end Zein showed that a positive relationship exists between capital investment and firm performance. Financial performance was explained using profitability, cash flow and return on investments.

1.1.4 Cement Industry in Kenya

The cement industry is at the center of the Kenyan economy since cement is the main material for the building and construction industry. The cement industry requires huge investment in long-term capital, which is seen by many as a barrier to entry. In the recent past a number of firms have invested largely in capital equipment. These include Athi River Mining Company spending $30m in a clinker plant. Also the Dangote cement which plans to set up a plant in Kenya focused investments of upwards of $400 million (Oxford Business Group , 2017)

The competitive edge of the cement industry is pegged on price with most of the firms trying to out to do each other in the market. This is what the Dangote cement company employed when trying to get a foothold in the Kenyan market with cement produced from its Ethiopia plant. The price strategy is underpinned by cost reduction, product differentiation and branding. This is augmented well with advertising. It's also seen that most firms opt to own the supply chain management to reduce the inefficiencies that may arise if left to external parties. Thus controlling resources like limestone and clinker has been a strategy of most firms. This has seen the companies investing large capital in clinker plants notably Bambara and Athi River mining company. Also owning lands rich of limestone the main ingredient of the cement manufacturing is a strategy of most firms (Oxford Business Group , 2017)

The building and construction sector in Kenya is amongst the most rapidly growing economic sectors. It recorded the fastest growth of 13.6% in 2015 compared to 13.1 percent in

2014(KNBS Economic Survey 2016). Cement is the main building material used in construction. In East Africa Kenya is leading in the production and consumption of cement. Kenya has six cement-producing firms these are Bamburi Cement, ARM Cement Ltd, East Africa Portland Cement Company (EAPCC), Mombasa Cement Company, National Cement and lastly Savannah Cement

Bamburi cement is the leading cement producer in Kenya and was established in Mombasa in 1951. Production started three years later. Bamburi cement is associated with the Nguvu brand cement. It was listed at the NSE in 1970 and has Lafarge group as the largest shareholder with a lion's share at 58.6% (Dyer & Blair 2012). Bamburi controls 40.5% of the market and has an annual production capacity of 2.1 million tones

EAPCC is the oldest cement company established in 1933 as a cement importer. It produces the Blue Triangle Cement. EAPCC first set up a production plant in Athi River in 1956. Amongst EAPCC shareholders is the government of Kenya (25.3%), Lafarge Group (14.6) and the National Social Security Fund (27%). EAPCC has diversified lately into precast Cement product. EAPCC has an annual capacity of 1.3 million tones.

ARM Africa LTD has a market share of 15.5% making it the third largest producer of cement in Kenya. It started in 1974 as a family business before listing at NSE in 1997. The founder's family, Punrana is the majority shareholder with 46%. ARM's flagship brand is called the Rhino Cement and also produces fertilizer, lime and industrial Minerals.

Mombasa Cement has an annual capacity of 1.5 million tones similar to Savannha cement. National Cement a subsidiary of Devki group has an annual capacity of 2 million tones. There are two companies which have shown interest to build plants in Kenya and these are Dangote Cement group that plans to build a $400m plant in kitui and Cemtech a subsidiary of indias Sanghi Group

1.2 Research problem

A firm's main goal is to maximize shareholder value. A firm can do so by coming up with strategies to utilize capital goods effectively to create value. Capital is necessary and like other factors of production it has a cost. This cost is equal to the marginal investor's required return. This rate is sometimes referred to as hurdle rate. Projects whose expected return exceed the hurdle rate are accepted (Bringham, et al 1999)

An optimal capital allocation strategy is critical in investment decision-making process. Thus cement industries like other manufacturing firms require a large amount of fixed asset invest in capital equipment. They focus on reducing cost of production in order maximize profit hence better firm performance. The problem is increasing profit at the expense of fixed asset can create serious problems to the firm. Firms find it difficult to increase investment in fixed assets in as much as they enhance the productive capacity of firms (olatunji et all 2014).

Njiru (2008) found that parastatals preferred NPV and IRR as appraisal techniques. Further he indicated that organization size, policy of the government and practices by the industry also have a bearing on the technique of choice. This brings about a question on whether the cement industry in Kenya considers such techniques and to what extent they will have an impact.

Munyao (2010) concluded that NSE listed companies employ PBP, NPV, IRR and ARR project appraisal decisions. In this study he demonstrated that there exists a positive correlation between the methods employed to appraise projects and the firm performance. He noted that this case may not apply to non listed firms as no research had been done. He further recommended EPS as measure of firm performance for long-term investments studies.

The trend of studies has focused on capital budgeting techniques in various industries without focus on the capital budgeting in the cement industry and its overall impact on cement industry performance. This provides a gap and calls for research on capital investments by cement companies and its impact on firm performance. This industry is very capital intensive and the study will inform industry players if it plays a role on firm performance or not. This raises concerns on the techniques employed by this industry and how investments in long-term capital influence the firm performance.

1.3 Research objective.

The objective of the study is to establish the relationship between long-term capital investments and the financial performance of cement producing firms in Kenya.

1.4 Value of the Study

Most studies on capital investments in the country have focused on capital budgeting techniques with few on capital investments and firm performance. Little has been done on the impact of long term investments on the financial performance in an industry like manufacturing.

The findings of this study will provide knowledge that will provide knowledge that will inform capital budgeting in developing countries. This will provide international investors with an opportunity to estimate financial performance given the firm's investment in capital projects.

This study will also help the industry in its pricing decisions and also Scholars who will want to study pricing factors in the cement industry. As pricing has been a debate in the construction of industry since Dangote Cement started selling cheap cement at half the retail price of local Kenyan companies.

The shareholders will be in position to check investment in capital projects knowing its impact on firm performance. This will help reduce the agency cost as management seeks to invest in capital projects without considering alternatives.

The study will also provide information to researchers who would seek to establish relationship between firm performance and capital budgeting in industry specific studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focused on literature that is related to investment in resources that theoretically guarantees financial performance of a firm. It summarizes theoretical and empirical evidence obtained from various journal articles, text and websites. These are helpful to investigate the impact capital goods have on financial performance of cement companies in Kenya.

2.2 Theoretical Framework

Theories relevant to this study have been discussed herein, these include. New Institutional Economics, Agency Theory, Stakeholder Theory, Resource dependent theory and financial economics theories. These theories have been found to influence capital budgeting in a firm.

2.2.1 New Institutional Economics

In modern times new institutional economics provide an important dimension to risk management. This concentrates on governance and how processes are established in organizations as noted by (Williamson, 1998). This theory explains that risk management activities in organizations are determined by what is accepted as practice in that industry. This theory is vital in contracts that brings together two parties such as supply of raw materials or plant equipment in the chain of supply (Williamson, 1987)

This theory has a critical implication on hedging. Which has a heavy bearing on how capital investments are managed. This is seen when a firm seeks to keep a plant running it may chose to hedge on fuel to protect itself against raising cost. New institutional economics acts in similar manner like agency theory in that it leads shareholders to seek block ownership for a more effective control.

2.2.2 Stakeholder Theory

Stakeholders are a group or individuals that have an impact on organizations objectives - Freeman and Reed (1983. A firm's success goes beyond stakeholders with financial interests or contracts like suppliers and customers. Good stakeholder management creates an environment where prudent financial management thrives and management make informed choices that benefits all stakeholders (Deegan, 2009)

It is very hard to ensure long-term market value of a firm when a firm mistreats a constituent of its stakeholders. This is argued by Jensen (2001) in what he called "enlightened value maximization". Corporate governance is related to stakeholder theory as the former is concerned with both internal and external stakeholders. Firms exploit natural resources owned by the society and good stakeholder engagement requires firms t o compensate the community with a form of payment in return which goes along way in good stakeholder engagement.

Sustainable firms have realized that in order to grow and succeed one needs to ensure the interests of all stakeholders are maximized (Psaros, 2009).

2.2.3 Resource Dependent Theory

The ability of firms to control external resources is critical to ensure its succeeds in its operations (Psaros, 2009). This is very critical especially to manufacturing firms that rely on raw materials for the production of goods. Cement companies are no exception, as they require limestone and clinker to produce cement. Thus A firm should strive to create these important links with resources external to the firm needed for it to maximum performance (Hillman et al, 2000).

As a cost reduction strategy firms will leverage on the control of external resources to lower the cost of resources and lower the agency costs associated. This also eliminates uncertainty that would arise when accessing these resources (Psaros, 2009)

2.2.4 Agency Cost Theory

There exist a potential conflict between shareholders and managers in organizations. In this case shareholders being the principals and the mangers being the agents who act for stakeholders (Jensen and Meckling, 1976)

This conflict arises when managers with different tolerances toward risk compared to shareholders seeks personal goals instead of maximizing shareholder wealth. This has an impact in how they chose to utilize resources engaged in a firm's generation of output. Shareholders are faced with a conflict to ensure managers do not utilize capital goods in an unprofitable manner. In such a case shareholders would put targets on returns in the hope that it will force managers to become more disciplined (Jensen, 1986 and Williamson, 1988).

2.2.5 Financial Economics

Financial economics branches from broader economics and involves relationship between financial variables. Financial economics deals with asset valuation, cash flows, the rate of discounting, asset comparison and capital assets dependence.

The theories that underpin financial economics include arbitrage pricing Stephen Ross (1976) and the portfolio theory discovered by Jack Tregnor (1961 and 1962). Financial economics therefore covers risk assessment that seeks to reduce the uncertainty in returns and profits. It treats the cost of capital as an opportunity cost

Financial Economics offers guidance when a firm seeks to acquire, issue, value or invest in securities in the financial market. This will lead a firm to buy underprices stocks and sell stocks that are overprices this creates a return for the firm (Graham & Dodd, 1934). However, Harry Markowitz (1952) demonstrated the effect of portfolio risk when he showed that portfolio of stocks could generate a higher return at a lower level of risk than individual stocks held alone. This is called portfolio diversification. However, building upon Markowitz work, William Sharpe (1964) explained the expected return of individual securities in a well-diversified portfolio. According to Markowitz investors are compensated only for bearing systematic risk, which cannot be diversified away.

Merton Miller and Franco Modigliani (1958)-"The Cost of Capital" they examined the impact the use of debt and dividends had upon the value of the firm. They found no effect on the value of the firm derived from strict assumptions including no taxes.

2.3 Determinants of the Dependent Variable of the Context of the Study

Firm performance is measured by accounting based measures as ROE, ROA, EPS and Net Profit Margin. In this study firm performance will be measured by two accounting ratios namely ROA and ROE. The following factors affect these variables.

2.3.1 Asset Utilization

Asset utilization measures what capable assets produce. This is a measure of how mangers effectively utilize assets to generate returns. On the other hand, asset dis-utilization is the losses in revenue when assets are underutilized. Assets dis-utilization increases agency cost since managers' work not in the interests of shareholders (Fleming, Henry and McCosker, 2005)

Okwo (2012) established a significant positive correlation between asset utilization and financial performance of firms. Xu and Xu conducted a study on optimal allocation of capital in long term investments and financial performance of a firm. They concluded from the study that a positive correlation exists between capital budgeting and firm performance.

2.3.2 Firm Size

Empirical studies when they refer to firm size have resorted to proxies that include; number of employees, total assets, market capitalization or sales. Additionally, firm size has also proxy theoretical constructs like risk, political costs or liquidity (Ball and Foster, 1982). The pursuance of an exact definition of firm size has been considered utopic, as size is multi-dimensional (Duarte Trigueirios, 2000)

Lee (2009) investigated what firm size does to profitability of a firm. Results obtained revealed that the size of the firm affects profitability . Amato and Burson (2007) researched on the relationship of firm size and profitability in the finance industry. The results concluded that a negative relationship between firm size and gross operating ration exists.

2.3.3 Liquidity

Current ratio that measures working capital is a relative measure of liquidity. This ratio is useful when comparing companies with varying total current assets and liabilities.

A study by Binti and Binti (2010) demonstrated how current ratio relates inversely to firm performance as shown by firms in the stock exchange in Malaysia. El Jelly (2014) examined the relationship of liquidity to profitability on 29 joint stock companies in Saudi Arabia. The results obtained confirmed that a negative correlation exists between the profits generated by a firm and the liquidity ratio.

2.4 Empirical Studies

Peter Weill of graduate school, University of Melbourne conducted a study on information technology investment and financial performance of a firm. The study focused on the firms that manufacture valves in Australia. Weill relied of historical data on investment in IT and financial reports for a population of 33 companies. Investment was categorized by management objective that is; strategic, informational and transactional. These were analyzed against four measures of firm performance that is, return on assets, sales growth and two measures of labor productivity. The study concluded that transactional IT investment is significantly associated with strong firm

performance during the study period. Strategic IT has no tangible association with firm performance in the long term but evidence from poorly performing firms showed association albeit in the short term. He confirmed that the firms that adopt IT strategy early are successful but the competitive advantage ceases once the technology becomes common.

Thomas R. Eisenman (2006) in his study on growth strategies employed by internet companies and the factors affecting long term financial performance. Thomas was able to demonstrate how to exploit first-mover advantage. In his paper he analyzed econometric factors that influence investment level in growth against the long-term financial performance. Results showed that early starters spent more on marketing before operations than those that came later. The study showed that critical early investments in growth are rational economically and would repair a bad outcome in the event marketing expense affects returns in the long term.

Hitt, Hoskisson and Kim (1990) study on diversification in the international market affects innovation and performance of firms in product-differentiated companies. They were able to show as backed by theory that performance of a firm is positive but the curve tapers to the negative side as diversification increases markets internationally. The study also established that non-diversified firms perform badly when they pursue diversification internationally. The reverse is true in diversified firms. Product diversification helps to repair the relationship between diversification internationally and the performance of a firm. Finally they recommended that firms that pursue diversification in the international market to diversify their products.

Kadondi (2002) did a study on capital budgeting techniques and performance of firms listed in Kenya. She opined that capital investment decisions are the vital decisions take by organizations as they are not easily reversible. She surveyed 43 companies listed in the NSE. She discovered most companies ignore the first stages but they are concerned about incorporating risk in the capital budgeting process. The study also found out that the companies use the cost of financing and internal target rates of return to determine project discount rate. Lastly no relationship was established between firm, CEO and project and capital budgeting techniques

Olatunji and Adegbite (2014) did a study on the effect of long term investments on the profit reported by commercial banks in Nigeria. Data was collected from financial reports of the banks

under study. The study employed multiple regressions for analysis. Net profit was used to measure profitability and long term investments included (information communication and technology, buildings, Land, machinery and furniture and fitting). The study established that investment in fixed assets has a significant correlation with the profits reported by banks in Nigeria. The study recommended that to increase profitability banks should increase investment in fixed assets and monitor fixed assets utilization and productivity.

Zein Mohamed (2012) investigated the relationship between capital investments and the financial performance of commercial banks operating in Kenya. The study employed census survey and the study population was composed of all the commercial banks in Kenya. Secondary data was used which was analyzed using multiple linear regression. The study established that a positive relationship exists between capital investments and firm performance. The dependent variable was explained using profitability, return on investments, cash flows and gearing ratio. Zein recommended that commercial banks should investment more in capital goods and carry out project appraisal.

John and Morgan (1998) looked at the managerial reasons for evaluating non-capital expenses in capital budgeting. They focused on projects like advertising and R&D. these were settled as many authors question the appropriateness of subjecting non-capital expenditures to capital budgeting. These authors argue that its in appropriate to evaluate expenditures with uncertain outcomes with rigorous techniques like Net present Value. John and Morgan contend that is appropriate to evaluate non-capital expenditures because it is essential for firm survival. They further argue that no other technique is better than capital budgeting in finding out how capital expenditures impact on the firm performance

2.5 Summary of Literature Review

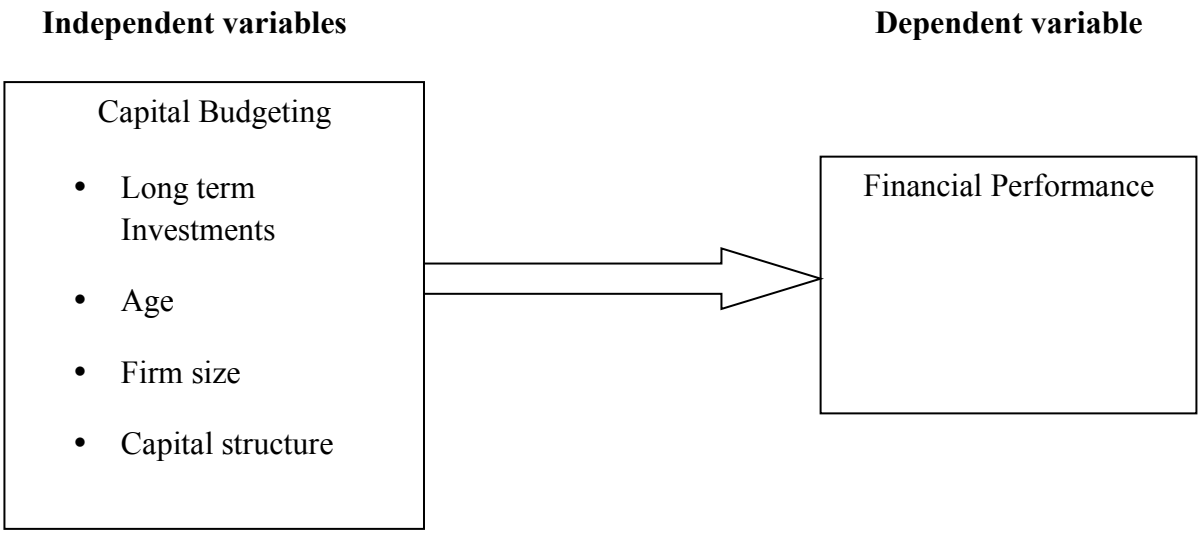
Investment in long-term assets is a precursor in any firm seeking to manufacture goods and increase its value. The use of these resources should be in a manager that creates maximum return

Managers have been known to use firm resources in in luxury that generates no shareholder wealth. Thus shareholders faced with this agency cost have resorted to stringent corporate governance in attempts to ensure managers operate efficiently and institute measures to ensure the resources of the firm are not wasted. (Jensen 1986 and Williamson 1988)

Wokabi (2014) found that a unit increase in capital budgeting lead to an increase on the return on investment. However kadondi (2002) did not see any relationship between firm, project and capital budgeting techniques. Olatunji and Adegbite (2014) discovered that Nigerian banks should increase investments in fixed assets and monitor fixed assets utilization to increase profits. Sundem (1980) concluded that under uncertain environments sophisticated capital budgeting techniques contribute to the value of the firm.

From the studies conducted in Kenya none has been done in the cement industry. From theory long term investment differs from industry to industry (Brigham, 2007). This study seeks to exploit this gap and focus on the cement industry in Kenya

2.6 Conceptual Framework



The framework above shows the independent variables that include but not limited to cost long-term investments, age of the company, firm size and number of operating plants affect the performance of cement producing firms in Kenya. There are many factors that affect the firm performance but this study will focus on those highlighted above.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology employed for this study. This refers to the tools and procedure employed by the researcher in conducting this study.

3.2 Research Design

The research design adopted for this study was a descriptive research design. Kothari (2005) says the descriptive research design is suitable as it enables one to collect, present, analyze and present the data in a meaningful manner. Data was collected from annual financial statements and secondary sources.

3.3 Population

A population is a group of items with similar characteristics as defined by the researcher (Mugenda, 2003). The study population consisted of the three listed cement firms as at December 2016.

3.4 Data Collection

The study used secondary sources of data that were derived from NSE handbooks, Annual reports of the companies under study and published books of accounts. Kothari (2005) defines data collection a systematic approach used to gather and assess information from various sources to achieve a holistic and a clear picture of the field of interest. Data collection enables the researcher to assess the results and project future possibilities and trends. The study will cover ten years period (1997-2016).

3.5 Validity and Reliability of Data

Data obtained from published books of account and the NSE handbooks that have been authorized by the capital markets authority. CMA is the regulator for capital markets in Kenya. The data was from the year 1997-2016**.**

3.5.1 Data Analysis

This study used the regression model that will involve the four variables these were Age, long-term assets, firm size and capital structure. These variables were expected

to influence the performance of cement companies in Kenya. The dependent variable was financial performance that was assessed using ROA. Kavita (2016) also applied a regression model to establish the nexus between variables.

$Y=\alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\varepsilon$

Where;

Y = Financial performance was determined using ROA.

X_1= long-term assets was evaluated from the statement of firm position

X_2= The number of years the company has been in operation

X_3= Firm size, measured as natural logarithm of Assets

X_4= The capital structure measured by debt ratio.

α = Regression constant

ε = Error term which is normally distributed about a mean of zero.

$\beta 1 \beta 2 \ldots \beta n$ = coefficients of variation established the volatility of each parameter on the financial performance in the regression equation.

3.5.2 Tests of Significance

The study adopted an F-test and T-test. In the F-test, F-value and F-critical value was used. F critical value is also known as F-statistics. If the calculated F-statistics was bigger compared to the F-value in the Table, the null hypothesis was to be rejected. This statistic was the only measure of significance in the F-test. P value was established by F-statistic, which is the likelihood that the results might have been realized through chance. T-tests will be applied to find out if the regression coefficient is significant at a given time.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter will present the study findings in relation to the objective. The study objective was to establish the relationship between investment in fixed assets and the financial performance of listed cement producing firms in Kenya. Data was gathered from all the three listed cement companies for a period of twenty years 1997-2016. Firm performance was measured by Return on Assets and capital investments were determined by the value of fixed assets reported in annual reports. Size of the firm, Age of the firm and capital structure measured by Debt ratio was considered in the study.

4.1 Missing Value Analysis

Before data analysis was carried out for the study missing value analysis was carried out for the data to understand the missing patterns and to confirm if the data is suitable for analysis.

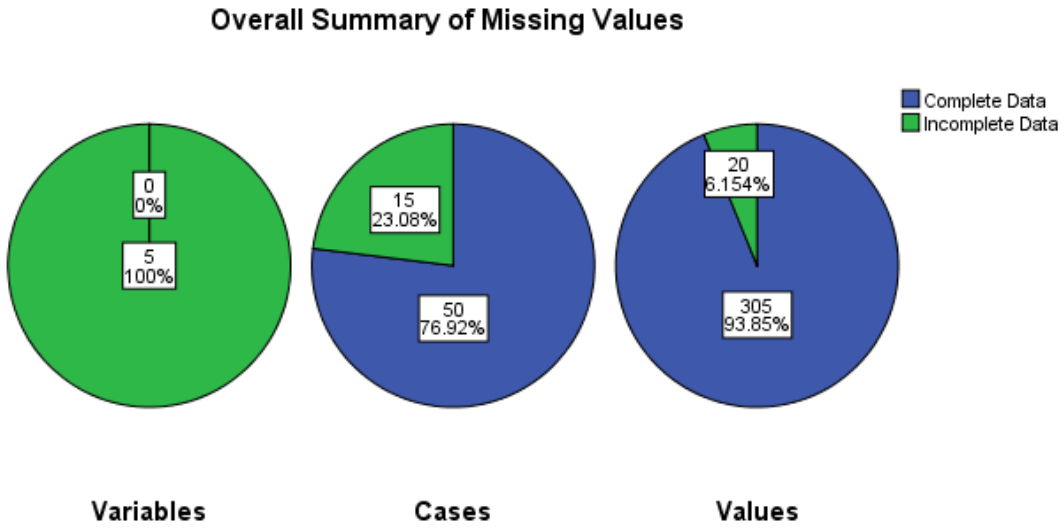


Figure 4.1.0 Overall summary of missing data

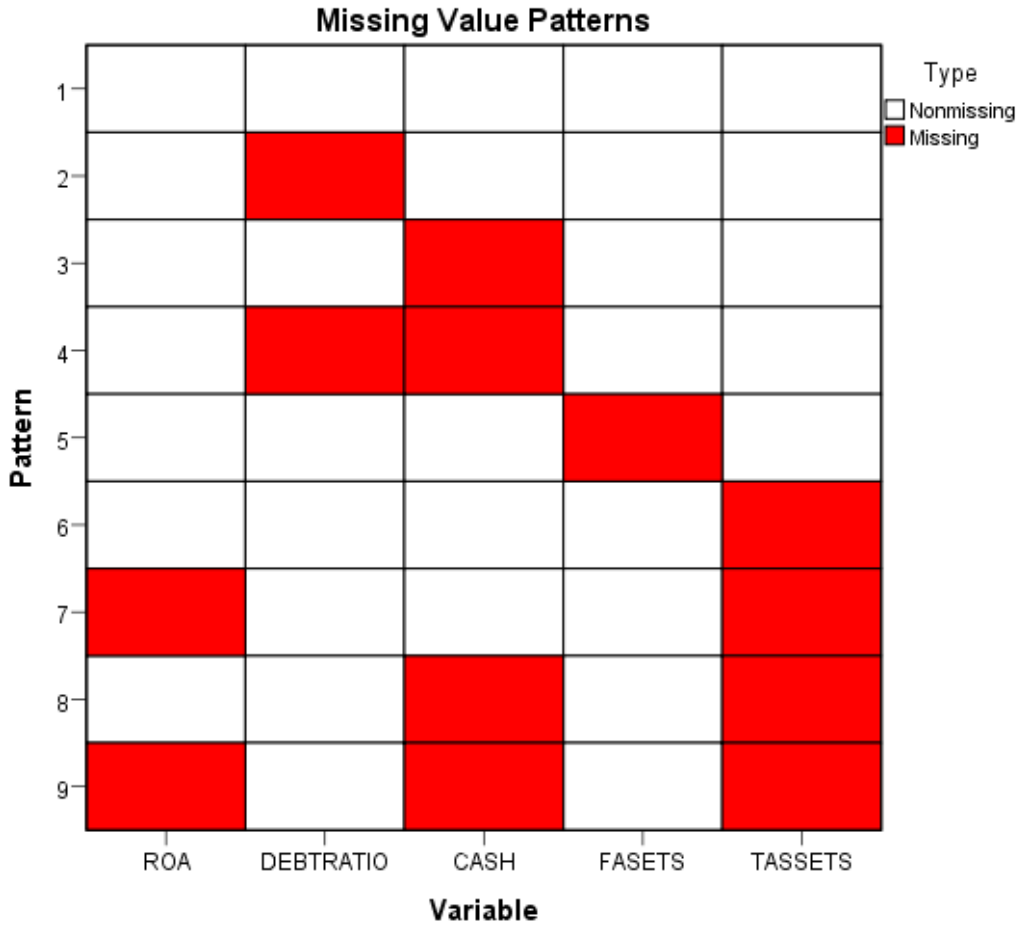


Figure 4.1.1

The figure 4.1 shows the missing value analysis from which the data revealed that of the values and cases the missing values were less than 20%. Therefore missing value imputation was carried out to replace the missing data. This was done in order to minimize biasness and to reduce errors associated with missing data.

4.2 Descriptive statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Log of Firm Size	68	.44	9.87	4.6285	2.20711
AGE	68	3.00	23.00	14.0154	5.67200
DEBTRATIO	69	-.02	.87	.2375	.26079
ROA	68	-.14	.84	.2325	.20379
Log of Firm Asets	68	3.88	8.90	5.8963	1.38974
Valid N (listwise)	68				

Table 4.2 Descriptive statistics

From the table above the study revealed that the log of firm size had a minimum value of 0.44 and a maximum of 9.87 with a mean of 4.8265. Consequently, from our data the minimum year was 3 and the maximum was 23. However the mean age was 14. The debt ratio revealed a minimum of -0.02; a maximum value is 0.87 and a mean of 0.2375. The study also found out that the ROA data had a minimum of -0.14, a maximum of 0.84 and a mean of 0.235. Finally, the data on fixed assets revealed a mean of 3.88, a maximum value of 8.9 and a mean of 5.8963.

The table 4.2 depicts that the minimum value for fixed assets was greater than the minimum value of total assets. Also the standard deviation of total assets is greater than that of fixed assets thus a higher variation of total assets compared to that of fixed assets.

The standard deviation for ROA and Debt Ratio were the lowest with values of 0.26079 and 0.20379 respectively. This shows there's minimal variation among the three firms with respect to Return on Assets and Debt Ratio.

4.3. Diagnosis Tests

A correlation matrix was used to test the multicollinearity assumption using the Variance Inflation Factor (VIF) and tolerance. The VIF factor was greater than 1 and less than 4 shown below. This indicates that multicollinearity assumption was met (Pallant, 2001). A high degree of multicollinearity is indicated by low tolerance values. In this regard when the tolerance value is less than 0.10 or a VIF value greater than 4 then the data is confirmed with significant multicollinearity (Hair et al., 1998). This was achieved by the data diagnostic tests with indicated tolerance values great than 0.10 and VIF values less than 4.

Independent Variable	**F-statistic**	**Significance**
	Tolerance	**VIF**
Debt Ratio	0.392	2.550
AGE	0.969	1.032

Firm Size	0.966	1.035
Fixed Assets	.406	2.463

In examining the linearity, normality, and homoscedasticity assumptions, a plot of residual values against predicted values of ROA, a histogram, and a scatter plot were developed. These are provided below. The study did not use skewness and Kurtosis values to establish normality since it has been argued by Tabachnick and Fidell (1996) that kurtosis and skewness for sample less than 200 does not reveal much difference.

4.3.0 Normality

Figure below shows the distribution that approximates the normal distribution with little Kurtosis. The bell shaped is a confirmation that the data collected for the study meets the test of normality.

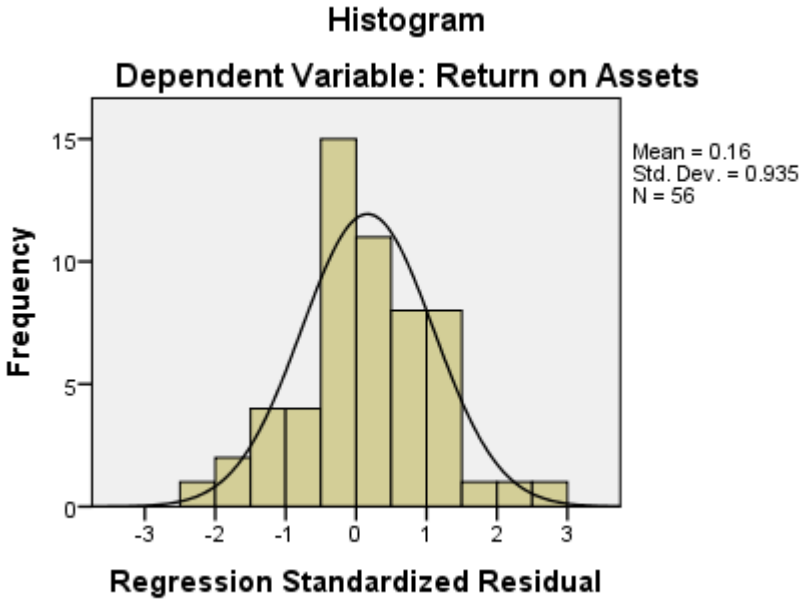
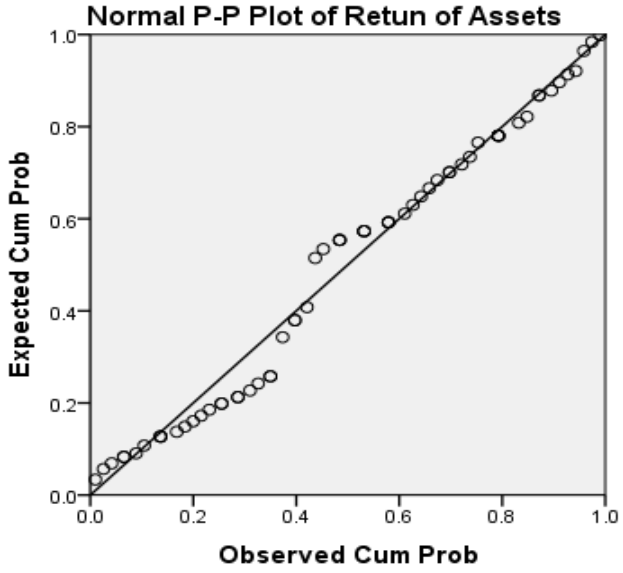


Figure 4.3.1 Histogram showing normality of data collected

4.3.2 Linearity Plot



Further, the data points were aligned along the straight line in a probability plot confirming the assumption of normality. All the points coalesced along the straight line in the P-P plot confirming the normal distribution of errors in the testing model. This is shown in the figure above.

4.3.3 Homoscedasticity

The scatterplot of the residuals mapped below showed that most of the points coalesced about the zero (0) point (Pallant, 2001). The assumption of linearity is therefore met as the residuals are evenly distributed in the scatter plot (Hair et al., 1998).

Therefore it can be concluded that the assumptions of linearity, homoscedasticity and normality have been adhered in this statistical analysis.

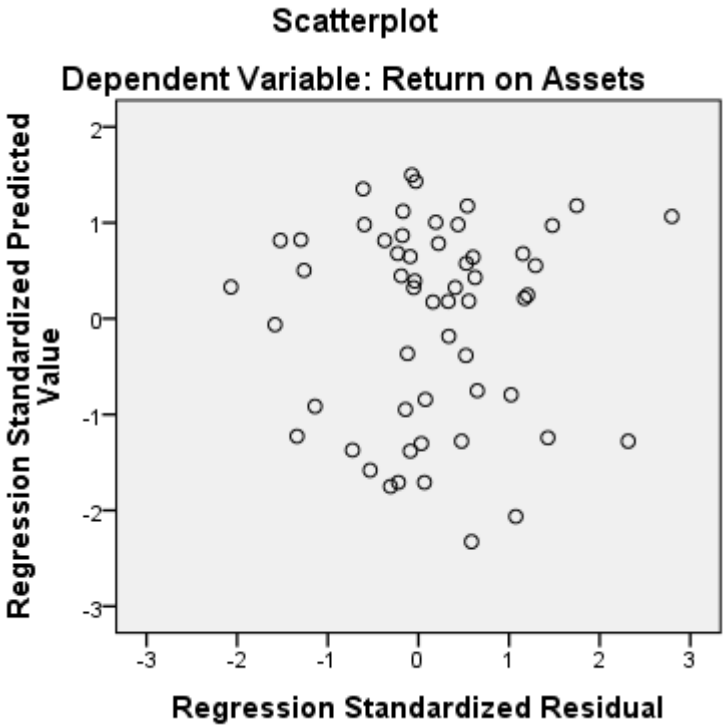


Figure 4.3.3 Scatter Plot showing homoscedasticity

The assumption of normality is related to homoscedasticity this is shown when the assumption of normality is met, the relationship between the variables are homoscedastic. Thus the homoscedasticity assumption was satisfied in this study

4.4 Regression Analysis on the Relationship between Fixed Assets and Financial Performance

4.4.1 Anova

Table 4.4.1 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.710	3	.237	10.304	.000[a]
	Residual	1.574	67	.023		
	Total	2.284	70			

a. Predictors: (Constant), Log of Firm Size, AGE, DEBTRATIO, Log of Fixed Assets

b. ROA

From the table above the model is suitable to explain the relationship between the independent and dependent variable. This was explained by the P-value being less than 0.05

4.4.2 Model Summary

Table 4.4.2 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.557[a]	.311	.271	.17400	1.587

In the table 4.4.2 above R Square was 0.311 with an adjusted R Square of 0.241. Due to the sample of the study being small the study used R square of 0.311 to represent the change effect in the model. The findings revealed that 31.1 % of the change in financial performance of the study is caused by the independent variables used in the study. 68.9% of change in financial performance is caused by variables not included in the study.

4.4.3 Regression coefficient.

Figure 4.4.3 Table of Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
Constant	.277	.195		1.421	.162	-.115	.670					
Debt Ratio	-.492	.149	-.629	-3.297	.002	-.791	-.192	-.507	-.430	-.394	.392	2.550
AGE	.005	.004	.148	1.215	.230	-.003	.014	.082	.173	.145	.969	1.032
Firm Size	.017	.011	.189	3.554	.027	-.005	.040	.100	.219	.186	.966	1.035
Fixed Assets	.014	.028	.096	2.512	.036	-.069	.041	.370	-.074	-.061	.406	2.463

a. Dependent Variable: ROA

From the table above the study findings show that there exists a positive significant relationship between fixed assets and financial performance. Thus a unit increase in fixed assets leads to a 14% increase in financial performance. This is supported by a study by Gladys Mwaniki and Job Omagwa (2017) on asset structure and financial performance where they found out that fixed assets like equipment, plant and property have a significant effect on financial performance of all the firms under commercial and services sector quoted at the Nairobi stock exchange. Another study by Nabil Raja (2015)on the impact of fixed Asset on Firm Profitability found out that a significant relationship exists between fixed asset and net profit as shown by companies in the textile, cement and sugar sector in Pakistan.

Age was found to be not significant as the study revealed that age does not affect the financial performance of firms. This is shown by the p value being greater than 0.05. This is negated by a study by Sumit K Majumdar (1997) on the impact of age and size on financial performance using data from 1020 Indian firms found out that older Indian firms are less profitable but more productive.

The study found out that there exists a significant positive relationship between firm size and financial performance. The analysis revealed hat a unit increase in firm size leads to an increase in financial performance by 17%.

Finally the study found out that Debt ratio is very significant in the financial performance of cement companies. This was determined by the p value of 0.002. The results further showed that an inverse relationship exists whereby a unit increase in debt ratio leads to a significant decrease in financial performance by 49%. This can be explained by high interest rates that creates huge interest burden for firms.

CHAPER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section will focus on overview of the research findings and conclusions based on research findings and recommendations. The objective of the study was to establish the impact of investments in fixed assets on financial performance. The methodology used for the study was panel data analysis technique specifically the study used pooled OLS. This method was used as the sample size was small and to take into account the variation occasioned by the firm effect.

5.2 Summary of Findings

The study was to establish whether investments in fixed assets have a bearing on the financial performance of the listed cement-producing firms in Kenya. Secondary data was used gathered from the Audited annual reports of the three listed firms. This was collected for a period of over 20 years starting from 1993 to 2016.

The study found out that fixed assets investment has a positive significant relationship with financial performance of an entity. This goes to confirm the theoretical evidence of capital budgeting whereby only projects that have returns are selected for implementation,

However the study found out that Age does not affect the financial performance of cement industries in Kenya. This shows that the number of years a company has been in operation in Kenya has no impact on the financial performance of that company,.

The study also showed that the size of a company is in direct proportion to the financial performance of the company. Thus larger companies by asset base perform better than companies with a small asset base. Thus a positive correlation exists in the cement industry between firm size and financial performance.

Finally the study established that capital structure measured by Debt ratio has is inversely related to financial performance. Its noted that debts reduce the earnings of a firm as interest payment eats into the returns thereby reducing profit. This shows that interest rates in Kenya are very high and the cement industry is not spared either.

5.3 Conclusion

The study conclusion is supported by the results of the regression analysis that reported a unit increase in fixed assets leads to a 17% increase in the financial performance of a cement company as measured by Return on Assets.

5.4 Recommendation

The study recommends that cement companies to invest in plant, equipment and machinery to increase capacity since the fixed assets have proved to have a positive impact on firm performance. The study also recommends that in financing these capital projects the cement companies should use more equity and reduce reliance on debt since it affects their financial performance negatively.

Finally the study recommends areas of further research that include consideration of other cement companies to increase the validity of the research. Also researchers should consider other control variables in the study.

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APPENDIX 1: ABBREVIATIONS AND ACRONYMS

ROA	Return on Assets
ROE	Return on Equity
KNBS	Kenya National Bureau of Statistics
ARM	Athi River Mining
EAPCC	East African Portland Cement Company
NSE	Nairobi Stock Exchange
NPV	Net Present Value
IRR	Internal Rate of Return
PBP	Payback Period
ARR	Accounting Rate of Return
EPS	Earning Per Share

APPENDIX 2: LIST OF CEMENT FIRMS IN KENYA

1. Bamburi Cement Company Ltd.
2. ARM Limited
3. East Africa Portland Cement Company Ltd
4. Mombasa Cement Company Ltd
5. Savannah Cement Company Ltd
6. National Cement Company Ltd

APPENDIX 3: RAW DATA COLLECTED FROM ANNUAL REPORTS

RAW DATA FROM ANNUAL REPORTS OF LISTED CEMENT PRODUCING FIRMS

ATHI RIVER MINING LTD

ITEM	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fixed assets	795,109,534	899,475	908,503	906,743	888,485	923,266	1,079,068	1,342,629	2,181,627	3,197,514	3,321,696	4,467,467	8,688,161	12,324,838	16,792,719	19,016,690	22,442,306	28,257,420	44,168,407	42,773,131
Total Asssets	1,045,384,181	1,178,328	1,233,607	1,270,612	1,273,277	1,415,154	1,575,403	2,025,991	3,238,664	4,254,328	4,504,677	6,352,478	12,141,091	16,564,899	20,549,023	26,953,100	29,705,254	36,912,580	51,936,664	51,058,802
Age	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
firm Size																				
cash flow	34,678,801	95,274	96,952	135,322	122,620	176,518	148,012	274,117	326,179	450,722	938,831	597,122	858,094	1,353,126	2,557,313	1,293,458	2,916,815	1,526,548	2,324,158	1,610,738
Debt Ratio	7%	49%	966%	856%	34%	39%	39%	49%	63%	68%	61%	67%	66%	72%	70%	74%	72%	74%	68%	46%
ROA	3%	1%	2%	2%	3%	4%	6%	6%	6%	6%	9%	8%	5%	6%	6%	5%	5%	4%	0%	-2%

figures in "000"

START 1974

EAST AFRICAN PORTALAND CEMENT COMPANY

	1993	1994	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fixed assets	6611808	1.3E+07	1.98E+08			5204310	532623	5717866	5440126	5201517	5050681	4768043	5570488		6411608	8904918	9125885	10358801	11520764	12531640		2E+07	4933240
Total assets	36088995	5E+07	2.28E+08			6305014	8083428	7505025	7414653	7467937	7470297	7717880	9052207	8938572	9073345	12035963	12037565	13444133	13976795	16133703		2.3E+07	2.8E+07
Age	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
Firm Size																							
cashflow		7709718	6854462			518449	664085	880338	691227	647263	1245199	1278412	1116697	988777	871370	1911926	441015	698282	52485	696776	820697	-19590	810682
ROA	4%	8%	1%			-14%	-5%	10%	2%	3%	-4%	5%	7%	9%	6%	17%	-2%	0%	-5%	15%		32%	15%
DEBT RATIO	64%	17%	47%			87%	80%	74%	74%	71%	48%	71%	65%	59%	56%	49%	53%	58%	66%	56%		40%	36%

Figures in 000

START 1933

BAMBURI CEMENT LTD

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fixed assets	7834	7557	8500	8949	10866	11011	12322	11616		11532	11532	12931	13631	18179	19339	20443	20146	26576	26979	25446	23897	21811
Total Asssets	10849	10620	11268	11548	13765	14137	15096	15105		15332	15332	18513	20720	28215	32112	33306	33502	43038	43016	40991	42030	40811
Age	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
Firm Size																						
cashflow	66241	1453	1437	569	1515	1153	2479	2812		3761	3592	4899	3556	5887	10669	10949	7595	8977	6638	7441	8320	6814
DEBT RATIO	10%	7%	6%	9%	34%	36%	30%	31%		27%	27%	26%	27%	41%	35%	35%	28%	28%	27%	29%	29%	27%
ROA	4%	7%	7%	5%	5%	2%	5%	8%		12%	14%	15%	18%	12%	22%	16%	17%	25%	11%	9%	12%	14%

figures in 000,000

START 1951

APPENDIX 4: SPSS DATA FOR ANALYSIS

ITEM NO	FIXED ASETS	TOTAL ASSETS	ROA	DEBT RATIO	AGE	LOG OF FIRM SIZE	LOG OF FIXED ASET	LOG OF CASHFLOW
1	3,321,696.00	26,953,100.00	0.24	0.09	83.00	7.43	6.52	5.78
2	8,688,161.00	36,912,580.00	0.84	0.05	82.00	7.57	6.94	6.13
3	2,181,627.00	16,564,899.00	0.52	0.06	81.00	3.22	6.34	5.65
4	4,467,467.00	29,705,254.00	0.42	0.08	80.00	7.47	6.65	5.93
5	3,197,514.00	20,549,023.00	0.60	0.06	79.00	6.31	6.50	5.97
6	888,485.00	4,254,328.00	0.28	0.03	78.00	6.63	5.95	5.25
7	12,324,838.00	51,936,664.00	0.38	0.06	77.00	7.72	7.09	6.41
8	1,079,068.00	6,352,478.00	0.67	0.06	76.00	6.80	6.03	5.44
9	25,446.00	1,233,607.00	0.26	0.00	75.00	6.09	4.41	#NULL!
10	1,342,629.00	12,141,091.00	0.46	0.06	74.00	7.08	6.13	5.51
11	906,743.00	3,238,664.00	0.33	0.02	73.00	4.51	5.96	5.09
12	923,266.00	4,504,677.00	0.51	0.04	72.00	2.65	5.97	5.17
13	23,897.00	1,270,612.00	0.26	0.40	71.00	6.10	4.38	5.91
14	26,979.00	1,178,328.00	0.49	0.56	70.00	6.07	4.43	5.91
15	908,503.00	2,025,991.00	0.39	0.02	69.00	6.31	5.96	5.13
16	16,792,719.00	51,058,802.00	0.46	0.06	68.00	2.71	7.23	6.11
17	#NULL!	28,215.00	0.41	0.12	67.00	4.45	#NULL!	3.77
18	795,109,534.00	1,415,154.00	0.39	0.03	66.00	6.15	8.90	4.98
19	899,475.00	1,575,403.00	0.39	0.01	65.00	6.20	5.95	4.99
20	5,204,310.00	14,137.00	0.36	0.02	64.00	3.15	6.72	3.06
21	6,411,608.00	32,112.00	0.25	0.22	63.00	4.51	6.81	4.03
22	8,904,918.00	33,306.00	0.35	0.16	62.00	1.52	6.95	4.04
23	#NULL!	13,765.00	0.34	0.05	65.00	1.14	#NULL!	3.18
24	21,811.00	1,273,277.00	0.34	0.36	64.00	2.10	4.34	7.54
25	20,443.00	23,112,582.00	0.32	0.53	63.00	7.36	4.31	5.84
26	5,717,866.00	15,105.00	0.31	0.08	62.00	4.18	6.76	3.45
27	532,623.00	15,096.00	0.30	0.05	61.00	4.18	5.73	3.39
28	12,531,640.00	40,991.00	0.29	0.09	60.00	4.61	7.10	3.87
29	#NULL!	42,030.00	0.39	0.12	59.00	3.62	#NULL!	3.92
30	9,125,885.00	33,502.00	0.28	0.17	58.00	1.53	6.96	3.88
31	10,358,801.00	43,038.00	0.28	0.25	57.00	4.63	7.02	3.95
32	5,201,517.00	15,332.00	0.27	0.12	56.00	2.19	6.72	3.58
33	5,050,681.00	15,332.00	0.17	0.14	55.00	1.19	6.70	3.56
34	5,570,488.00	20,720.00	0.27	0.18	54.00	4.32	6.75	3.55
35	11,520,764.00	43,016.00	0.27	0.11	53.00	5.63	7.06	3.82
36	19,955,246.00	40,811.00	0.47	0.14	52.00	2.61	7.30	3.83
37	4,768,043.00	18,513.00	0.26	0.15	51.00	4.27	6.68	3.69
38	11,532.00	12,035,963.00	0.17	0.48	50.00	1.08	4.06	6.11
39	18,179.00	16,133,703.00	0.15	0.56	49.00	7.21	4.26	6.28
40	20,146.00	27,842,120.00	0.19	0.58	48.00	0.44	4.30	4.72
41	6,611,808.00	10,849.00	0.10	0.04	47.00	3.04	6.82	4.82

42	7,557.00	7,505,025.00	0.10	0.47	46.00	6.88	3.88	#NULL!
43	#NULL!	11,548.00	-0.09	0.05	45.00	2.06	#NULL!	2.76
44	11,616.00	8,938,572.00	0.09	0.74	44.00	6.95	4.07	5.81
45	22,442,306.00	#NULL!	0.08	0.05	43.00	#NULL!	7.35	6.18
46	13,415,408.00	10,620.00	0.07	0.07	42.00	4.03	7.13	3.16
47	12,322.00	9,052,207.00	-0.07	0.74	40.00	8.96	4.09	5.84
48	26,576.00	1,045,384,181.00	0.07	0.66	42.00	1.02	4.42	5.84
49	198,216,171.00	11,268.00	0.06	0.07	41.00	4.05	8.30	3.16
50	#NULL!	9,073,345.00	0.06	0.71	40.00	5.96	#NULL!	6.10
51	11,011.00	7,717,880.00	0.05	0.80	#NULL!	4.89	4.04	5.94
52	19,016,690.00	#NULL!	0.04	0.05	38.00	#NULL!	7.28	6.46
53	8,949.00	7,467,937.00	0.03	#NULL!	37.00	3.87	3.95	5.71
54	8,500.00	7,414,653.00	0.02	#NULL!	36.00	4.87	3.93	#NULL!
55	28,257,420.00	#NULL!	0.01	0.04	35.00	#NULL!	7.45	6.37
56	5,440,126.00	#NULL!	0.00	0.00	#NULL!	#NULL!	6.74	#NULL!
57	12,931.00	13,444,133.00	0.00	0.65	31.00	3.13	4.11	6.00
58	19,339.00	#NULL!	0.00	0.49	28.00	#NULL!	4.29	5.64
59	11,532.00	12,037,565.00	-0.02	0.71	27.00	4.08	4.06	6.05
60	10,866.00	7,470,297.00	-0.04	0.87	26.00	9.87	4.04	5.82
61	7,834.00	8,083,428.00	-0.05	0.17	25.00	1.91	3.89	6.84
62	13,631.00	13,976,795.00	-0.05	0.59	24.00	4.15	4.13	5.94
63	4,933,240.00	6,305,014.00	-0.14	0.64	23.00	5.80	6.69	6.89
64	44,168,407.00	#NULL!	#NULL!	0.00	22.00	#NULL!	7.65	6.21
65	7,834.00	8,083,428.00	-0.05	0.17	21.00	1.91	3.89	6.84
66	13,631.00	13,976,795.00	-0.05	0.59	20.00	4.15	4.13	5.94
67	4,933,240.00	6,305,014.00	-0.14	0.64	19.00	5.80	6.69	6.89
68	44,168,407.00	#NULL!	#NULL!	0.00	30.00	#NULL!	7.65	6.21