EFFECT OF FREE CASH FLOW ON CAPITAL EXPENDITURE OF NON-FINANCIAL FIRMS LISTED AT NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

I declare that this research project is my original work and has not been presented for an award of any degree in any other University.

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This research project has been submitted for examination with my approval as the candidate's university supervisors.

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DEDICATION

I dedicate this research project to my wife, Madalo and my two sons, Kondwani and

Limbikani Mangwaya.

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LIST OF ABBREVIATIONS

ADF   Augmented Dickey-Fuller

ANOVA   Analysis of Variance

CAPEX   Capital Expenditure

CMA   Capital Markets Authority

DP   Dividend Policy

FA   Fixed Assets

FCF   Free Cash Flow

FL   Financial Leverage

IPS   Im, Pessan and Shin

LL   Levin et Lin

MM   Modigliani and Miller

NPPE   Net Property, Plant and Equipment

NPV   Net Present Value

NSE   Nairobi Securities Exchange

OLS   Ordinary Least Squares

PP   Philippe et Perron

SE   Standard Error

SPSS   Statistical Package for Social Sciences

VIF   Variance Inflation Factor

ABSTRACT

The objective of the study was to examine the effect of free cash flow on capital expenditure for non-financial firms listed at Nairobi Securities Exchange. The study embraced a descriptive research design aimed at analysing the effect of free cash flow on capital expenditure of non-financial firms listed at NSE. The study involved analysing a population of 32 non-financial firms listed at NSE. In the study businesses that operate in financial sector were exempted due to the differing reporting requirements in the sector and the regulations that do not apply to the non-financial companies. The study involved capital expenditure as dependent variable with free cash flow, financial leverage and dividend policy as independent variables. The study used secondary data extracted from annual reports and financial statements of the firms taken from NSE and CMA covering a period of five years (2013-2017). Subsequent to the sorting, cleaning and mathematical transformation of the data two statistical packages EViews 7 and SPSS 20 were used to analyse the data. The regression results using fixed-effect model indicate that the adjusted coefficient of determination is at 0.919 which meant that the variation of dependent variable capital expenditure is explained by 91.9%. This meant that only 8.1% of the variation was not explained by the regression model. The probability of F-statistic was also found to be significant at (0.00). The results revealed that there is a positive and significant relationship between free cash flow and capital expenditure. The results obtained depicted a coefficient value of 0.1904 and a statistical significance of (0.0022). The study also indicated that the existence of a negative relationship between financial leverage with a coefficient value of 0.00193 and 0.6382 significance level. In addition, the study also revealed a negative and non-significant relationship between dividend policy and capital expenditure. The results showed that there is an effect of free cash flow on capital expenditure for non-financial firms listed at NSE. This entailed that firms use the propositions of pecking order theory when making financing decisions as they use internal funds first before resorting to external debts in form of debt and equity.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In the current business environment where firms are engaged in mammoth war for growth to sustain competitive advantage, financing Capital Expenditure (CAPEX) has become one of the strategic decision-making areas for managers (Kamau, & Kagiri, 2015). It is considered thought that choosing a way of financing CAPEX can lead to attainment of competitive advantage as the different methods of financing bear different costs (Carter, MacDonald, & Cheng, 1990). Studies on how managers behave when faced with financing decisions have been of interest to many financial scholars who came up with differing views. Modigliani and Miller (1958) contend that it is irrelevant on how investment decisions are made for the fact that Free Cash Flow (FCF) and external funds are substitutes. On the other hand, Hansen (1999) postulates that Managers avoid using external funds because of transactions costs and emergence of strict monitoring after usage of these funds.

Free Cash Flow (FCF) and CAPEX theories have been extensively used in the study with Pecking Order Theory being the anchoring theory. The theories attempt to explain the behaviour of financing decision makers. Using Pecking Order Theory, firms attempt to investment first with finances retained in the business, then use the innocuous debt, and lastly with equity, to decrease the lopsided information and other associated financing costs (Fama, & French, 2002). FCF Theory states that if the firm's FCF happen to be in surplus of cash required for the projects exhibiting a positive Net Present Value (NPV), it offers the executives an opportunity to benefit themselves (Jensen, 1986). Lastly, Residual Theory of Dividend Policy indicates that a firm tends to only give dividends from earnings remaining after all the expenses and investments have

been financed (Miller, & Modigliani, 1961). From the three theories it is expected that level of FCF have an effect on CAPEX as they postulate that managers are biased to use FCF first before considering use of external funds.

Most of the early studies conducted on this topic have portrayed that FCF has a positive effect on CAPEX (Saffarizadeh, 2014; Lukam, 2011). Conversely, studies by (Firth, Malatesta, Xin & Xu 2012) conducted using Chinese firms brought a new discovery that there exist a negative association between FCF and CAPEX at low levels of cash flow but positive relationship for high levels of cash flow. In this study which was set to find out if FCF has an effect on CAPEX, the study concentrated on non-financial firms listed at Nairobi Securities Exchange (NSE).

1.1.1 Free Cash Flow

Free Cash Flow (FCF) is cash realised from operations after deducting taxation and interest payments, and adding all noncash items from income and unusual items, minus dividends (Mundaca, 2008). FCF measures how much cash a business is capable of producing after leaving out the funds necessary to sustain or enlarge its assets base. FCF can as well be described as the cash flow in surplus of funds needed to finance every project that possess a positive NPV after discounting using the appropriate cost of capital (Jensen, 1986). The Jansen (1986) definition of FCF has subjective components which tolerate users of FCF information to use their choice and personal liking to calculate FCF of a firm.

The availability of FCF allows firms to pursue investment opportunities that would ultimately augment shareholders' value. It would be problematic to advance new products, make purchases, pay-out dividends and decrease debts in the absence of sufficient cash at hand (Jensen, 2000). According to Vogt (1997) negative FCF is not

certainly a sign of a poor business; nonetheless, to illustrate this many companies in their early years deploy a big portion of their funds into capital spending, which reduces their FCF. However, firms utilising a good chunk of FCF, ought to possess a justifiable reasons for undertaking such investment in order to get an adequate rate of return.

Jensen (1986) who was the first to propose the concept of free cash flow did not propose the calculation of FCF leading to different scholars to devise different metric for the calculation. Brigham and Houston (2016) measured FCF as earnings before interest and tax added to depreciation which is then subtracted by capital expenditure plus or minus the change in net operating working capital. Ross, Westerfield and Jaffe (2013) measured FCF as earnings before interest, tax, depreciation and amortisation less capital expenditure plus or minus net working capital. Cornett, Adair and Notsinger (2012) measured FCF as earnings before interest and tax add depreciation and then subtract net operating working capital. On their contribution, Kieso, Weygandt and Warfield (2013) measured FCF as Cash Flow from Operations less capital expenditure and dividends. According to Brealey, Myers and Allen (2005) free cash flow is measured as earnings before interest and tax multiplied by proportion after tax then add depreciation and amortisation less net capital expenditure and also less changes in working capital.

It has to be noted that the different measurements of FCF produce different results and as a result motivation for using these measures will be biased and challenging to make proper conclusions (Bhandari, & Adams, 2017). The inconsistence in definitions and measurement of FCF requires a consensus between academics and professionals to specifically describe and measure FCF (Bhandari, & Adams, 2017).

1.1.2 Capital Expenditure

CAPEX arise when a firm expends money in purchasing fixed assets or adding value to a present fixed asset to a useful life that spreads to a period of more than one taxable year (McConnell, & Muscarella, 1985). It refers to financial resources employed by a firm to obtain or renovate physical assets namely; property, plant and equipment. It is mostly anticipated that capital expenditures will produce future economic benefits that will be in use for more than one financial or tax year (McConnell, & Muscarella 1985). According to Kochhar and Hitt (1998), CAPEX is the acquiring of capital assets or fixed assets which are in the form of manufacturing plants and machinery that is projected to be in use over a long period. A firm needs to have strategic assets which are maintained in order to have future benefits. These assets are also a condition for maintaining sustainable competitive advantage (Kochhar, & Hitt, 1998).

The financial performance of a firm usually emanates from investing in project which have positive NPV. These projects are recognised to be value enhancing as they fetch a yield that is more than the shareholders cost of capital. CAPEX comprise of the deployment of enormous sums of money, and it affects the business over a lengthy period. Additionally, the resources to acquire a fixed asset must be paid out instantly, while the returns or benefits accumulate over a long period. Since the benefits are centred on future prospects and the capability to predict the future is imperfect, substantial effort ought to be made to appraise investment options as comprehensively as possible (Boehlje, & Ehmke, 1986).

CAPEX is typically available in the statement of cash flow under cash flows from investing activities. Companies listed commonly show their CAPEX for a particular year in the annual reports, which permits investors to identify how the business is utilising or investing their funds in the quest for long-term growth. Nearly all companies have

CAPEX on yearly basis as they improve equipment and facilities regularly (Quandhali, Khan & Rizvi, 2016).

There is no clarity in the presentation of CAPEX in standard corporate finance textbooks. Former writers, seem to have no feeling for the need to define CAPEX in relation to the statement of financial position as either Gross Property, Plant and Equipment or Net Property, Plant and Equipment (NPPE). In addition to this, NPPE explanations vary widely and usually confusion. For instance, Ross, Westerfield and Jordan (2010), CAPEX is the change in Net Fixed Assets plus depreciation whilst Graham, Smart and Megginson (2010) defines CAPEX less depreciation as equal to change in Fixed Assets (FA) where the change in FA is the change in Gross Fixed Assets. The result in CAPEX being defined as change in Gross Fixed Assets plus Depreciation. The use of net expenditure (meaning acquisition of FA minus sales of FA) by Ross, Westerfield and Jordan (2010) creates confusion as the use of term net is simply referring to subtraction of the sales of FA while others may interpret it as referring to change in NPPE for the calculation of CAPEX.

1.1.3 Relationship between Free Cash Flow and Capital Expenditure

In the event that firms want to pursue profitable investment activities there is always a challenge of deciding on the financing strategy to implement. Firms which have positive free cash flows usually choose to employ internal financial resources instead of getting financing from external sources through loans or using equity financing. Use of internally generated cash flows is vastly reliant on the capacity of the entity to generate adequate FCF (Fama, & French, 2002).

Firms that do not have the ability to internally finance positive NPV projects are understood to be financially constrained and as a result have to look elsewhere for

financing. In this case financing could be through loans and equity by issuance of shares. Accessing of finance other than using internally generated finance is relatively costly, as it attracts fees charges and interest. It is for this reason that firms use Pecking Order Theory when making financing decision (Myers, & Majluf, 1984). The Pecking order theory indicates that businesses rank their financing sources with respect to financing costs, with a bias that equity is used as a financing method of last resort. Therefore, internal financial resources are utilised initially, and in the event that they are depleted, they turn to debt financing, and when it reaches a stage where it's not practical to get more debt, equity is then sourced.

CAPEX is intensely and clearly linked to the level of FCF, the more FCF a firm possess, the extra investments the business can be engaged in (Vogt, 1997). Business with more FCF can engage in more the gainful CAPEX projects that are acceptable. The FCF effect on CAPEX rises when firm size is small, (in that firms considered to be small engage more towards extensive development thereby employing most or all their FCF to finance value increasing projects). The assertions by Vogt (1997) are very different to the findings of Firth, Malatesta, Xin and Xu (2012) who discovered that there exist a negative association between FCF and CAPEX at low levels of cash flow but positive relationship for high levels of cash flow.

1.1.4 Non-Financial Firms Listed at Nairobi Securities Exchange (NSE)

Financial institutions act as intermediaries in financial markets by getting cash or cash equivalents from units with surplus position and directing them to the units with shortage of cash. They include banks, insurance companies and investment companies (Madura, 2012). On the other hand, Non-financial firms do not give credit or take deposits. Non-Financial firms listed at NSE are involved in provision of goods and

services and are quoted at the NSE. The mode of operation of these firms is separated from those of their owners, meaning that the owners have limited liability.

At NSE non-financial firms include automobile and accessories sector, commercial and services sector, energy and petroleum sector, agriculture sector, manufacturing and allied sector and telecommunication and technology sector. In this study businesses that operate in the financial sector will be exempted due the differing reporting requirements in the sector and the regulations that do not apply to the non-financial companies.

The securities market is an essential institution which governs and portrays the performance of the economy. The environment and condition of the securities market is of interest to the governing authorities, investors and in general all the stakeholders. As an establishment which is a key player in the economy, the securities market has a part of improving the effectiveness of how capital is generated and allocated. That is, the complete progress of the economy is affected by how good the market of securities is performing (Ashaolu & Ogunmuyiwa, 2011).

NSE is a capital market institution situated in the capital city of Kenya. The NSE began its operations in the early 1920s during the time Kenya was a colony under British control. In that era NSE was not a formal trading place for stocks and shares. In the year 1954, a proper stock market was formed as a result London Stock Exchange formally acknowledged NSE as an overseas stock exchange. NSE is licensed by Capital Markets Authority (CMA) with key mandate of regulating the security market and making sure that exchange of ownership of securities by bringing borrowers and investors together at low cost (Ojode, 2014).

In the aftermath of Kenya gaining freedom from the Britain, the stock exchange has continued to expand and developed into financial institution great repute. The services

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have been modernized form the initial "handshake over coffee" way of trading. The NSE has in the recent time automated its operations, to be in line with other major world stock exchanges (Chirombo, (2017).

In general, a securities exchange or securities market is a structured market where trading of stocks, bonds and other securities takes place. It offers mechanics through which businesses can get capital for growth needs by issuing and selling securities (bonds and stocks). At the NSE, there were 40 non-financial firms listed at the NSE as of December, 2017. These are businesses operating in sectors such as commercial and services, agriculture, manufacturing, telecommunications and petroleum sectors. (NSE, 2017). This research attempted to investigate if the listed non-financial firms are fully utilising the market which is an economic key player in the Kenyan business sector.

1.2 Research Problem

Investment decision-making is a significant part of strategic policymaking in every firm and this is important to the existence of every firm thus increasing the shareholders wealth which is at the centre of every decision that managers make. In the mammoth international fight for growth, extensive investment in equipment modernisation, infrastructure, advertising and improvement of products is obligatory for a business (Gutierrez & Phillipon, 2016). Firms engaged in investment which enhance the shareholders' value inspire confidence in the shareholders which eventually lead to increased stock value. The presence of FCF should motivate managers to invest only in projects that offer positive NPV, otherwise it is prudent to return the cash to the shareholders in form of cash dividends or share repurchase (Jansen, 2000).

The research was conducted on firms listed at NSE as the capital market provides an opportunity to access current information and provides reliable information since listed

firms are required to follow a set code of conduct when preparing their financial statements. The expectation of the researcher was that that all the information required for the study will be available in a usable form. In addition, NSE provides an opportunity to the researcher to study a weak form efficiency market where investors react to information in a lagged manner (Odumbe, 2010).

Several researches have been conducted on the effect of FCF on CAPEX with Vogts (1994) describing the effect of FCF and CAPEX by analysing the FCF theory of Jensens (1986). Vogt (1996) concluded the existence of the effect. In their research Kaplan and Zingales (1997; 2000) discovered a U-shaped relationship where businesses that are less financially constrained exhibited greater FCF-CAPEX relationship than those more financially constrained. In their research, Clearly, Povel and Raith (2007) and Firth, Malatesta, Xin and Xu (2012) also observed the U-shaped relationship when their investigation showed the existence of a negative relationship between FCF and CAPEX at low levels of cash flow and positive at high levels of cash flow.

On the local set-up, Kinyanjui (2014) in his study to establish the relationship between free cash flows and investments, used two control variables namely dividend policy and depreciation. Wahome (2017) used a different context in his study titled, the effect of FCF on investment by the insurance companies in Kenya and confirmed the existence of the relationship. The studies conducted different parameters which did not include one of the most important control variables for a study of this topic; sales growth. This study therefore attempts to answer the research question; what is the effect of free cash flow on capital expenditure for non-financial firms listed at the Nairobi Securities Exchange?

1.3 Research Objective

The objectives are to establish if there exist an effect of free cash flow on capital expenditure financial firms listed at the Nairobi Securities Exchange.

1.4 Value of Study

The expectation of the study was that the findings obtained will be important to:

The Academicians and Researchers in a way of contributing to the existing body of knowledge and create a flawless comprehension on the existence and impact of FCF on the CAPEX decisions for non-financial firms quoted at the NSE. The findings will also form basis for further study in the same or related areas.

The findings of this research will offer more understanding to foreign and local investors on the impact of FCF on investment when they are undertaking investment choices and the diversification of portfolios with the aim of increasing profitability and value maximisation.

The investors and other stakeholders, it will improve their comprehension on the effect of FCF on CAPEX decisions of managers. Investors will be able to know if managers are investing in the non-value adding investment. In addition the study will expose whether firms are fully utilising the NSE as a capital market. An inclination to use FCF means less usage of the capital market.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section discusses theoretical review, determinants of company's capital expenditure, the empirical literature which reviews past researches, which are associated to the research topic, the conceptual framework and conclude with the summary of the reviewed literature.

2.2 Theoretical Review

The pecking order theory, FCF theory and residual theory of dividend policy will be discussed under the theoretical review. The three theories offer theoretical proof of different opinions by various academicians and researchers in relation to FCF and CAPEX. The anchoring theory for this study is the pecking order theory which explains behaviour of financing decision making process by managers.

2.2.1 Pecking Order Theory

Pecking order theory up this day remains important component of financial studies. Pecking order theory was initially proposed by Donaldson in the year 1961 and was later altered by Myers and Majluf in 1984. The theory postulates that firms arrange their sources of finance, with internal financing as the most preferred which is trailed by debt. Equity finance is regarded as a source of 'last resort' in the hierarchical view of the sources of finance (Donaldson, 1961). Myers and Majluf (1984) affirmed that gainful firms augmented their demand for debt since firms use internal funds to invest. They described this notion through what is recognised as the pecking order hypothesis. In agreement to the pecking order theory, businesses favour to employ their internally generated resources to invest and every time exterior financing is required; they choose

to obtain debt instead of equity to decrease the information unevenness and transactions costs (Myers & Majluf, 1984).

Other scholars such as Fama and French (2002) weighed in the debate and agreed that firms attempt to use internal finance first as the engage in investment decisions, then with innocuous debt, and lastly with equity, to decrease the disproportionate information and other financing costs. Considering that external funds are expensive to be profitable, for firms with fewer gainful assets dividends are less attractive (Fama, & French, 2002).

The proposition of the Pecking order theory was a contrast to what Modigliani and Miller proposed earlier in 1958 where they revealed that that capital structure choice has no influence on the wealth of the company. They claimed that it is irrelevant or inconsequential how a firm is financed considering that perfect market circumstances are in existence and in disregarding bankruptcy, taxation and other related costs. It was after the MM first research that many contemporary theories like Trade-off theory and Pecking order theory came into existence. Critical discrepancy of these theories was that there assumptions were more realistic and as such they could easily be verified. In the static trade off model propagated by Shyam-Sunder and Myers (1999), indicates that companies fix their optimal debt levels, by equating benefits and costs of financing using debt. This level is where marginal present value of interest tax shield is the same as the marginal present value of the costs of financial distress.

The pecking order theory is vital for this research as it answers why managers prioritise use of FCF in CAPEX before resorting to other sources of finance. The theory explains why in the presence of FCF will have an effect of free cash flow to capital expenditure and explaining why with different levels of FCF it expected to observe a corresponding change in CAPEX level.

2.2.2 Free Cash Flows Theory

Jensen In 1986, a financial economist Michael Jensen came up with a theory of free cash flow. The theory indicates that in a case where a company's FCF is higher than what the firm requires for the projects with positive NPV, the executives will be faced with an opportunity to create an advantage for themselves. Jensen held a position that if a firm has spare cash; the executives may take on board business ventures with negative NPV with an intention of benefiting from the increase in size of the firm. FCF lures executives to enlarge the coverage of processes and the size of the firm, thus swelling executives' mandate and individual's remuneration. This is achieved by using the free funds in developments which possess negative NPVs. Thus, by raising the amount of dividend paid, FCF under executives control can be reduced and inhibit them from using the resources to invest in unbeneficial ventures. Investing in unprofitable projects goes against the principal aim of managers and directors, which is to enhance the shareholders' value. By lowering the level of FCF, it may result in lower agency costs.

In corroborating with the notion that dividend pay-out decrease FCF existing to follow their personal opportunistic ingestion and unprofitable investments, Donaldson (1997), contends that executives of companies with FCFs have a tendency to misemploy cash by taking unnecessary incentives or by undertaking unbeneficial investments. It is most probable that executives will utilize FCF to undertake investments that will result in an expansion in the size of the entity, rather than to paying dividends to owners or repurchase shares. A practical consequence of the agency hypothesis is that companies with FCF are likely to expand beyond the optimal level where shareholder wealth maximization is achieved. Owners of such companies will profit from any managerial choice that restricts these uneconomical outlays. Repurchasing of shares is one of the

ways that help in averting waste by utilising the surplus cash flows (Jensen, & Smith, 1995).

The alternative case is that, while executives strive to make optimal investments, they do so by pursuing irrational financing strategies, remarkably through displaying a preference of using internal financial resources (which are associated with FCF measures) rather than using external financing. The projected reasoning for the avoidance of using external sources of finance is that managers strive to limit their exposure to obstructive contractual terms and strict supervision of their investment projects – an aspect of the "quiet life hypothesis". As a result of this kind of thinking there arises a financing premium due to the resulting agency costs (Hansen, 1999). A dissimilar, though corresponding justification as to why external sources of finance may be taken at a higher cost than the internally generated funds is that the transactions of both corporate debt and new equity usually is accompanied with sizeable transaction costs. These could however, be offset by likely tax gains of selecting external sources of finance.

Free cash flow theory is important in this study as it helps in understanding why managers are motivated to spend more in capital expenditure rather than giving out cash in form of dividends. The theory explains the behaviour of managers when faced with a decision as to whether spend the available cash flow in dividends or CAPEX.

2.2.3 The Residual Theory of Dividend Policy

Preinreich in 1932 and Sage in 1937 offered what is perhaps the initial narrative in the academic literature of a residual dividend policy even though they did not call it that name (Smith, 2011). It took two scholars, Miller and Modigliani in 1961 as they were in the process of explaining the irrelevance dividend policy, they brought out a framework

purporting that companies pay out cash dividends after undertaking all gainful projects. They called the framework residual dividend policy. The residual theory of dividend policy contends that firms only make dividend payments from residual earnings, implying that payments of dividends can only be made if cash is still available after reaching the appropriate level of CAPEX. In other words when all suitable investment openings have been bankrolled, that is the only time dividend is paid (Miller, & Modigliani, 1961).

Using a residual dividend policy, the most important attention of the business is undertaking investments and as such dividend policy tends to be regarded as a passive decision variable. Investment choices have a direct bearing on the worth of the company thus rendering the dividend policy to be irrelevant. Through their classic piece validating dividend policy as irrelevant, Miller and Modigliani (1961) attributed to a structure signifying that companies give out as dividends after undertaking all gainful investments. DeAngelo and DeAngelo (2006) agree that this supposition is fundamental to MM's dividend irrelevance result.

The spirit of the residual theory is that the company will only give out dividends from the remaining earnings, which mean earnings that are left after the business has depleted all investments in ventures with a positive NPV. Retained earnings are main source of finance for investment in most firms (Baker, 2009). With regard to residual dividend policy, the main concentration of the managers is certainly on investment, and not dividends. In agreeing with MM dividend policy is rendered irrelevant as it is regarded as being passive decision variables.

According to Baker (2009), the management's understanding of in this set-up is that by deploying the earnings in gainful investment ventures rather than giving out the earnings

as dividends to shareholders the value of the business will increase, thereby also increasing and maximising shareholders' value. Consequently executives will vigorously pursue, and deploy company's financial resources in all satisfactory (in terms of return and risk) ventures, which are projected to raise the company's wealth. In the case where retained earnings surpass the funds necessary to finance the appropriate ventures then dividend will be issued and where the situation is to the contrary, no dividends will be issued.

The residual theory of dividend policy is important for this research as it help in understanding the decision making process of managers especially for firms whose shareholders are indifferent on whether to receive dividends or have share value appreciation. The availability of free cash flow in these firms will give impetus to managers to prioritise on investing the free cash flow up until the gainful projects are exhausted thus providing a direct effect of FCF on CAPEX.

2.3 Determinants of Capital Expenditure of Non-financial Listed Firms

This section will discuss determinants of capital expenditure of non-financial firms listed at Nairobi Securities Exchange which are; free cash flow, financial leverage, sales growth and dividend policy.

2.3.1 Free Cash Flow

This study will use the measure advocated by Brealey, Myers and Allen (2005) where FCF is measured as earnings before interest and tax multiplied by after-tax rate plus depreciation and amortisation less net capital expenditure and also less changes in working capital.

2.3.2 Financial Leverage

The term leverage has numerous descriptions, but the most commonly stated as the extent to which an investor or business is employing debt relative to equity; alternatively it is the quantity of debt that is used to fund a firms investments (Ross, Westerfield, & Jordan, 2010). This study will use long-term liabilities as a numerator for the sole reason that including short-term liabilities might distortions that might arise from earnings management. This can happen by firms deciding to alter the closing balance of short-term debt by paying in advance or delaying in settling the short-term debt. The denominator will be the sum of long-term debt and equity. A firm rate of return or return on investment is ordinarily influenced by the amount of leverage in the firms cost of capital and the fixed interest on debt also has an effect to profitability of the firm (Enekwe, Agu & Eziedu, 2014).

2.3.3 Sales Growth

Sales growth also possess a substantial positive influence on the investment decision making process. Growth of sales evaluates the competence with which the total utilisation of non-current assets are calculated. A high ratio is a symptom of a great level of competence in the utilisation of assets and the opposite holds (Odit, & Chittoo, 2008). A firm operating at high level of competence will be faced with many positive NPV projects and will have an appetite to increase CAPEX. In this study, sales growth will be calculated as net sales divided net fixed assets Odit and Chittoo (2008).

2.3.4 Dividend policy

Dividend policy refers to financial strategies pertaining to issuing cash dividend in the current period or paying an improved dividend at a future stage. Modern studies have revealed that dividend and investment decisions are interdependent or interact in that case proposing that dividend policy decision and investment decisions are at the same

level (Abor, & Bopkin, 2010). This suggestion is more reinforced by the study done by Lintner (1956), underlining the significance of dividend pay-out. The dividend pay-out ratio measures the percentage of funds given as dividend in relation to the total net income of the company. The study will use this formula in calculation dividend pay-out ratio as it is the most reasonable method as it depicts the percentage given out to the shareholders.

2.4 Empirical Review

Taking their turn researchers, Upneja and Sharma (2009) took time to study the presence of the effect of FCF on CAPEX. The research was conducted on publicly traded United States of America restaurant firms. The study covering the period of 12 years from 1995 to 2006 covered a population of 3276 firm-year observations but concluded with 1,420 firm per year interpretations that was due to data constraints. The conclusion of this research advocated that in investments of the small businesses which usually have greater financial constraints, it showed that they possessed a comparatively frailer sensitivity to FCF than the investments that are undertaken by big firms which showed stronger sensitivity. With the discussion for sensitivity of investments to cash flows still continuing, researchers have not widely explored industry contexts, especially in service industries such as the restaurant industry. The study having been carried out using only service industry firms may not reflect the true results since most of the investments in the service industry are in working capital.

Saffarizadeh (2014) explored the relationship of FCF and CAPEX in the context of the German automobile sector. The research covered the period 1995 to 2012 (19 years). Using panel data econometrics for top five companies namely; Audi, Porsche, Volkswagen, Daimler AG and BMW the researcher conducted a Johansen co-integration test, unit error tests and vector error correction model, he confirmed that there exist an

effect by FCF on CAPEX in the long run. FCF has substantial and constant effect on CAPEX. The researcher had a small number of samples and as such had to use Johansen co-integration test which also has its own weaknesses which include sensitivity to lag selection.

Lukam (2011) examined the relationship between FCF and investment in capital assets of non-financial firm's listed on the Bursa Malaysia. The objective of the study which covered a five-year period from 2005 to 2009 was to provide an insight into the information on the relationship between the Malaysian Public Listed firms' investment activities with the respective free cash flow. The study was based on a sample of 110 out of nearly 1000 publicly listed, non-finance firms. A regression model was used where Investment was equated as the function of FCF. The research found that the trend of investment activities for the past 5-year period had been fluctuating and in fact reduced due to the impact of the global economic downturn. According to the researcher this rend had actually enhanced the theory that firms' investment is reliant on the cash flow, however, it may be incorrect to make such a conclusion.

In Canada, Sigeng (2016) in his study tested the relationship between FCF and CAPEX for the listed Canadian companies. The study covering a period of six years from 2010 to 2015 utilised a sample of 90 companies listed at Toronto Stock Exchange and the companies were drawn from 10 respective industries. The researcher used the autocorrelation and regression analysis to confirm if the effect of FCF on CAPEX did exist. The results showed that FCF and CAPEX are negatively related. The research was conducted in the period when the Canadian economy was not and as such firms were not keen to invest aggressively. A research conducted in a different period could offer different results.

Qandhari, Khan and Rizvi (2016) studied the relationship between FCF and CAPEX in the sugar industry of Pakistan in the years 2000 to 2011. The study which was aimed at proving that there that FCF is utilised for CAPEX in the sugar industry of Pakistan used 27 millers of sugar which are listed at Karachi Stock Exchange was designed as a multiple case study. The conclusion of the research depicted that an effect of FCF exist on CAPEX in the sugar milling industry in Pakistan. Use of information from a specific industry may not be a true representation of the behaviour of firms in all industries.

Kinyanjui (2014) established an existence of a relationship between FCF and CAPEX of firms that are listed at the NSE, having considered data of five years (2009-2013) for 30 companies out 61 companies listed. The researcher utilised simple random sampling to make the selection. In the research he used multiple regression and correlation analysis to analyse data which showed that a relationship exist between FCF and investments. The researcher omitted usage of more control variables as only depreciation and dividend pay-out ratio were used due to limited time for the study.

Mabinda, Namusonge and Iravo (2017) explored whether FCF determine investment decision making for firms at NSE. The researchers by use of primary and secondary data to analyse a population of 64 firms listed at NSE in the period 2010 to 2014. Questionnaires were given out to 384 out of which 288 respondents duly filled and returned to the researchers. The research also involved conducting a pilot study involving 10 respondents to make sure that the questionnaires are both valid and reliable when collecting the data necessary for purpose of the investigation. The research concluded that FCF has an impact on decisions of firms listed at the NSE pertaining to CAPEX. The research only used debt level as a control variable meaning that other factors affecting the relationship were omitted.

Gitari (2014) examined effect of free cash flow on investments in fixed assets for companies listed at the NSE. The research which covered the period of 10 years from 2003 to 2012 used a regression analysis which was performed on various variables considered to have an impact on investment. The researcher collected and analysed data for all the available listed companies at the NSE which were 60 in number at the time of the research, however, due to incomplete data for some firms, only 34 firms were considered to form part of the research. From the results the researcher concluded that cash flows have a positive effect on investments. The researcher lost focus in coming up with control variables as instead of using determinants of investment he brought factors which affect the availability of cash. Variables such as financial systems and financial constraints were some of the variables used.

Wahome (2017) studied the effect of FCF on investment by the insurance companies in Kenya. The researcher conducted a descriptive research of all 62 insurance firms operating in Kenya. The period understudy for the insurance companies was from 2012 to 2016 (5 years). Regression and correlation analysis was employed on the secondary data used. The research results confirmed the existence of the positive effect of FCF on investment in the insurance industry. In a research which used financial institutions, it is difficult to apply the results across to the other industries as the financial accounting treatment and the nature of CAPEX is different in the financial sector.

In his study, Mundia (2016) on the effect of FCF on stock prices of non-financial firms at NSE, the researchers scope covered the period 2011to 2015, 5 years. Using multiple linear regression analysis he concluded that FCF has an effect on the stock prices through factors such as capital investment which increased. The researcher attributed the increase in the capital investment to the availability of FCF. The research used measurements of variables which were erroneous such as pay-out ratio which was
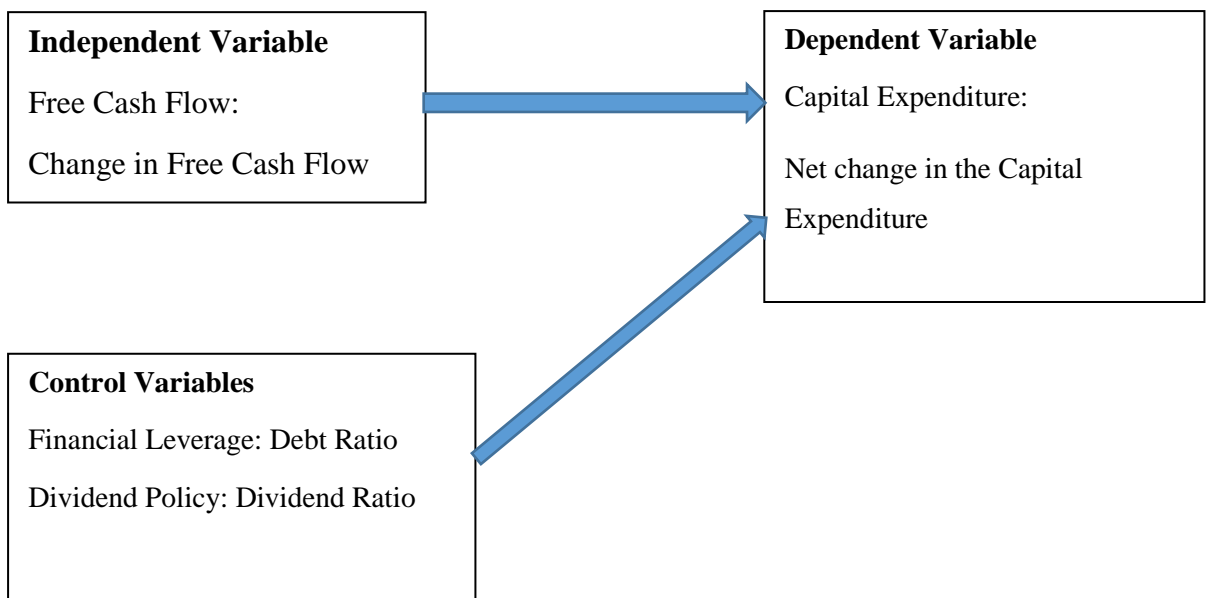
measured as earnings per share divided by dividend per share. The errors might have affected the results of the study.

An evaluation of the previous researchers on the relationship between FCF and CAPEX indicate that there is a steady relationship between the two variables. It has to be realised that the researchers are from different economies and used different analytical which could have led to different conclusions. The results may be used to conclude that the irrelevance theory propagated by Modigliani and Miller (1958) does not apply in the reality.

2.5 Conceptual Framework

A conceptual framework is a diagrammatical illustration of the interaction between research variables. In this research, CAPEX is the dependent variable whilst FCF is the Independent variable. Control variables of this relationship are; Dividend Pay-out Ratio, Depreciation and Capital Structure.

Independent Variable	**Dependent Variable**
Free Cash Flow:	Capital Expenditure:
Change in Free Cash Flow	Net change in the Capital Expenditure

Control Variables
Financial Leverage: Debt Ratio
Dividend Policy: Dividend Ratio

Figure 2.1: Conceptual Framework

2.6 Summary of the Literature Review

From the literature studied, it is apparent that research works have taken place on FCF and CAPEX. However, most of the researches focused on the investment in general which includes investment in financial assets. In addition, firms target for the research have mostly included financial entities like banks and insurance firms. In some research works, researchers have used general cash flow as a determining factor on investment and not the FCF which is the independent variable is this study. The previous researchers on the topic at NSE used only two control variables, and alluded to the fact that this might have led to omission of other important variables which could have had an effect on the results of their studies. It is evident that in the context of NSE there is a gap on the research of listed non-financial firms' capital expenditure vis-à-vis free cash flow. This research also makes an attempt to extend the period of study by analysing data of an extended period of eight years from 5 years which most local research has been using. In addition, this research will also examine the relationship of FCF and CAPEX for listed non-financial firms at the NSE by incorporating additional but different control variables to investigate if the results will still depict a positive effect between the independent and dependent variables. The research will focus on usage of the free cash flow on tangible assets which are to be used by the firms for a period of more than one financial year.

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter portray a methodical explanation of the procedures and methods to be used by the researcher in order to achieve the research goals. It demarcates the design of the study, the population, the sample design and techniques and the methods of data collection. The chapter will also state the way the researcher plans to evaluate data, the research tools that are to be deployed and the way the report is going to be laid out and research findings.

3.2 Research Design

Burns and Grove (2007) defined research design as a plan for guiding an enquiry with great control over features that may obstruct the strength of what the research has found. A researcher, Parahoo (1997) defined research design as a disposition that defines the method, the period and the place where data is to be sourced and evaluated. Research design permits the researcher to comprehend the organisation of the study thus preventing the likelihood of erroneous conclusions.

This research will use descriptive research design which involves assembling data that define happenings and then arranges, tabulates, illustrates, and pronounces the data gathering (Glass, & Hopkins, 1984). Since by nature a human mind has no capability to extract the full intake of a huge form of raw data, descriptive statistics are important in decreasing the data to a convenient form. Descriptive research designs support in giving solutions to the interrogations of who, what, when, where, and how connected with a particular research problem; a descriptive study cannot decisively establish responses to why. Descriptive research is employed to get evidence regarding the existing position of the occurrences and to define "what exists" with regard to variables or situations.

Descriptive statistics will be used in this research because of the nature of financial data which has to be presented in an extra expressive way, which enables easier understanding of the information.

Use of descriptive research design will enable the researcher to refine and summarise the data from the population of all non-financial listed firms at NSE.

3.3 Population

Population is a specified or a precise set of people, cluster of things, firms, households, services, components or occasions which are being researched (Ngechu, 2004). In this research the population is made up of all non-financial listed firms at the NSE. There are 44 non-financial firms listed at the NSE as of December, 2017 (NSE, 2017).

3.4 Data Collection

The study will use secondary sources of data. Secondary data is data collected by others, not precisely for the research problem at hand (Johnston, 2014). The Secondary data used was obtained from audited annual reports of the non-financial firms listed at NSE. Other secondary sources to be used will include books, publications, journal articles, and reports circulated by the organisation under study (NSE). The method of data gathering procedure employed is both suitable and effective as it will save money and time. Data collected for each variable will be quantitative in nature.

3.5 Data Analysis

The study will use regression analysis method to analyse the quantities association of the variable. In this study there are more than one independent variable as such the ideal statistical method used will be multi linear regression.

Correlation analysis will be employed to show the magnitude and direction of the connection between the variables. The Statistical Package for Social Science (SPSS) and Eviews 7 were used to analyse the relationship.

3.5.1 Diagnostic Tests

In statistics, a regression diagnostic does one of a set of processes exist for regression analysis that strive for to evaluate the soundness of a model in any of a number of several ways. This study being a financial model in nature will employ a number of diagnostic tests with an aim of testing the validity of the data used.

Multicollinearity is a condition of very high inter-correlations among the independent variables. It is consequently a state of disturbance in the data, and when available in the data the statistical extrapolations drawn out of the data may not be trustworthy. Multicollinearity results in unstable parameter estimates which renders it problematic to quantify the impact of independent variables on dependent variables (Gujarati, 2003). Multicollinearity may be discovered with the assistance of tolerance and its reciprocal, stated to as variance inflation factor (VIF). If the worth of tolerance is a smaller amount than 0.2 or 0.1 and, at the same time, the worth of VIF 10 and above, then the multiple correlations is problematic. In the event that no factors are correlated, the VIFs will all be 1. In case where multicollinearity is present at a level that might affect the outcome of the study partial least squares regression will be used. This method reduce the number of predictors to a minor set of components which are uncorrelated (Gujarati, 2003).

In the study normality checks will be deployed to assess if a data set has characteristics of a normal distribution model and to calculate the chances for a random variable which is fundamental in the data set to be normally distributed Farrell and Rogers-Stewart (2006). Non-normal distribution of data is as a result of several factors such as outliers,

multiple distributions may be combined on data and use of insufficient data. Normal distribution test of the error term will be checked to decide whether the error term contribute in the suppositions of the OLS regression by using the Shapiro Wilk test.

Homogeneity exist in defining the properties of a dataset, or several datasets. Homogeneity relate to the validity of the often appropriate supposition that the statistical properties of any single part of a complete dataset are the identical as any other part (Krus, & Blackman, 1988). Since homogeneity is a feature of a sample and not of a population it is not envisaged to occur in this study as the study is covering the whole population of all listed non-financial firms at NSE.

Linearity assumption of regression analysis states that standard multiple regression correctly approximate the association between dependent and independent variables in case the relationships are linear state (Osborne, & Waters, 2002). The study will use ANOVA test of linearity to test the significance of linearity.

Autocorrelation, which is the relationship of a signal that possess a delayed replica of itself as a function of delay. Easily put, it is the likeness between observations as a function of the time lag between them (Verbeek, 2004). It is commonly employed in signal processing for evaluating series of values, such as time domain signals. In this study the existence of autocorrelation will be assessed using Durbin Watson test statistic.

Homoscedasticity portrays that variance of errors is equal across all levels of the independent variable. In the case where the variance of errors is different at unequal values of the independent variable, heteroscedasticity is indicated (Osborne, & Waters, 2002). To check for heteroscedasticity, White test will be used. White test is appropriate

since it relaxes the assumptions of the residuals being normally distributed (Nduta, 2016).

3.5.2 Analytical model

To analyze effect of free cash flow on capital expenditure, a panel data regression model was done from the year 2013 to 2017, using the equation specified before i.e.

$$LY_{it} = \alpha_0 + \alpha_1 \, LFCF_{it} + \alpha_2 \, FL_{it} + \alpha_3 \, DP_{it} + \varepsilon_{it}$$

Where;

LY_{it} Capital Expenditure of company i at time t, in logarithm

$LFCF_{it}$ Free Cash Flow (residual cash flow) of company i at time t, in logarithm.

FL Financial Leverage of company i at time t.

DP Dividend Policy of company i at time t.

α_0 is the intercept.

$\alpha_1, \alpha_2, \alpha_3,$ are the slope coefficients.

ε_{it} is the error term.

Table 3.1: Summary of Variables

Variable No.	Variable Name	Measurement
Y	Capital Expenditure	Capital Expenditure (Current Year Capital Expenditure less Previous Year Capital Expenditure add Depreciation)
FCF	Free Cash Flow (residual cash flow)	EBIT – Interest Expense – Tax Paid – Expected Loans less loan repayments
FL	Financial Leverage	$\dfrac{\text{Debt Finance}}{\text{Debt + Equity}}$
DP	Dividend Policy	$\dfrac{\text{Dividends}}{\text{Net Income}}$

3.5.3 Test of significance

To measure the degree of association between the dependent variable and the independent variables coefficient of determination (denoted by R^2) will be used in the analysis. It is deduced as the fraction of the variance in the dependent variable that will be predicted from the independent variable. The coefficient of determination is measured between the scales of $0 \geq R \leq 1$. When R^2 is equal to 1 or close to 1 means that observation are fully explained by the regression equation and the greater the relationship between the dependent and independent variables.

ANOVA (F- test) will be used to find the significance model and aid in accepting or rejecting the null hypothesis. In order to reject the null hypothesis, the F-test value has to be greater enough.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter presents analysis and findings of the study as spelt out in the research objective and methodology. The findings are for the study on the effect of free cash flow on capital expenditure for non-financial firms listed at the Nairobi Securities Exchange. In the study the researcher used secondary data that was obtained from audited annual financial statements of 32 companies which makes the population of non-financial firms listed at the NSE. The study excluded companies which have been deregistered and those listed within the period under study. Descriptive statistics, charts and regression analysis are the elements comprising this chapter.

4.2 General Analysis

This section present details the findings of the various variables analysed.

4.2.1 Capital Expenditure

The summary of the data collected on Capital Expenditure is presented in the chart below

(Figure 4.1) in relation to non-financial firms listed at the NSE.

Figure 4.1: Capital Expenditure (in Billions)
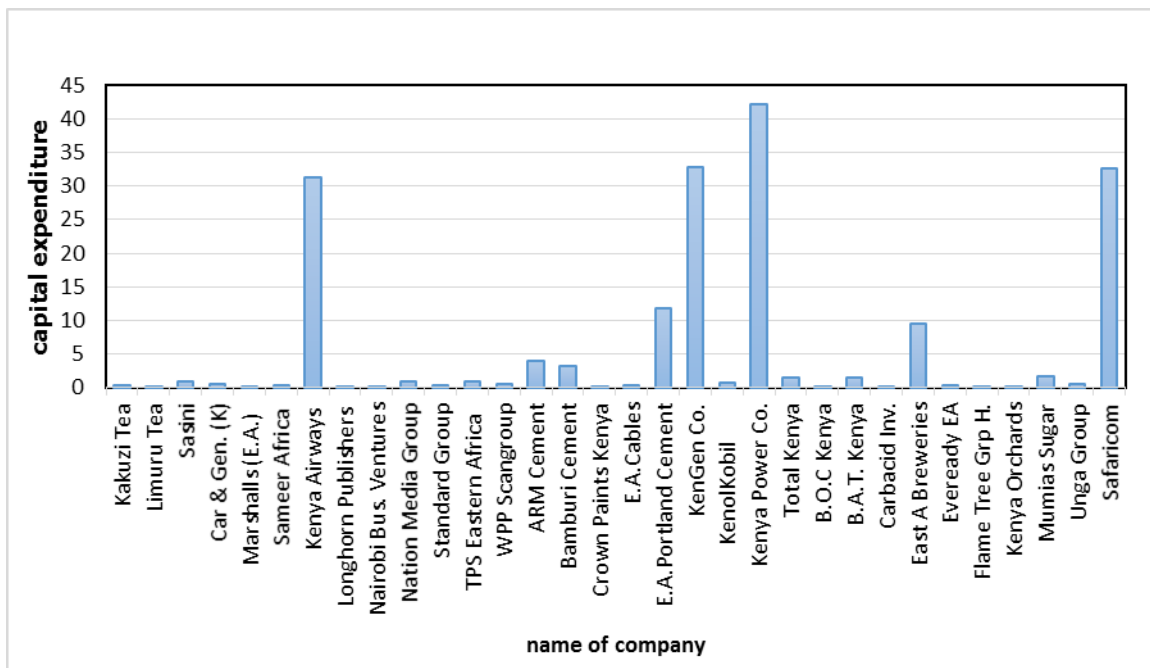
From the data of 32 firms, it was indicated that Kengen had the highest values of capital expenditure. This was due to the high investment in property plant and equipment that was required to maintain and expand the ever growing demand in the energy sector. The chart show that Kenya Orchards had the lowest values of capital expenditure, as it seemed to be financially struggling with observed losses and its comparatively small size. The amount of annual capital expenditure was observed to be different from company to company due to the nature of the demands in the different sectors. In general it is observed that all firms are on yearly basis undertaking capital investments in order to maintain and expand their capacity.

4.2.2 Free Cash Flows

In the chart below (Figure 4.2), data collected on free cash flows pertaining to non-financial firms listed at the NSE, show that Kenya Airways had the lowest free cash flow due to huge losses and loan repayments.

Figure 4.2: Firms Average Free Cash Flow
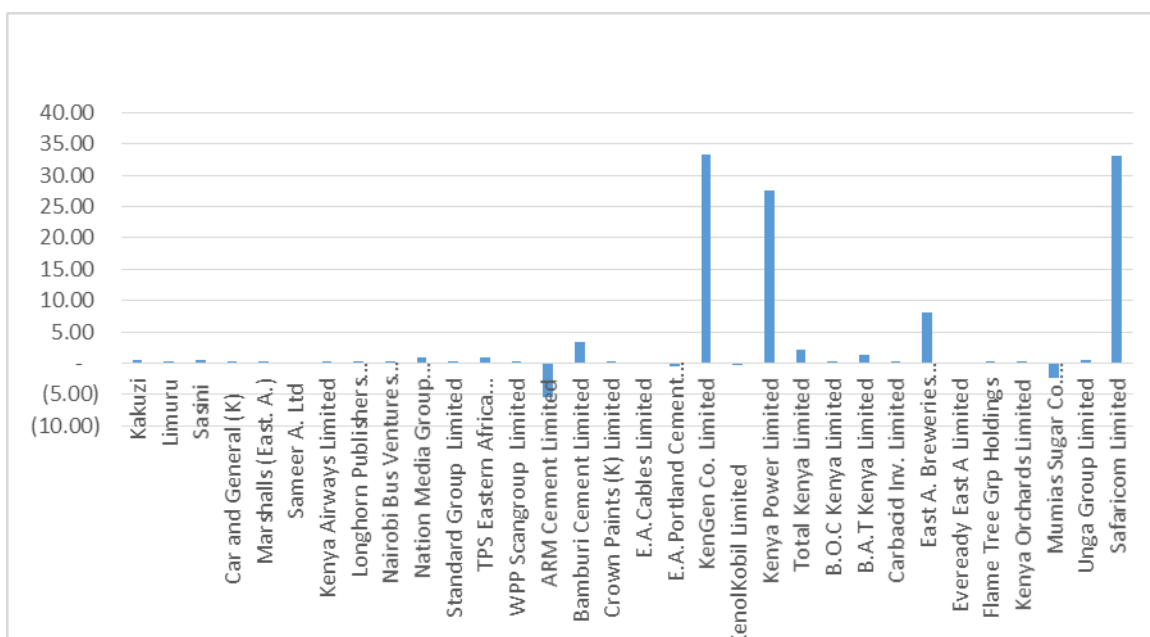
4.2.3 Financial Leverage

In the figure below (Figure 4.3) the analysis indicate that Kenya Airways had the highest financial leverage reaching 1.6, which meant it had more debt than equity. The huge debt was as a result of it acquiring the state of the art aircrafts with the aim of increasing strategic competition. The negative effect of this was that the company annually paid huge interests and loan repayments which also affected the free cash flow figure.

Figure 4.3: Firms Average Financial Leverage (In Percent)
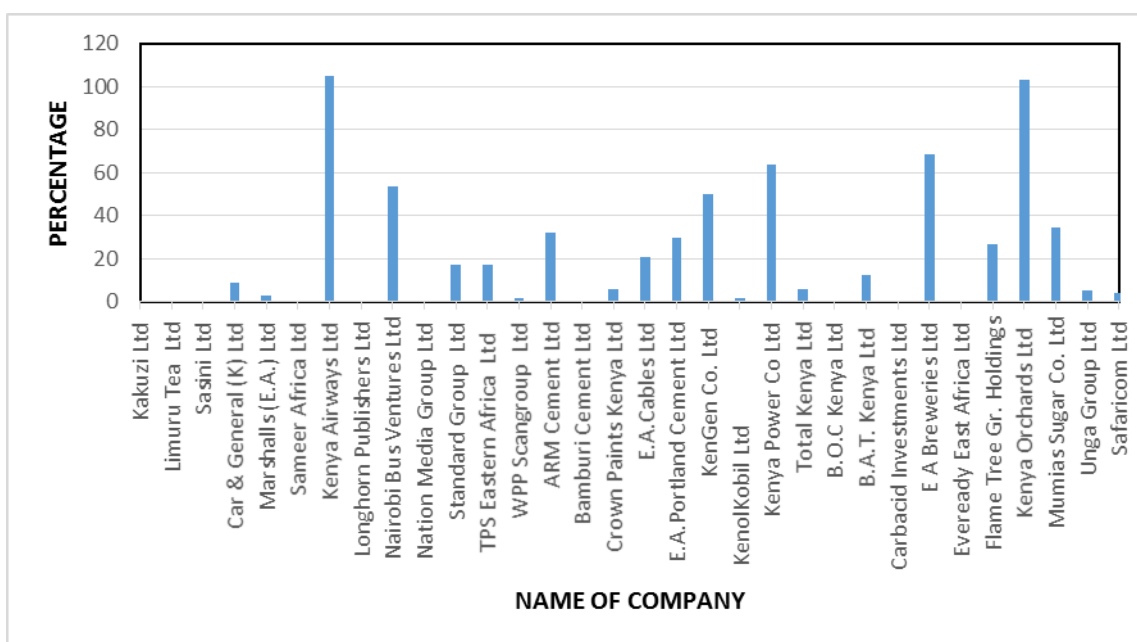
4.2.4 Dividend Payout Ratio

In the figure below (Figure 4.4) which show how dividends were distributed and several firms had in the previous five years not paid dividends to the shareholders.

Figure 4.4: Average Firm Dividend Payout Ratio (In Percent)
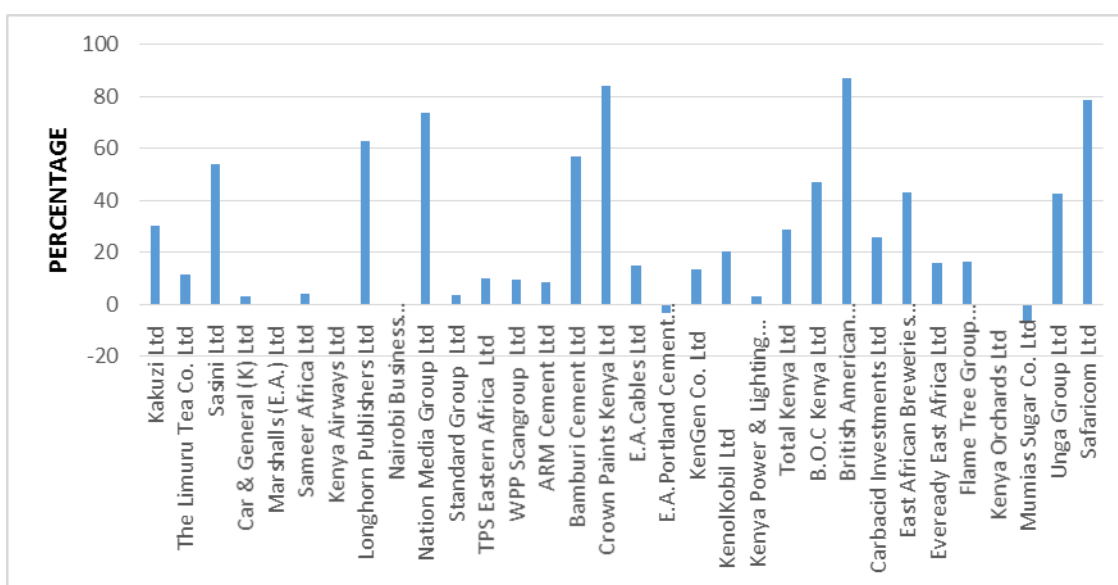
Most of the firms were those faced with huge investments, lack of profits and start-up businesses. The firms that had not paid dividends included Marshals East Africa, Sameer

Africa Limited, Kenya Airways, Nairobi Business Ventures, Free Trees Group Holdings and Kenya Orchards. Firms which were consistent in paying a big portion of their profits to the shareholders included Longhorn, Nations Media Group, Bamburi Cement, Crown Paints Kenya, British American Tobacco and Safaricom Limited. The common denominator of these companies were the huge profits that they were producing annually offered the firms an opportunity to have cash flows which they could use to make such payments. It had also been noted that some firms paid dividends in years where their net income was negative. This was done to maintain the dividend levels paid to shareholders.

4.3 Descriptive Analysis

Descriptive statistics is the act of quantitatively labelling the principal features of a collection of information, or the quantitative description itself. The study used capital expenditure as a dependent variable with free cash flow, financial leverage and dividend policy as independent variables. The results of descriptive analysis are presented in Table 4.1.

Table 4.1: Descriptive Statistics

	CAPEX (Ksh. Billions)	FREE CASH FLOW (Ksh. Billion)	FINANCIAL LEVERAGE (%)	DIVIDEND POLICY (%)
Mean	5.64	3.30	20.93	26.29
Median	0.55	0.23	6.33	18.11
Max	64.08	59.18	166.77	210.61
Min	0.000870	-45.88	0	- 87.64
Std. Dev.	12.33	12.02	31.93	37.85
Observations	160	160	160	160

Source: Research Findings EViews 7

From the results on descriptive analysis the mean capital expenditure for the firms under study was Ksh5.6billion. The high mean was as a result of huge investments in the energy, telecommunication, production and the transport sectors and in general all firms were observed to be expanding their capacity. This was as a result of technological and demand changes. Free Cash Flow mean was at Ksh3.3billion which was as a result of several firms raking huge operating profits, more especially in the energy and telecommunication sectors. It was observed that a couple of firms especially in the Agricultural sector were experiencing financial difficulties with some recording as low as Ksh -45.88billion free cash flow annually. Financial Leverage mean was at 20.93% which indicated that most firms leverage was low and this implied that most of the capital expenditure was financed by retained earnings. Dividend policy mean was at 26.29% which implied that generally at least a quarter of the net income was being given back to the shareholders in form of cash dividends.

4.4 Regression Analysis

To analyze effect of free cash flow on capital expenditure, a panel data regression model was done from the year 2013 to 2017, using the equation

$$LY_{it} = \alpha_0 + \alpha_1\, LFCF_{it} + \alpha_2\, FL_{it} + \alpha_3\, DP_{it} + \varepsilon_{it}$$

Where;

LY_{it}	Capital Expenditure of company i at time t, in logarithm
$LFCF_{it}$	Free Cash Flow (residual cash flow) of company i at time t, in logarithm.
FL	Financial Leverage of company i at time t.
DP	Dividend Policy of company i at time t.
α_0	is the intercept.
$\alpha_1, \alpha_2, \alpha_3,$	are the slope coefficients.

ε_{it} is the error term.

4.4.1. Unit Root Tests

Unit root test permits the researcher to check whether regression series are stationary. Stationarity implies that mean and variance of the regression series are time invariant. In the event that data is not stationary in level, the data is differenced d times to make it stationary and then series are said to be integrated of order (d) and represented as I(d).

Table 4.2: Unit Root Test

Variable	Description	LL	IPS	ADF	PP
LCAPEX	t-stat.	-11.575	-3.653	94.465	104.354
	Prob.	0.000	0.0001	0.007	0.0011
	Stationary	**YES**	**YES**	**YES**	**YES**
LFCF	t-stat.	-15.897	-4.487	99.178	112.084
	Prob.	0.000	0.000	0.0032	0.0002
	Stationary	**YES**	**YES**	**YES**	**YES**
FL	t-stat.	-17.42	-2.883	70.390	81.327
	Prob.	0.000	0.002	0.019	0.001
	stationary	**YES**	**YES**	**YES**	**YES**
DP	t-stat.	-25.94	-17.702	93.35	102.156
	Prob.	0.000	0.000	0.000	0.000
	stationary	**YES**	**YES**	**YES**	**YES**

Source: Research data, from regression results with Eviews 8

The above table shows that all series were stationary in level. Thus, it was concluded that all variables of the study were stationary, and this allowed the researcher to continue with model regression. The subsequent step was to do a Hausman test in order to choose a good model to use between fixed-effects model and random-effects model.

4.4.2. Hausman Test

Hausman test is a condition test to decide the best model to be used between fixed-effects and random-effects models. These models differ from the correlation between individual effects and the explanatory variables. When using panel data regression models, the fixed-effects model affirms that the specific effects can be correlated with explanatory variables. In random-effects model, individual specific effects are random and cannot be added to the constant as dummy variables. These effects do not display any kind of correlation with the exogenous variables.

The two hypotheses of Hausman test are as follows:

H_0: Random-effects model is appropriate

H_1: Fixed-effects model is appropriate

When the probability value is statistically significant, fixed-effects model is used, otherwise use the random-effects model.

Table 4.3: Hausman Test Results

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	**80.557390**	**3**	**0.0000**

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LFCF	0.190489	0.563417	0.001752	0.0000
FL	-0.001933	0.002820	0.000007	0.0715
DP	-0.001170	0.000232	0.000001	0.0804

Source: Research data, from regression results with EViews 7

According to the Hausman hypotheses and referring to the results above, the null hypothesis was rejected for the reason that the probability was associated with the Chi-Sq. Statistic is significant (0.000). With these results a good model to use in the analysis was the Fixed-Effects model.

4.4.3. Fixed - Effects Model

The following table provides results generated from the fixed-effects model.

Table 4.4: Estimation Results of Fixed - Effects model

Dependent Variable: LCAPEX
Method: Panel Least Squares
Date: 11/06/18   Time: 22:47
Sample: 2013 2017
Periods included: 5
Cross-sections included: 32
Total panel (balanced) observations: 160

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16.48621	1.241720	13.27691	0.0000
LFCF	0.190489	0.061018	3.121831	0.0022
FL	-0.001933	0.004101	-0.471396	0.6382
DP	-0.001170	0.002095	-0.558767	0.5773
Effects Specification				
Cross-section fixed (dummy variables)				

R-squared	0.936783			
Adjusted R-squared	0.919588			
S.E. of regression	0.676401			
Sum squared resid	57.18978			
Log likelihood	-144.7263			
F-statistic	54.47978			
Prob(F-statistic)	0.000000			

Source: Research data, from regression results with EViews 7

The above results showed that the fixed-effect model was good as its adjusted coefficient of determination (Adjusted R^2 = 0.919) was much greater than 50%. This was interpreted to mean that the variation of dependent variable (Capex) was explained by the independent variables taken together at 91.9%. The probability of F-statistic was also significant (0.000). Using the results above, it was found that variable FCF was statistically significant at 5% level while FL and DP were not statistically significant. In

addition, FCF had a positive effect on the dependent variable whilst FL and DP possessed a negative relationship which corresponded to the study expectation. The estimated coefficients substituted from the above table were as follows:

LCAPEX = 16.48 + 0.1904*LFCF - 0.00193*FL - 0.00117*DP+ ε_t

 Prob: *(0.0000) (0.0022)   (0.6382)   (0.5773)*

Therefore, the intercept value meant that in any given year, the Capex will be 16.48 when all the predictor values were equal to zero. The coefficient of LFCF was positive and significant (prob. 0.0022) which agreed with the pecking order theory. This meant that, an increase by one percent of free cash flow corresponds to an increase of 0.19 % in the Capex of any company.

However, the results showed that FL had a negative non-significant (prob. 0.638) effect on the Capex which corresponded to theory expectation. The implication was that an increase in the company's FL decreased Capex but this effect was not statistically significant in the study. Furthermore, the DP had also a negative and non-significant (prob. 0.577) effect on the Capex which also agreed with the economic theory. The non-significance of the variables FL and DP was due to variables that were not included in the model but had a great importance in the explanation of any company's Capex.

4.4.4. Multicollinearity test

Collinearity exist when two or more independent variables are linearly associated. Multicollinearity can be recognized by the use of two collinearity diagnostic factors such as tolerance and the Variance Inflation Factor (VIF). Tolerance measures collinearity produced by SPSS and the tolerance of the variable is $1-R^2$. When a tolerance value is

smaller than 0.1 the researcher must undertake further investigation. The table below (Table 4.5) shows the results generated by the multicollinearity diagnostic.

Table 4.5: Collinearity Statistics between CAPEX and Independent Variables

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	LFCF	.966	1.036
	FL	.909	1.100
	DP	.920	1.087

Source: Research data, from regression results with SPSS

The above table indicated that tolerance values were greater than 1, which validates that there is collinearity between the dependent variable and explanatory variables. Therefore, there was evidence to get rid of collinearity of the three explanatory variables; free cash flow, financial leverage, dividend policy.

4.4.5. Autocorrelation Test

Autocorrelation test was used to help in checking that the variables of the study did not present serial correlation, this meant that the error terms must not be correlated so that the OLS assumption could not be violated.

Table 4.6: Results of Autocorrelation Test

Model	Durbin-Watson
1	1.138[a]

a. Predictors: (Constant), DP, LFCF, FL,

b. Dependent Variable: LCAPEX

From the above table, Durbin-Watson value (1.138) happens to be in the acceptation interval which meant there is no serial autocorrelation in the model.

4.5. Discussion of Research Findings

To summarize the findings, there was a significant and positive relationship between free cash flow and capital expenditure. An increase in one percent of free cash flow had a corresponding increase of 0.19 percent in the capital expenditure of any firm. These results were obtained with a coefficient value of 0.1904 and a statistical significance of (0.0022). The results were an indication that firms in Kenya were using free cash flow to make capital expenditures which was in line with the Pecking Order Theory. The Theory suggests that managers have a tendency of first utilizing the free cash flow before resorting to usage of debt for capital investment purposes. The reasoning behind this assertion is that free cash flow is cheap and easy to access no conditions and covenants. The results of the study were also in tandem with the study of Safarizadeh (2014) who using panel data from German automobile sector concluded that a positive relationship between free cash flow and capital expenditure do exist. In addition, Lukam (2011) conducted an empirical study on Malaysian public listed companies using panel data concluded that a relationship existed between free cash flow and capital expenditure.

Findings of this study on the relationship between Financial Leverage (FL) and Capex, the results indicated the existence a non-significant negative relationship at -0.00193 coefficient and 0.63820 significance level. This means that as financial leverage increased, capital expenditure decreased but not in a significant way according to the results of this study. The non-significance may have been due to variables that were not included in the model but had a great importance in the explanation of any firms' capital expenditure. These results were in agreement with the findings of Enekwe, Agu and Eziedu (2014). In their study on the effect of financial leverage and on financial performance for listed pharmaceuticals in Nigeria explained that there is a negative relationship between financial leverage and capital expenditure. When the financial leverage happens to be increasing the cost of capital for projects also increases, rendering the NPV of the projects to go down and resultantly making the projects undesirable.

The study also revealed an existence of a negative and non-significant relationship between dividend policy and capital expenditure. The results depicted a coefficient value of -0.00117 and significance level of 0.5773. The findings were in line with the findings of Higgins (1972) who in his research paper, which was about the dividend-savings decision concluded that dividends vary negatively with investment. This assertion was corroborated by Elston (1996) when she researched on dividend policy and investment using theory and evidence from US panel data. The reasoning behind these results was that companies paying dividends needs to maintain stable dividends and as a result this hampers capital investment by reducing internal funds available.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of the study was to examine the relationship between free cash flow and capital expenditure for firms listed at the Nairobi Securities Exchange. This chapter makes a summary of the significant findings and conclusions will be drawn. Further to this in the chapter recommendations for further research by the researchers and policymakers will be made.

5.2 Summary of Findings

The study was set out to determine the effect of free cash flow on capital expenditure for non-financial firms listed at the NSE covering the period 2013 to 2017. The study revealed the existence of a significant and positive relationship between free cash flow and capital expenditure. The existence of the relationship implied that firms mostly utilized free cash flow when making capital expenditures which was in tandem with the propositions of the pecking order theory. The theory stipulates that firms are inclined to first use internal funds for capital expenditure which is cheap as there are no transaction costs and covenants attached to its usage. Only when the free cash flow is exhausted then firms turn to debt as a source of funds for capital expenditure. Equity is only employed as a source of funds of last resort.

Financial leverage and dividend policy were found to be having a negative effect on capital expenditure albeit not being statistically significant which implied that the relationship could have been as a result of other variables which were not included in the study. Negative relationship of financial leverage culminated from the change in the cost of capital which rendered projects not being viable as the NPV of project turned to negative. The negative relationship with dividend policy emanates from the fact that

maintaining the level of dividends results in the firm not having enough funds to allocate to capital expenditure.

5.3 Conclusion

From the firms that were studied it has been recognized that a positive and statistically significant relationship exist between free cash flow and capital expenditure. The firm's prioritize the use of free cash flow in order to undertake capital investment before embarking on utilizing debt as a source of capital. Usage of free cash flow is motivated by the absence of transaction costs and covenants that stifle freedom of managers. Only when the level of free cash flow is not adequate to suffice the capital expenditure requirements, then debt is utilized. When the debt sourced is not enough then firms use equity as a source of finance. Procedures, implications and cost of issuing equity finance renders it unpopular to firms and rarely do firms issue equity as a result.

All non-financial firms at the NSE are actively engaged in capital expenditure with the aim of maintaining and expanding their production capacity to meet the growing demand for goods and services. However, in general the level of capital expenditure is higher than free cash flow indicating that the firms are also extensively using debt to finance capital expenditure. In using debt, firms enjoy lower costs of debt that emanates from the tax shield although the downside of using debt are finance costs and conditions set by the debtholders..

5.4 Recommendations

Capital expenditure being a key factor in the development of every economy needs to be thoroughly studied in order to understand factors that affect it. In this study, free cash flow has been confirmed to be one of the factors having an influence on the level of

capital investment. There is need to establish the other factors that might also affect capital expenditure.

The outcome of the study indicate that there exist a positive and significant relationship between free cash flow and capital expenditure. Further to this, the research results indicate that financial leverage and dividend policy negatively but not significantly relate to capital expenditure implying that there are other variables that were not part of the study that are also impinging on the effect. With this there is need for further research using other variables, other than the ones used in this study.

Considering that the results show that managers are prioritizing usage of free cash flow for capital investment, shareholders should critically monitor the returns that these expenditures are raking in order to restrict managers from investing in projects that are only aimed at expanding the firm size for their benefit. In the event that these returns are not viable funds should be given back to shareholders in form of dividends or share buybacks.

5.5 Limitations of the study

During the study several limitations were encountered and these require the attention of future researchers on the topic. The expectation of the researcher was that all data will be easily obtained at the NSE, however, for some firms especially the relatively small firms filed summarized data which could not be used in the study. Comprehensive data had to be obtained from the Capital Markets Authority (CMA) at a cost.

The study was conducted covering the period from (2013-2017) and as a result the findings may not remain the same after five years due to macro-economic factors. These macro-economic factors might have an effect on the capital investment of non-financial

firms listed at NSE. Political factors and a change in technology and government policy are some of the factors that might change the macro-economic environment.

The study was designed to cover a population of 44 non-financial firms listed at NSE as at 31st December, 2017, however, it turned out that despite appearing on the register some companies had been suspended from transacting at the Exchange. Other firms were new and as such had operated at the NSE for less than five years and as such the researcher had to work with 32 firms, a number which was still considered to be adequate for statistical inference.

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APPENDICES

APPENDIX 1: Yearly Data for All Companies

Company Name	Year	Capital Expenditure	Free Cash Flow	Financial Leverage	Dividend Policy
Kakuzi Ltd	2013	248449000	171891000	0	41.69
	2014	143962000	126490000	0	47.67
	2015	406805000	642938000	0	18.40
	2016	142013000	552896000	0	20.69
	2017	491917000	753885000	0	23.12
Limuru Tea Co. Ltd	2013	28864000	33313000	0	33.19
	2014	20720144	16921144	0	-0.36
	2015	25039000	34881000	0	36.96
	2016	12298000	-30499000	0	-11.03
	2017	8283000	-9584000	0	0
Sasini Ltd	2013	8183000	-55880000	0	62.18
	2014	511362000	333084000	0	125.52
	2015	2354979000	723843000	0	28.61
	2016	818816000	693539000	0	37.42
	2017	755624000	665355000	0	16.80
Car & Gen. (K) Ltd	2013	453760000	214688000	3.65	8.47
	2014	462048000	116187000	14.67	8.64
	2015	347623000	88224000	9.82	0
	2016	688404000	171643000	3.56	0
	2017	613894000	111590000	11.28	0
Marshalls (E.A.) Ltd	2013	34693700	-75903300	4.06	0
	2014	96957500	25683500	6.09	0
	2015	45563900	14898900	3.32	0
	2016	63533600	23742600	0	0
	2017	61941200	27340200	0	0
Sameer Africa Ltd	2013	442470000	354674000	0.01	20.81

	Year				
	2014	268115000	-24736000	0	0
	2015	356306000	85321000	0	0
	2016	95376000	-88169400	0.18	0
	2017	331584000	225752000	1.66	0
Kenya Airways Ltd	2013	43478000000	28256000000	50.83	0
	2014	31205000000	24942000000	63.97	0
	2015	33529000000	27991000000	104.46	0
	2016	34974000000	-45883000000	143.14	0
	2017	12979000000	-34288000000	161.67	0
Longhorn Publishers Ltd	2013	59925000	94070000	0	49.83
	2014	30789000	22362000	0	123.24
	2015	19409000	-13055000	0	32.15
	2016	297861000	93638000	0	91.63
	2017	336430000	342517000	0	18.67
Nairobi Business Ventures Ltd	2013	16439331	1613559	56.25	0
	2014	29799994	38177895	59.84	0
	2015	15143487	-8549944	35.34	0
	2016	22217516	35958695	57.15	0
	2017	11166653	-29647561	59.05	0
Nation Media Group Ltd	2013	583300000	824900000	0.81	55.82
	2014	1555300000	1417400000	0.47	57.47
	2015	1140800000	1141300000	0	63.62
	2016	801700000	1373300000	0	83.73
	2017	933000000	-30500000	0	107.88
Standard Group Ltd	2013	517418000	471844000	12.82	0

	2014	341177000	317942000	15.29	18.53
	2015	323622000	55489000	22.01	0
	2016	489229000	189496000	18.51	0
	2017	124271000	-218737000	16.20	0
TPS Eastern Africa Ltd	2013	950984000	1041922000	7.33	0
	2014	493267000	372666000	7.99	89.62
	2015	647352000	522239000	16.89	-87.64
	2016	1813507000	1661437000	24.99	49.30
	2017	946390000	1067554000	29.42	0
WPP Scangroup Ltd	2013	718174000	672477000	3.90	17.47
	2014	571491000	405001000	3.32	30.29
	2015	691782000	418265000	2.01	0
	2016	512206000	344922000	0	0
	2017	286172000	-30877000	0	0
ARM Cement Ltd	2013	7964223000	733818000	59.34	22.03
	2014	4496481000	30215000	44.83	19.90
	2015	3824753000	-4180825000	34.69	0
	2016	1886936000	-17288371000	14.13	0
	2017	1898235000	-6853618000	6.34	0
Bamburi Cement Ltd	2013	2364000000	1081000000	0.97	100.49
	2014	2373000000	3759000000	0	57.08
	2015	4494000000	4938000000	0	44.04
	2016	3628000000	4197000000	0	36.98
	2017	3518000000	3109000000	0	45.97
Crown Paints Kenya Ltd	2013	201805000	225846000	0	19.42
	2014	350872000	406622000	0	210.61
	2015	279397000	273129000	0	138.90

	2016	288663000	224029000	13.64	32.41
	2017	167552000	161485000	14.42	19.13
E.A.Cables Ltd	2013	348303000	-58551000	10.76	38.14
	2014	1139042000	642931000	19.53	37.10
	2015	412824000	61394000	30.97	0
	2016	136064000	-384344000	27.16	0
	2017	118408000	-430141000	16.48	0
E.A.Portland Cement Co. Ltd	2013	13099719000	606938000	37.73	0
	2014	13030241000	17253000	37.73	-17.46
	2015	20510033000	381710000	36.32	0.94
	2016	6414749000	-2175095000	22.53	0
	2017	6109854000	-991471000	15.36	0
KenGen Co. Ltd	2013	27546860000	35026030000	49.93	25.12
	2014	64078248000	56765956000	63.37	31.11
	2015	25422266000	28578263000	50.16	12.41
	2016	34887750000	23959181000	44.07	0
	2017	12034262000	22257908000	41.84	0
KenolKobil Ltd	2013	622248000	-986463000	7.27	26.36
	2014	745986000	-2951629000	1.19	20.69
	2015	654469000	-3468299000	0	19.39
	2016	946433000	3154082000	0.37	18.30
	2017	881491000	2912705000	0	17.91
Kenya Power & Lighting Co Ltd	2013	20197857000	7013478000	56.86	0
	2014	35746560000	13956595000	59.01	8.37
	2015	44131712000	19469258000	67.46	0
	2016	50312227000	3819144000	67.87	8.13

			5917739600		
	2017	60062347000	0	67.36	0
Total Kenya Ltd	2013	1280400000	994347000	6.77	28.78
	2014	1400318000	1457315000	6.77	30.94
	2015	1622624000	2205973000	6.60	30.02
	2016	1834706000	3096762000	4.40	30.00
	2017	1749559000	2859500000	3.85	25.56
B.O.C Kenya Ltd	2013	176486000	270517000	0	25.05
	2014	120423000	160693000	0	25.51
	2015	172297000	196298000	0	28.91
	2016	114848000	135666000	0	46.37
	2017	123295000	101061000	0	109.08
British American Tobacco Kenya Ltd	2013	1672382000	1397414000	12.03	89.96
	2014	1214033000	1267643000	11.79	91.65
	2015	2314037000	2090681000	12.18	92.44
	2016	341443000	202018000	12.26	93.29
	2017	2150887000	2164218000	13.65	67.45
Carbacid Investments Ltd	2013	181497000	358535000	0	21.44
	2014	203103000	524041000	0	15.58
	2015	299182000	430562000	0	45.29
	2016	178730000	137225000	0	47.50
	2017	280519000	383124000	0	0
East African Breweries Ltd	2013	9687064000	5408874000	70.17	59.77
	2014	10123752000	1590038900 0	71.01	46.30
	2015	8491090000	3267950000	64.70	56.81
	2016	6245253000	-554942000	66.40	34.64
	2017	12995746000	1661853500 0	69.63	18.57
Eveready East Africa	2013	206308000	79912000	0	0

Ltd					
	2014	54793000	-227467000	0	0
	2015	145306000	-80118000	0	0
	2016	940472000	190797000	0	0
	2017	21093000	-389158000	0	78.92
Flame Tree Group Holdings Ltd	2013	36548793	74904041	80.27	82.51
	2014	96768863	142510411	23.91	0
	2015	111382623	214673516	14.05	0
	2016	114492616	198294023	7.33	0
	2017	33050366	-91644376	8.14	0
Kenya Orchards Ltd	2013	926858	1924686	95.77	0
	2014	807322	2331457	166.77	0
	2015	1731795	5233249	90.33	0
	2016	2616410	6325089	85.25	0
	2017	8811684	9937263	78.50	0
Mumias Sugar Co. Ltd	2013	2778497000	3363062000	18.32	-36.45
	2014	1730535000	-2552514000	4.44	0
	2015	1270365000	-4745840000	10.89	0
	2016	1382648000	-2252137000	47.94	0
	2017	1690199000	-593183500	89.26	0
Unga Group Ltd	2013	453396000	290335000	3.29	21.44
	2014	421552000	279958000	8.44	21.51
	2015	844596000	982149000	6.31	14.05
	2016	775619000	556349000	5.34	22.77
	2017	532939000	455497000	2.35	134.39
	2013	22746248000	27783778000	13.01	70.70
	2014	24060786000	17073636000	5.30	81.81

	2015	39938302000	3492809800 0	0.47	80.45
	2016	31818431000	3279904600 0	0	80.00
	2017	44219278000	5235517800 0	0	80.22

APPENDIX 2: Yearly Data used for the regression analysis

Company	Year	Log CAPEX	Log FCF	FL	DP
1	2013	19.3308	18.9624	0	41.6896
1	2014	18.7851	18.6557	0	47.6654
1	2015	19.8238	20.2816	0	18.3988
1	2016	18.7714	20.1307	0	20.6911
1	2017	20.0138	20.4408	0	23.1219
2	2013	17.1781	17.3215	0	33.1944
2	2014	16.8466	16.6441	0	-0.3625
2	2015	17.036	17.3675	0	36.9572
2	2016	16.325	17.2331	0	-11.031
2	2017	15.9297	16.0759	0	0
3	2013	15.9176	17.8383	0	62.1819
3	2014	20.0526	19.6239	0	125.523
3	2015	21.5798	20.4001	0	28.6111
3	2016	20.5234	20.3573	0	37.418
3	2017	20.4431	20.3158	0	16.7981
4	2013	19.9331	19.1847	3.65015	8.46639
4	2014	19.9512	18.5707	14.6718	8.64411
4	2015	19.6666	18.2954	9.81811	0
4	2016	20.3499	18.9609	3.55857	0
4	2017	20.2353	18.5303	11.2818	0
5	2013	17.3621	18.1449	4.0616	0
5	2014	18.3898	17.0614	6.09204	0
5	2015	17.6346	16.5168	3.31838	0
5	2016	17.9671	16.9828	0	0
5	2017	17.9417	17.1239	0	0
6	2013	19.9079	19.6867	0.0053	20.8139
6	2014	19.4069	17.0239	0	0
6	2015	19.6913	18.2619	0	0
6	2016	18.3733	20.5971	0.17971	0
6	2017	19.6194	19.235	1.66014	0
7	2013	24.4955	24.0646	50.8311	0
7	2014	24.1638	23.9398	63.971	0
7	2015	24.2357	24.0552	104.462	0
7	2016	24.2779	24.5505	143.141	0
7	2017	23.2866	24.2599	161.671	0
8	2013	17.9086	18.3596	0	49.8307
8	2014	17.2427	16.9229	0	123.245
8	2015	16.7813	16.3834	0	32.1473
8	2016	19.5121	18.355	0	91.631
8	2017	19.6339	19.6518	0	18.674
9	2013	16.6152	14.294	56.2472	0

9	2014	17.21	17.4578	59.8402	0
9	2015	16.5331	15.9614	35.3443	0
9	2016	16.9164	17.3979	57.1468	0
9	2017	16.2284	17.2049	59.0494	0
10	2013	20.1842	20.5308	0.80622	55.8227
10	2014	21.1649	21.0721	0.46543	57.4721
10	2015	20.855	20.8554	0	63.6208
10	2016	20.5023	21.0405	0	83.7291
10	2017	20.6539	17.2331	0	107.881
11	2013	20.0644	19.9722	12.8199	0
11	2014	19.6479	19.5774	15.2937	18.5322
11	2015	19.5951	17.8317	22.0146	0
11	2016	20.0083	19.0599	18.5107	0
11	2017	18.638	19.2029	16.2006	0
12	2013	20.673	20.7643	7.3266	0
12	2014	20.0166	19.7362	7.98889	89.6203
12	2015	20.2884	20.0736	16.8894	-87.642
12	2016	21.3185	21.231	24.9942	49.3018
12	2017	20.6682	20.7886	29.4179	0
13	2013	20.3922	20.3265	3.90392	17.4721
13	2014	20.1638	19.8194	3.32389	30.2862
13	2015	20.3548	19.8516	2.00827	0
13	2016	20.0542	19.6588	0	0
13	2017	19.4721	17.2453	0	0
14	2013	22.7982	20.4138	59.3377	22.0318
14	2014	22.2266	17.2239	44.832	19.8986
14	2015	22.0648	22.1544	34.6929	0
14	2016	21.3582	23.5735	14.1328	0
14	2017	21.3642	22.6483	6.34203	0
15	2013	21.5836	20.8012	0.97112	100.49
15	2014	21.5874	22.0474	0	57.0843
15	2015	22.226	22.3202	0	44.0395
15	2016	22.012	22.1576	0	36.9779
15	2017	21.9812	21.8576	0	45.9706
16	2013	19.1228	19.2354	0	19.417
16	2014	19.6759	19.8234	0	210.611
16	2015	19.4481	19.4255	0	138.9
16	2016	19.4808	19.2273	13.6389	32.4054
16	2017	18.9368	18.8999	14.4181	19.1268
17	2013	19.6686	17.8857	10.7584	38.1402
17	2014	20.8535	20.2816	19.5302	37.099
17	2015	19.8385	17.9328	30.9676	0
17	2016	18.7286	19.768	27.1678	0
17	2017	18.5897	19.8796	16.4892	0

18	2013	23.2959	20.2239	37.7296	0
18	2014	23.2905	16.6635	37.7296	-17.459
18	2015	23.7442	19.7602	36.3157	0.94312
18	2016	22.5819	21.5002	22.5306	0
18	2017	22.5332	20.7147	15.3559	0
19	2013	24.0392	24.2794	49.9343	25.1235
19	2014	24.8834	24.7622	63.3676	31.1127
19	2015	23.9589	24.0759	50.1631	12.4068
19	2016	24.2754	23.8996	44.0658	0
19	2017	23.211	23.826	41.8359	0
20	2013	20.2489	20.7096	7.26893	26.3558
20	2014	20.4302	21.8055	1.19139	20.6852
20	2015	20.2993	21.9657	0	19.3864
20	2016	20.6682	21.872	0.36686	18.2963
20	2017	20.5971	21.7924	0	17.914
21	2013	23.7288	22.6711	56.8599	0
21	2014	24.2997	23.3592	59.0087	8.37002
21	2015	24.5104	23.6921	67.4622	0
21	2016	24.6415	24.3659	67.8695	8.13499
21	2017	24.8187	24.8038	67.3627	0
22	2013	20.9704	20.7176	6.77147	28.7839
22	2014	21.06	21.0999	6.76691	30.9447
22	2015	21.2073	21.5144	6.60477	30.0153
22	2016	21.3302	21.8536	4.40462	30
22	2017	21.2826	21.7739	3.84506	25.5641
23	2013	18.9888	19.4159	0	25.0528
23	2014	18.6065	18.895	0	25.5094
23	2015	18.9647	19.0951	0	28.9071
23	2016	18.5591	18.7257	0	46.37
23	2017	18.6301	18.4312	0	109.084
24	2013	21.2375	21.0579	12.0318	89.9645
24	2014	20.9172	20.9604	11.7935	91.6501
24	2015	21.5623	21.4608	12.1776	92.439
24	2016	19.6487	19.1239	12.264	93.285
24	2017	21.4892	21.4953	13.6465	67.4459
25	2013	19.0168	19.6975	0	21.4368
25	2014	19.1292	20.0771	0	15.5829
25	2015	19.5166	19.8806	0	45.2939
25	2016	19.0014	18.7371	0	47.5003
25	2017	19.4522	19.7639	0	0
26	2013	22.9941	22.4113	70.172	59.7708
26	2014	23.0382	23.4896	71.0117	46.3034
26	2015	22.8623	21.9074	64.6951	56.8119
26	2016	22.5551	20.1344	66.3978	34.6466

26	2017	23.2879	23.5338	69.6321	18.5746
27	2013	19.1449	18.1964	0	0
27	2014	17.8191	19.2421	0	0
27	2015	18.7944	18.1991	0	0
27	2016	20.6619	19.0667	0	0
27	2017	16.8645	19.778	0	78.9233
28	2013	17.4142	18.1317	80.2715	82.5128
28	2014	18.3878	18.7749	23.9148	0
28	2015	18.5285	19.1846	14.0517	0
28	2016	18.556	19.1053	7.33494	0
28	2017	17.3135	18.3335	8.13762	0
29	2013	13.7396	14.4703	95.7765	0
29	2014	13.6015	14.662	166.774	0
29	2015	14.3647	15.4705	90.3278	0
29	2016	14.7773	15.66	85.2533	0
29	2017	15.9916	16.1118	78.4986	0
30	2013	21.7452	21.9361	18.3238	-36.449
30	2014	21.2717	21.6607	4.43917	0
30	2015	20.9626	22.28	10.8926	0
30	2016	21.0473	21.5349	47.9408	0
30	2017	21.2481	22.5038	89.2585	0
31	2013	19.9323	19.4866	3.29411	21.4389
31	2014	19.8595	19.4502	8.44393	21.508
31	2015	20.5544	20.7053	6.31177	14.0471
31	2016	20.4692	20.1369	5.33919	22.7717
31	2017	20.0939	19.9369	2.34711	134.393
32	2013	23.8477	24.0477	13.006	70.6963
32	2014	23.9039	23.5608	5.29631	81.8104
32	2015	24.4106	24.2766	0.46843	80.4544
32	2016	24.1833	24.2137	0	80
32	2017	24.5124	24.6813	0	80.2228