EFFECT OF LEVERAGE ON EARNINGS MANAGEMENT FOR COMPANIES LISTED AT THE NAIROBI SECURITIES EXCHANGE

By

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DECLARATION

This research project is my original work and has not been submitted for examination in any other university.

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

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DEDICATION

This is for My Late Father Kiprono John Tonui arap Lelei.

Your loss is the reason I did this. I will always miss you.

To my Sons Bill Moses, Aaron Nick and Prince Nickson,

I wish you the best in your quest for academic excellence.

To my Mother Mrs. Annah Tonui,

You are my daily reminder of all that is good in this world and a great prayer warrior who constantly prayed for me during my studies.

To my Husband Kirui Nicholas,

For allowing me to take this path of self-actualization.

To all my Siblings,

For being always there for me and for your never-ending support.

ABSTRACT

An important item in a firm's financial statement is the level of earnings generated. This is because of the value-added benefits associated with the level of earnings generated and as a result the company management would attempt to monitor the same in a meaningful manner, as per the existing accounting standards and the discretion provided by the accounting standards. The main objective of the study was to examine the effect of leverage on earnings management of firms listed at the Nairobi Securities Exchange. The study was anchored on three theories; Agency Theory, Prospect Theory, and Positive Accounting Theory. The study used descriptive design while the target population consisted of the 66 firms listed at the NSE. Since the population of the study was small, the research was a census. Secondary data was collected from audited financial information ranging between 2016 and 2020. The study used SPSS in analysis where the findings established that degree of operating leverage had an insignificant impact on earnings management (β=0.000, α=0.476) it therefore implied that additional resources that boosts degree of operating leverage may not be realized in the outcome of earnings management. Similarly, the study found a regression coefficient β=0.784 and significance value α=0.784 for the degree of financial leverage. As a result, it was established that the degree of financial leverage insignificantly affects earnings management. However, the study found a positive (β=0.165) and a significant (α=0.004) relationship between property, plant and equipment and earnings management. As a result, the findings implied that an increase in organizational tangible assets increases organizational earnings management activity. The study findings in relation to operating cashflow found that there is a positive (β=0.034) and an insignificant (α=0.746) relationship with earnings management. The findings show that an increase in operating cashflow result to increased earnings management by a factor of 0.034 but the effect may not be significant effect. Contrary to the relationship between operating cashflow and earnings management, the study established a negative and significant relationship between firm size and earnings management. From the regression model, an increase in the size of a firm significantly (α=0.014) reduces earnings management by a factor of 0.034. From the overall effect of leverage on earnings management, the coefficient of determination computed was 0.060 implying that the determinants of leverage; degree of financial leverage, operating cashflow, degree of operating leverage, property plant and equipment intervened by firm size explains 6% of the overall earning management outcome. From the inferential statistics, the study concluded that degree of operating leverage and degree of financial leverage have an insignificant effect on earnings management. Though the impact might be positive, the result on the outcome may not be realized. On the other hand, increase in tangible assets enhances earnings management process. As a result, the study recommends that more time for the study and additional variables for the study resources in order to establish the most appropriate dimensions of leverage that should be incorporated in order to establish more impact on earnings management.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

An important item in a firm's financial statement is the level of earnings generated. This is because of the value-added benefits associated with the level of earnings generated and as a result the company management would attempt to monitor the same in a meaningful manner, as per the existing accounting standards and the discretion provided by the accounting standards (Nalarreason, Sutrisno & Mardiati, 2019). The level of earnings generated affect the firm bargaining power, helps in avoiding debt covenant violation or result in a better debt negotiations and conditions set. On the other hand, a not so favourable earnings position would result in costly debt and also a reduction in credit line available to the firm. Therefore, managers might be motivated to modify financial statements using different ways to generate a favourable earnings position for a given period. However, such a move runs the risk of that the management might be motivated to mislead stakeholders about the company's performance and by extension influences outcomes that depend purely on accounting numbers reported in the financial report of the company (Ferentinou & Anagnostopoulou, 2016).

Debt financing is influenced in part by the performance of a borrowing firm. Ardison, Martinez and Galdi (2013) assert that a highly leveraged firm or those that operate in competitive business environment will attempt to register positive returns through the manipulation of the financial statements while at the same time not violating the international accounting standards. Further, Matsumoto (2012) observe that managers want to avoid earnings surprises and one of the ways through which the same can be achieved to manage earnings to beat or reach analysts' target. Consequently, the question that comes into the fore

is to try and understand the elements in the financial statements that might drive managers to manipulate earnings level and realise a desired performance outcome.

Three theories, including Agency Theory, Prospect Theory, and Positive Accounting Theory, explained the origins of profits management. Jensen and Meckling (1976) proposed the Agency theory, which states that business managers are more knowledgeable of internal information and future prospects of the company than the company's owner. As a result, it is the responsibility of the management to send signals to the company's owners, and one way of doing so is through financial reports. The information asymmetry, on the other hand, might allow managers to manipulate earnings in order to deceive the owner of a company's economic performance. Prospect theory was advanced by Kahneman and Tversky (1979) and predicts that individual choices involve risk and that, ceteris paribus, individuals will tend to avoid the same. The theory continues to argue that all real human beings exhibit irrational behaviours and in decision making different options is available that are clearly not rational. The positive accounting theory was advanced by Watts and Zimmerman (1978). The theory identifies three factors that explain the performance of a firm, namely; debt, compensation and size of the company. The compensation to the executives depends on earnings generated and this might result to the managers seeking to portray better earnings than the true position. Similarly, level of debt and size of the firm are postulated by the theory to influence the manipulation of earnings by the managers.

Firms listed in the Nairobi Securities Exchange operate in different segments that at any given time face different competitive pressures and market forces that impact on their performance (Musyoka, 2015). The risk exposure on firms that operate in the retail or agricultural sectors will differ with those in the communication sectors and therefore might

motivate the managers of these firms to show increased earnings even where the same is not the correct position (Ngunjiri, 2017). Similarly, some listed firms in the bourse have gone under and yet in the few years preceding their going under, the firms had posted positive earnings. This therefore implies that manipulation of the financial information had been practised and this therefore justifies the undertaking of a research to try and understand what might be the trigger of such a practice.

1.1.1 Leverage

A firms' leverage represents the ability of a company to use funds that have a fixed charge to generate income for the owner of the company (Syamsudin, 2001). The same line of argument is pursued by Alkahtib (2012) who defined leverage as the extent to which companies utilize the funds borrowed to improve on their performance. In defining leverage from its role in asset financing, Kumar (2014) defined leverage as a borrowing for purposes of purchasing assets. Leverage therefore is an important financial decision because leverage affects the level of investment that a firm has in its portfolio and therefore the return generated for a particular year. However, the choice between debt and equity financing decision requires that managers have to trade off between the need for financing and the resultant risk from the borrowing to the firm operations (Njagi, Aduda, Kisaka & Iraya, 2017).

Leverage can be divided into two, operating and financial leverage. According to Chen, Harford, and Kamara (2019), operating leverage refers to the company's use of fixed operating costs in relation to investment activities, whereas financial leverage refers to the company's use of debt and/or preferred funds to finance its operations, resulting in fixed costs in the form of interest and expenses, respectively. According to the above classification, a company's cost structure influences its operational leverage in the sense that if a company has

more fixed expenses, its operating leverage will be higher (Brigham & Louis, 2007). In a cost structure of a company, expenses that falls in the category of building depreciation, salaries of employees, depreciation of equipment and other permanent expenses are considered as fixed costs. Financial leverage, on the other hand, when handled appropriately, will generate income for the firm's owner because interest expenditure is a tax-deductible expenditure, reducing the amount of taxes paid by the company. On the other side, if financial leverage fails, the company may face bankruptcy as a result of its inability to make interest and principal payments to creditors (Asraf & Desda, 2020). Operating leverage will be determined by a ratio of fixed operating expenses to total assets, whereas financial leverage will be determined by the sum of interest and preference dividends to total assets in the current study.

1.1.2 Earnings Management

Firms' earnings refer to the net income or profit realised in a particular period. Increase in earnings represents growth in the value to the company. A firm's management will therefore be interested with earnings performance and will strive to improve on its position from one period to another. Schipper (2010) defines earning management (EM) as a deliberate intervention in the external financial reporting process with the objective of achieving specific private gains while avoiding losses and therefore maintaining a targeted level of profitability. A similar view is taken by Scott (2015) who opines that earnings management is that process in which a firm management choice an accounting policy that affect earnings. Some stakeholders are misled about the company's underlying performance or economic conditions by management's use of judgment in transaction structure and financial reporting. As a result, earnings management refers to management's interference in the external

financial reporting process in order to favour one party over another, as Setiawati and Naim (2014) explain.

The strategy adopted by a firm in its quest to conduct earnings management depends on management personal goals, the firms' objectives and the costs associated with the decision. Real and accrual-based earnings management are the two most common approaches used to achieve the EM objective. Accrual earnings management happens when management chooses an accounting technique or modifies transactions in the financial statements to achieve desired outcomes. Real earnings management, on the other hand, happens when managers modify period operations in order to reach or exceed specified earnings targets (Dechow, Ge & Schrand, 2015). Earnings management may be accomplished through a variety of techniques. According to Scott (2003), a firm's managers might attempt to decrease income in order to reduce the company's tax burden. Similarly, a company may wish to grow its revenue in order to boost profits in the hopes of receiving a favourable response from the market. In addition, due to the investors desire to achieve predictable earnings, a firm might smoothen its earnings with an aim of realising a predictable earnings stream. In the current research, earnings management in the firms will adopt the accrual approach in that EM will be measured by a ratio of the total accrual to total assets at a given period.

1.1.3 Effect of Leverage on Earnings Management

Because it is more likely to include accounting procedures that are consciously chosen by management for specific goals within the boundaries of GAAP than it is to involve manipulation of data or accounting information, earnings management is not an unlawful activity in itself (Lazzem & Jilani., 2018). The debt covenant concept (Watts & Zimmerman, 1986) proposes that if a business is on the verge of breaking a debt covenant, a management will be driven to choose an accounting method that shifts earnings from the future period to

the current period. This implies that there may be a link between debt contractual conditions and earnings management, because excessive leverage reduces the amount of cash available to managers for non-value-adding projects. Similarly, a highly geared firm faces high scrutiny by lenders and its spending is often scrutinized by lenders.

Lenders place greater controls on the integral part of the project of a highly geared company, and managers will be less inclined to undertake earnings management in this circumstance. Because of the tighter debt restrictions and audits for leveraged businesses, Vakilafard and Mortazavi (2016) argue that managers with high leverage will have less reason to engage in accrual-based earnings management. Indeed, Scott (2003) identified the reasons behind management undertaken earnings management to be for political costs, debt covenants, and for bonus plans purposes. It therefore follows that firms that wishes to engage in EM for reasons related to leverage will go for that strategy that will attract less scrutiny by external stakeholders and in this case real earnings management will be the preferred choice as compared to the accrual management.

A scale that may be used to classify the size of a company is the size of the corporation as well as the physical assets accessible to the firm's management to create earnings. According to Marihot and Doddy (2007), a firm's size may be quantified in a variety of ways, including log of total assets, log total revenues, and market capitalization size. Similarly, Mardiyah (2001) divides business size into three categories: big businesses (large firms), medium businesses (medium firms), and small businesses (small firms) (small firms). In this study, the size of the companies will be determined by the log of their total assets.

1.1.4 Companies Listed at the Nairobi Securities Exchange

A business must have a minimum of seven members to be listed on the Nairobi Securities Exchange (NSE), according to Kenya's Companies Act, Cap 486. Majority of the firms

ordinarily start by being private entities and then grow to open up its shareholding to the public and in the process gain addition capital injection for expansion purpose. Between 1954 and the present, the Nairobi Securities Exchange has transformed itself from being owned by an association of stockbrokers to what it is currently a public entity with its shares being traded in the same bourse (www.nse.co.ke).

There are currently 64 firms that are listed at NSE under 13 different segments with the banking segment with highest firms listed under it of 12 firms while the investment services, telecommunication and real estate's have one firm listed under it. Equities, Preference shares, Treasury Bonds, and Corporate Bonds are some of the most frequent instruments traded in the markets. The non-financial markets will be the focus of this study owing of the commercial banks' particular reporting practices, which are subject to close examination by regulators. Ngujiri (2017) explains that earnings management is prevalent among the listed firms listed at the NSE and that they EM have a significant and positive relationship with financial performance of the firms. In regard to the effect of earnings management on the market stock price, Oduma (2015) found that that earnings management significantly influenced the performance of stock of the listed firms at the NSE. This was attributed to the reason that EM was aimed at increasing the financial performance of the firms and consequently had a positive effect on financial performance. In terms of the board structure, Musyoka (2015) found that audit size had an a negative and significant effect on earnings management of the listed firms.

1.2 Research Problem

Earnings management has become a common practice among firms in both developed and developing countries, more so, due to the fact that it is not an illegal practice but might mislead stakeholders such as creditors and government agencies (Lazzem & Jilani,2018).

Notable cases in the developed countries (Enron case, WorldCom case, Xerox case etc) has brought into the limelight the danger brought about by manipulation of accounting information that mislead stakeholders and when the vice is spread in an economy, it has been found to have serious economic consequences–including in the developed world with better regulatory environment. It is therefore important to try and understand how the leverage position of a firm influence the earning management practice by managers and from the same help in avoiding serious economic effect that might result from the collapse of such firms that perpetrate the same.

Developing countries, like Kenya that have a weak economic position cannot afford to have firms collapsing as a result to the manipulation of accounting data due to the interlinked nature of their operations. A case in point is the financial crisis that arouse due to the Chase Bank and Imperial Bank collapse that was attributed to earnings management had a ripple effect across several sectors in the country (Manyaga, Muturi & Oluoch, 2020). Imperial bank for example issued a bond worth Ksh 2 Billion two months before its collapse and yet investors bought the bond based on the 'healthy' financial position that the financial statements showed then (Weldon, 2018). Similarly, the collapse of the retail chains Nakumatt and Uchumi supermarket went down with significant number of creditors and suppliers' funds that were advanced based on healthy financial statements that were later found to have been engineered to meet pre-determined management goals. Different studies have been undertaken with a view to understanding the problem of earnings management.

Kim, Lisic and Myers (2011) sought to determine the effect of debt contracting on the real earnings management among Furniture exporting firms listed at the NYSE and the findings suggest that real earning management is driven by the desire of not to miss targets and maximising proceeds from debt issue. Jha (2013) investigated the influence of earnings

management on debt covenant violations among 8,804 firms in US and the results reveal that earnings management that aims to avoid violation of bond covenants is also aimed to improve the managers bargaining power during negotiations. Similarly, highly indebted firms were found to practice earnings management more than the less indebted firms. Alzoubi (2018), on the other hand, looked at the Jordanian firm's experience with the nexus of audit quality, loan financing, and profits management. In order to prevent contract violations, according to the findings, low debt businesses practiced: reduce earnings management practice, whereas high debt is strongly related with earnings management practice..

Researchers Iraya, Mwangi, and Wanjohi (2014) found a negative link between earnings management and ownership concentration (ownership concentration), board independence (board independence), and board concentration (board concentration) of the firms listed at the Nairobi Securities Exchange (NSE). In addition, there was a relationship between board involvement, CEO duality, and profit management. Across Kenyan and Tanzanian companies, Waweru and Prot (2018) examined the relationship between corporate governance compliance and accrual earnings management. The data show that board gender diversity, board independence, and director share ownership all have a beneficial impact on discretionary accounting, suggesting that corporate governance does not limit earnings management. Swai (2016) used data from 44 non-financial businesses listed on the East African Security markets to investigate the impact of corporate governance and firm-specific factors on earnings management. Both firm-specific features and corporate governance appear to have a favourable impact on both earnings' management techniques, according to the findings of the study.

The studies reviewed suggest that though the effect of leverage on earnings management has been done in developed countries (USA, UK, China), it has attracted limited attention in

developing countries like Kenya and yet with its weak regulatory environment the vice is a common practice. Studies undertaken with regard to earnings management in Kenya has sought to investigate the same from the corporate governance perspective. However, it is possible that managers might undertake earnings smoothing with a view to attracting external funding. The issue at hand is whether the capital structure contributes to the earnings management practices by firms listed at the NSE considering that several firms listed at the NSE have gone under or put under receivership and yet a few years earlier had posted impressive financial performance. While there could be different factors that might induce managers to undertake earnings management practice, the effect of capital structure in inducing managers to practice earnings management has attracted limited attention. In order to fill this gap, the study sought to answer the following question; what is the effect of leverage on the leverage on earnings management of firms listed at the Nairobi Securities Exchange?

1.3 Research Objective

To examine the effect of leverage on earnings management of firms listed at the Nairobi Securities Exchange.

1.4 Value of the Study

Research on the effect of leverage on the earnings management has important implication to the policy makers and regulatory with regard to the firms listed at the NSE. The findings is expected to guide policy makers in coming up with appropriate decision on firm financing and what need to be assed in their financial statements for the past years before approving the raising of the additional finances. In addition, the regulators are able to guide lenders on the correct financial standings of a firm before making investment decision. Therefore, the research finding has important implications for policy makers, regulators and standard setters such as capital market authorities (CMAs) as well as other researchers on the importance of

considering both earnings management strategies in order to come up with a definitive conclusion.

The practice of finance management benefits from the study because the understanding of how earnings management might be influenced by leverage is evaluated and therefore help in advising on an appropriate level policy with regard earnings management. Further, the research allows the finance managers to conform to the set standards relating to the management of earnings. The management decision with regard to financing is further discussed and therefore enhances the understanding of the finance function and how it can influence the financial accounting function of a firm.

To the scholars in finance, the research is of benefit because it has provided an emerging market perspective of the relationship between leverage and earnings management – considering that there exists a gap in this area. From the research, different gaps was identified which can be pursued by other scholars through the use of different predictor variables.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter covers a review of the relevant literature that relates to the effects leverage on earnings management practices by firm managers that has been carried before by other researchers. The areas covered include the theories that underpin the research, discussion on the determinants of earnings management, and a review of empirical studies. Further, a section on the conceptual framework that presents diagrammatically the nexus between leverage and earnings management is presented.

2.2 Theoretical Review

The research was anchored on three theories, namely; Agency Theory, Prospect Theory and Positive Accounting Theory. The relevance of the theories to this particular research is presented too.

2.2.1 Agency Theory

Jensen and Meckling (1976) proposed the agency theory, which states that an agency connection exists when one party delegated labor or services to another and gave authority in decision-making. The primary feature of the agency problem is the existence of a conflict between the principal and agent's interests, as well as the principal's knowledge asymmetry concerning the contribution of an agent (Bosse & Phillips, 2016). Due to the possible conflict that might arise between the managers and the shareholders, different mechanisms are used by the shareholders with a view to reducing the level of this conflict. Evidence abounds that demonstrates how a company's management manipulates results as a result of the form of pay arrangements put in place by shareholders to reduce the degree of agency conflict.

Because of the nature of their pay, managers are enticed to manipulate earnings. Healy (1985) provides evidence that managers seek to manage profits downwards when their incentive

compensation has reached the specified maximum level when earnings are realized on a downward trend. Furthermore, there is ample evidence that managers falsify earnings when their job security is at risk. Going forward, management of a business will utilize accounting discretion to provide a positive picture of its own success to voting investors during a proxy battle, according to Goel (2012). In their final years of service, CEOs tend to cut back on research and development expenses in order to boost reported profitability. Similarly, in the preceding years to an initial public offer (IPO), managers tend to smoothen up the earnings to show a favourable possible and this raises agency conflict between the management and shareholders.

When managers employ earnings management opportunistically, agency costs should show a higher degree of earnings management, suggesting that earnings management is directly connected to agency conflicts. As a result, companies with a high degree of agency costs are anticipated to demonstrate a higher level of earnings management in order to enhance their own private outcome. On the other hand, managers are likely to have an incentive to conduct earnings management in businesses with lower agency conflict since it improves communication between shareholders and the management. The negative relationship between agency costs and earnings management is sufficient evidence to indicate that earnings management is helpful or, at the very least, not detrimental. Habbash and Alghamdi (2015) go on to say that when a business has extra cash flow after completing all lucrative projects; managers may be enticed to participate in earnings management by utilizing accounting discretion to hide negative net present value projects and improve the company's performance.

The agency theory is relevant in the current study because it might explain the reasons why managers might engage in earnings manipulation. In the quest to reduce agency conflict,

shareholders might adopt a compensation policy that is based on the performance of managers. If managers register high profit levels, they end up being paid highly in terms of salaries and bonuses. As a result of this the compensation policy adopted under the agency mitigation challenge might explain why managers might engage in earnings management to try and portray a positive position than is actually the case. Therefore, lower level of earnings management is going to be witnessed in firms associated with lower agency conflict, while in situations where there is high agency conflict then managers might adopt elevated level of earnings management. Therefore, Agency theory is a relevant theory in explaining why managers might engage in earnings management.

2.2.2 Prospect Theory

Prospect theory was advanced by Kahneman and Tversky (1979) and predicts that individual's choices involve risk and that, ceteris paribus, individuals will tend to avoid the same. The idea maintains that all actual human beings engage in illogical behaviour, but that when making decisions, numerous choices are accessible that are plainly not rational. Decision-makers will value gains and losses relative to a reference point rather than the absolute degree of wealth from this perspective (Subekti, 2013). As a result, managers will pursue a change that will result in individual value and the person will not like a change that is not going to result in a loss.

While developing the theory, Kahneman and Tversky (1979) used controlled experiments in which various individuals were given options, each with conceivable outcomes and their relative probability of occurrence. Individuals are loss-averse, according to the results of the controlled experiment, and will forego the chance of a gain when there is a risk of loss compared to one's existing position. When it comes to earnings manipulation, the idea holds

that managers will be more willing to sacrifice future good earnings if a current choice would result in a loss in the short term (Shen, & Chih, 2005). Therefore, small negative earnings in the current period, even if small, shows that the performance is not good as compared to a small positive figure and consequently, managers will go for that accounting option that results in a positive performance.

Negative earnings statistics in this example, despite their tiny size, indicate poor performance. Positive profits, on the other hand, have worth even if they are tiny. Even though the profits amount is small, it may reflect strong performance. In terms of earnings management, the theory assumes that managers would adopt an accounting approach that produces positive earnings, larger profits than the previous year, or better profits than the analyst estimate (Beatty, Ke & Petroni, 2002). In relation to the investors, the Prospect theory alludes to the fact that investors will prefer to invest in companies with smaller predictable earnings than those whose earnings is associated with greater uncertainty. Consequently, for managers, they will aim to realise a small predictable profit over time than a large amount of profit that is unpredictable. In the context of the current study, the Prospect theory will be relevant because it suggests that managers perceive a small loss to be extremely unpleasant than a small gain in the amount equal to the loss and so naturally will have an incentive to manipulate the accounts to reflect a positive performance even if that might not be the case. This is because by a firm reporting a small profit, a higher valuation premium is expected to result as compared to a reporting of a loss than will result in a more than proportional loss in investor valuation.

The prospect theory is relevant to this study since both managers, investors and shareholders desire that the future prospects of the firm earnings is going to show positive changes, however small. Since managers are aware of this desire, prospect theory suggests that it

might explain why managers might be tempted to show a positive earnings position however small so that stakeholders might positively rate the performance of the firm. Therefore, the urge of the managers to manipulate the earnings position to show a favourable position than the previous period is explained by the prospect theory that suggest that managers should show a positive position in earnings in the subsequent years- however marginal as it is.

2.2.3 Positive Accounting Theory

The positive accounting theory was advanced by Watts and Zimmerman (1978). The theory identifies three factors that explain the performance of a firm, namely; debt, compensation and size of the company. The compensation to the executives depends on earnings generated and this might result to the manager's motivation to portray better earnings than the true position. Similarly, level of debt and size of the firm are postulated by the theory to influence the manipulation of earnings by the managers. Managers' compensation in many jurisdictions is influenced by the earnings generated and in this context, the theory is of the view that managers will seek to realise high earnings through manipulation of the accounts to reflect increased earnings position (Milne, 2012). This imply that the quest by managers to potray a positive performance to the lenders will motivate managers smoothen the earnings to show a favourable position and thus easily convince financial institution to extend the credit facility. Consequently, as the positive accounting theory suggest, earnings management might arise due to the informational asymmetry between the firm management and the lenders.

The positive accounting theory suggests that if a firm finances its operations using debt, then it has convinced lenders through the financial statements that the financial health of the company is good to warrant increased lending. This motive can explain why managers will manipulate the accounting policies with a view to increasing their earnings position. The size of a firm also affects the earnings motive of mangers because large firms attract the interest

of investors and regulators alike and therefore influencing managers in a way to post good results. However, Zadeh, Salehi and Alaei (2012) assert that large firms also attract good managers and good image in the eyes of stakeholder. The theory further postulates that the managers endeavour to represent their perceived fair value of their organizations assets. Benston (2006), for example, opine that such firms as Enron tried to mask the fair value argument when confronted with the claim of manipulating the accounts.

The use of different rates and policies with regard to a firm's wage growth rate, expected return on equity, equity return spread and the discount spread rate – in trying to find a fair value of a firm transactions (Byrne, Clacher, Hillier, & Hodgson, 2008). They further note that the variations in the accounting treatment of these transactions is not explained by difference in economic fundamentals but rather the management motives to register high earnings and then be paid higher compensation. The question that Positive accounting attempts to answer is whether intangible assets should be recognized in the books or not. This grey area is what makes the theory relevant in the current study or not. The disclosure of intangibles in the financial statement, in itself, is value relevant, it negates the need to recognize such internally generated asset in the financial statements. The theory is further relevant to the study because in their quest to reflect a high value of physical assets available in a firm to act as collateral, managers might be induced to adopt different re-valuation measures and depression policies with the aim of increasing their value. Hence positive accounting theory is relevant in explaining how a firm leverage might motivate managers to overstate the value of the assets.

The Positive Accounting theory is relevant in this study as it identifies compensation adopted in a firm, size and debt level as the key factors that determine performance. In cognizant of these factors, the theory opines that if the size of the firm increases via the asset base and at

the same time the debt level held at a manageable level that does not result in lower credit rating results in the firm being rated favourably and thus increases the compensation to managers. Consequently, the theory submits that managers might have an incentive to increase their asset base through adoption of different valuation base and also re-structure their debt level by say taking short-term term liabilities to be long-term. These actions involve earnings management process that results in a misleading picture being portrayed by the financial statements.

2.3 Determinants of Earnings Management

Earnings management is a strategic accounting method that managers use to optimize on the firm productivity and at the same time reduce risk. It is from this perspective that earning manipulation results in conflict with the mainstream accounting practice. Different authors have identified the factors that might contribute the earnings management practice by managers. In this research, the relevant determinants of earnings management include, leverage, free cash flow firm size and corporate governance.

2.3.1 Leverage

Leverage refers to the use of fixed cost sources of funds with intention of increasing the profits to shareholders. The management of such firms use operating and financial leverage with the hope that they can generate profits that is higher than the cost of financing the firm operations with such sources of capital. From another perspective, leverage has the potential that it increases the volatility of profits to the shareholders (Sartono, 2010). In order to avoid going against the debt covenants, managers might use earnings management to contravening the debt provisions with high debt levels being found to induce managers to adopt income increasing accounting policies (Waweru & Riro, 2013). Managers manipulate earnings with the intention of portraying a strong financial standing and that those firms that exhibit higher

leverage showing the tendency to exhibit high earnings management that relate to profit smoothing.

According to Ujah and Brusa (2011), there is a link between earnings management and financially troubled businesses, which is backed by Fung and Goodwin's financial distress theory (2013). The goal of the study was to find a relationship between financially distressed businesses and earnings management. It was discovered that firms with earnings management were positively connected to financially distressed enterprises with short-term debt commitments. Compounded with the cash flow volatility, leverage was found to increase the incentive by managers to control earnings. This is because there exists a high probability of default for firms that are highly geared and in order not to fail, in fulfilling its obligations managers will be persuaded to undertake earning management. Jelinek (2007) highlight that a smaller firm leverage position will be seen by investors has having a lower chance of default and therefore having lower cumulative risk to the firm. Operating leverage will be measured by a ratio of fixed operating costs and total assets.

Higher financial leverage has been found to result in increased accrual earnings management and other earnings-related accounting decisions (Beatty and Weber, 2003). This is done with the sole aim of avoiding contravening debt covenant provisions. In a study by Zagers (2009), it was found that in the case of leveraged firms, earnings management is done, to among other, maintain the cash flows at a desired level. Further, Sari (2013) suggests that there exist a strong correlation between a firm leverage and capital expenditure. On the other hand, other studies have found that increased leverage results in reduced earnings management because they are likely to face tighter control from creditors (Zamri et al, 2013). As a result, managers will have fewer incentives to undertake earnings management because of the realization that the firm creditors will be taking keen interest on the financial statement.

Vakilafard and Mortazavi (2015) further suggests that as the firm leverage increases, the resultant pressures from the debt covenant and frequent audits demanded by the creditors reduces the incentives of the firm's managers to pursue earnings management. Financial leverage in the study will be measured by a ratio of a sum of interest and preference dividend by total assets.

2.3.2 Operating Cash flows

Free cash flow (FCF) represents that remaining amount of cash flows after a firm has met its investment and operating cash flows requirements. Jensen (1989) introduced the free cash flow theory and stated that it represents the operating activities cash flows after deducting the cash required for investments that have a positive net present value outcome. Free cash flows were described by Len and Poulsen (1989) as operating income before depreciation but after tax, as well as any other fixed charge expenditures such as interest and preference dividends paid. Conversely, Copeland (1995) begins by stating that free cash flows are operating income plus non-cash costs after subtracting investments in property, working capital equipment and plant and other assets. Ordinarily, any remaining amount after the two activities of operating and investment activities will be used to enlarge the company size. Nekhili, Amar and Lakhal (2016) is of the opinion that high level of free cash flow in an organization might result in earnings management because managers might direct more cash to personal gain. It does not therefore imply that a high level of free cash flow results in increased size of the firm because, Bukit and Iskandar, (2009) find that managers might use the funds for personal gains by applying an appropriate cost of capital to determine the net present value of an investment, the cash flow required for an investment from the available cash, the balance represents the cash available for use by management and it might bring about wastefulness and thus increase the agency cost.

The level of FCF in a firm might be a cause of worry for shareholders because a high level of free cash flow available in a firm might bring about an over investment by the managers without an effective capital appraisal. Managers might misuse these available funds because the allocation is not in most cases to the company's best interest but rather what eventually turns out to benefit the managers themselves. However, the difficulty is not present in businesses with active investment possibilities; rather, in instances when strong development chances are scarce, an overinvestment problem is likely to occur. This move is harmful to shareholders, particularly minority stockholders (Stulz, 1990). Managers who engage in acts such as share repurchase, adopting a full-fledged method of extracting private advantages, and expropriating minority shareholders are examples of wasteful behavior (Nekhili & Cherif, 2011). By taking such action, the company's financial condition may be jeopardized, resulting in decreased stock prices and perhaps the dismissal of managers. Managers will tend to falsify earnings in order to hide their use of excess free cash flow and the use of the same for personal gain in order to lessen the effect of such conduct (Richardson, 2006). Operating cash flows will be assessed in this study using a ratio of net cash flow to total assets.

2.3.3 Company Size

The size of a firm serves as a metric for determining whether it is deemed small or huge. The market capacity of a company indicates its size, and larger corporations are less likely to engage in earnings management since they are subject to public scrutiny. Larger firms, according to Lee and Choi (2012), will be more attentive in reporting their finances and, as a result, will disclose their financial situations more correctly. The natural logarithm of the total asset is used to calculate the business size in the majority of research. In terms of the agency connection, it is hypothesized that the larger the firm, the greater the predicted agency problem (Abed et. Al., 2012). This is because larger firms are expected, ceteris paribus, to

generate more earnings because of the higher resources that they do have and further have less incentive to carry out earnings management through discretionary accruals (Barton & Simko, 2012).

There are two opposing viewpoints on the impact of company size on earnings management techniques in a firm, according to Zhu and Tian (2009) and Shehu (2011). Abdul Rahman and Ali (2006) discovered a negative relationship between the two factors, indicating that bigger businesses with sophisticated internal control systems, major auditing firms, and higher reputations are less inclined to use earnings management methods in order to protect their reputations. To the contrary, smaller firms that are not subject to regulatory controls and are desirous of projecting good performance will practice earnings management activities. Myers and Skinner (2010) establish a positive link between earnings management and company size because bigger firms with commanding market shares and influence are more inclined to control their earnings in order to preserve their position. Choutrou et al. (2011) while investigating the effect of firm size on performance suggest that large companies in terms of the asset base, lack the urge to do earning management than small companies. In the current study, firm size will be measured the log of total assets.

2.4 Empirical Review

Tulcanaza-Prieto, Lee, and Koo (2020) studied the influence of leverage on real earnings management in Korea using data from non-financial firms listed on the Korea Composite Stock Market Price Index. Short-term debt ratios and long-term debt ratios were utilized in the study along with four other factors. Positive correlation was found between leverage and earnings management in suspicious firms, whereas negative correlation was seen in non-suspicious firms. In keeping with a previous result by Cohen, Dey, and Lys (2008), suspicious businesses are more likely to participate in REM by giving trade discounts, easing

credit policy terms, and decreasing R&D and advertising expenditures to hide daily transactions.

Koesharjono and Priantono (2018) examined the combined effect of corporate governance and indebtedness on earnings management. The researchers hypothesized that, because of the risk of default, managers of highly leveraged businesses are more likely to engage in earnings management, whereas corporate governance is expected to reduce earnings management because independent boards are expected to be more critical of supervisions. The study used data from non-bank businesses registered on the Indonesian Securities Exchange from 2013 to 2016. The study's findings demonstrate that the number of independent members on the board, the board's size, and the firm's size all have an influence on earnings management. This indicates that the larger the company, the less likely it is for managers to engage in earnings manipulation because larger companies may hire renowned audit firms to act as a deterrent. These findings support that performed by Khaerunnisa, Siti and Eko, Umanto (2014) but is in variance with that by Wulandari's (2013) study, that reveals that the composition of the board of commissioners most dominant influence on earnings management.

Isa and Farouk (2018) looked at board diversity and the function of the audit committee in the profit's management of low and highly geared banks listed in Nigeria. The study utilized multiple regressions analysis to demonstrate the link using panel data from 2008 to 2015. The study's findings suggest that having more women on boards has a negative impact on banks' actual profits management methods. Similarly, it was discovered that board ownership had a positive impact on earnings management. The findings, however, contrast with those of Iraya, Mwangi, and Muchoki (2015), who found that board size was inversely associated to

earnings management. Similarly, the findings contradict those of Van den Berg (2015), who contends that a more diversified board of directors enjoyed better profits management.

Swai (2016) studied the influence of corporate governance and firm-specific variables on earnings management for 44 non-financial listed companies on the East African Securities Exchanges between 2004 and 2013. The results suggest that managers prefer to control actual earnings over accrual earnings, according to the study, which employed panel data regression using three models. Sales balance is the most prevalent earnings manipulation method utilized by managers, according to the findings. Furthermore, the findings show that business characteristics as well as corporate governance have a significant influence in deciding the decision to move from accrual to real earnings management. With the exception of Dechow, Ge, and Schrand (2015), who discovered a negative relationship between board independence and real earnings management, the findings discovered a highly significant and positive relationship between the two variables, implying that board independence weakens the negative relationship between the two earnings management strategies.

The relationship between leverage ratio and earnings management from a Brazilian perspective was modelled by Ardison and Galdi (2013), who utilized data from 1994 -2010 of firms listed at BMF & Bovespa. The research employed three variables of discretionary accruals to proxy the earnings management while cost of capital and log of total assets was adopted as a control variable. The findings resulted in a higher p-value for the variables of interest (leverage ratio), it was concluded that leverage has no effect on earnings management – though all the estimated coefficients were positive. This finding is supported by Coelho and Lopes (2007). In conclusion, leverage was found not to induce managers in manage earnings. Surprisingly, Ujah and Brusa (2011) discovered that, when looking at the same nation

businesses, both financial leverage and cash flow volatility had an influence on how firms manage their earnings.

Uwuigbe, Ranti and Bernard (2015) while using judgemental sampling technique to select 20 listed firms in Nigeria sought to determine whether a firms characteristics affect their earnings management. The firm characteristics studied included firms size, corporate governance, leverage and risk management. By using pooled ordinary least square regression, the findings suggest that firm size and the corporate governance practice adopted by a firm had a significant and positive effect on the earnings management ($p=0.0000$, $p=0.0254$) . In relation to the firm size, this findings is in line with that of Ramjee and Gwatidzo (2012) which concluded that large firms have a motivation to register higher performance than smaller firms through manipulation of earnings emanating from the intricacies of their operations.

Veronica (2015) used 30 manufacturing businesses registered on the Indonesian Securities Exchange to study the combined influence of debt and company size on managers' inclination to control earnings. A regression analysis was used by the researcher to test the study hypothesis. The findings indicated that operating leverage had a positive coefficient of 0,215, whereas financing leverage had a 50.5 percent impact on managers' earnings management. The findings also show that a combination of operating leverage, financial leverage, and company size had no influence on earnings management technique. The findings back up Goddess's (2007) findings, which indicate that financial leverage has little impact on managers' earnings management decisions. Similarly, this finding supports the Signaling hypothesis, which claims that companies trade the interest cover advantage and the hazards associated with financing risk, and that the more the leverage, the higher the degree of profits management.

Mudjiyanti, (2018) while using manufacturing firms listed at the Indonesia Stock exchange investigated the individual and combined effect of tax planning, deferred tax expense and ownership structure on earning management. The study utilized data for the period 2013 – 2016. By adopting a purposive sampling technique, the study collected 72 observation samples of the variables and the analysis technique adopted was a linear regression equation. The findings reveal that tax planning had a positive and significant effect on earnings management (β=0.0424, p=0.000) while managerial ownership has a negative and significant effect on earnings management ((β=-0.010, p=0.014). These findings supports that of Kasipillai and Mahenthiran (2013) but at the same time supports the findings by Wang and Chen (2012) that show that adoption of appropriate tax planning resulted in increased earnings of a firm.

The role of firm size on the relationship between leverage and firm performance of 101 firms listed in Nigeria was investigated by Ibhagui and Olokoyo (2018). The research utilized a five-year panel data covering 2013 -2017. The results indicate that the existence of a negative effect of leverage on firm performance in the case of small firms and that this relationship diminishes as the size of the firm increases. The findings held even in situation where the debt level increased. This position is supported by a study by Kodongo, Mokoaleli-Mokoteli and Maina (2015) who while investigating the nexus between capital structure, profitability and firm value of firms listed at the NSE, found that firm size, sales growth and asset tangibility are important and significant determinants of profitability. The findings also reveal that asset tangibility, irrespective of the firm size, consistently has a negative relationship with profitability.

Mwendwa (2020) investigated the effect of corporate governance characteristics on earnings management decisions made by Nairobi Securities Exchange-listed firms. CG features such

as audit committee activity, board independence, ownership concentration, and board size were assessed. Between 2015 and 2019, a longitudinal technique was utilized to examine 65 firms that were publicly traded between 2015 and 2019. The size of the board of directors and audit committee, according to the research, has a negative and significant influence on the profit management of enterprises. Therefore, independence of the audit committee and board size should be monitored by the shareholders since the findings suggest that it has the greatest influence the management of earnings. However, these findings differ from those of Iraya, Mwangi, and Muchoki (2015), who showed that earnings management is negatively associated with board size and ownership concentration, but positively associated with board involvement and CEO duality. According to the study, earnings management is negatively connected to ownership concentration, board size, and board independence, but positively related to board activity and CEO duality.

2.5 Summary of Literature and Knowledge Gaps

From the literature review and empirical studies assessed, it is evident that earnings management has lately received increased attention from scholars, investors and management in equal measure. From the empirical review, with regard to firms at the NSE, the studies have concentrated with understanding how corporate governance practices affect earnings management of the firms. With the exception of studies undertaken in Jordan, Malaysia and India, in the developing countries, the effect of leverage on earnings management of firms operating in countries has been overlooked. However, the leverage position in a firm might also affect the earnings management practice in an organization because managers might be induced to appease the lenders and other investors to advance additional funding to the firm by portraying a better performance than is actually the case. The context of the studies differ since the studies reviewed above - with an exception of Uwuigbe, Ranti and Bernard (2015),

that was carried in developing world (Nigeria) like Kenya, the other studies were carried out in upper middle income countries, whose regulatory framework is different from Kenya's.

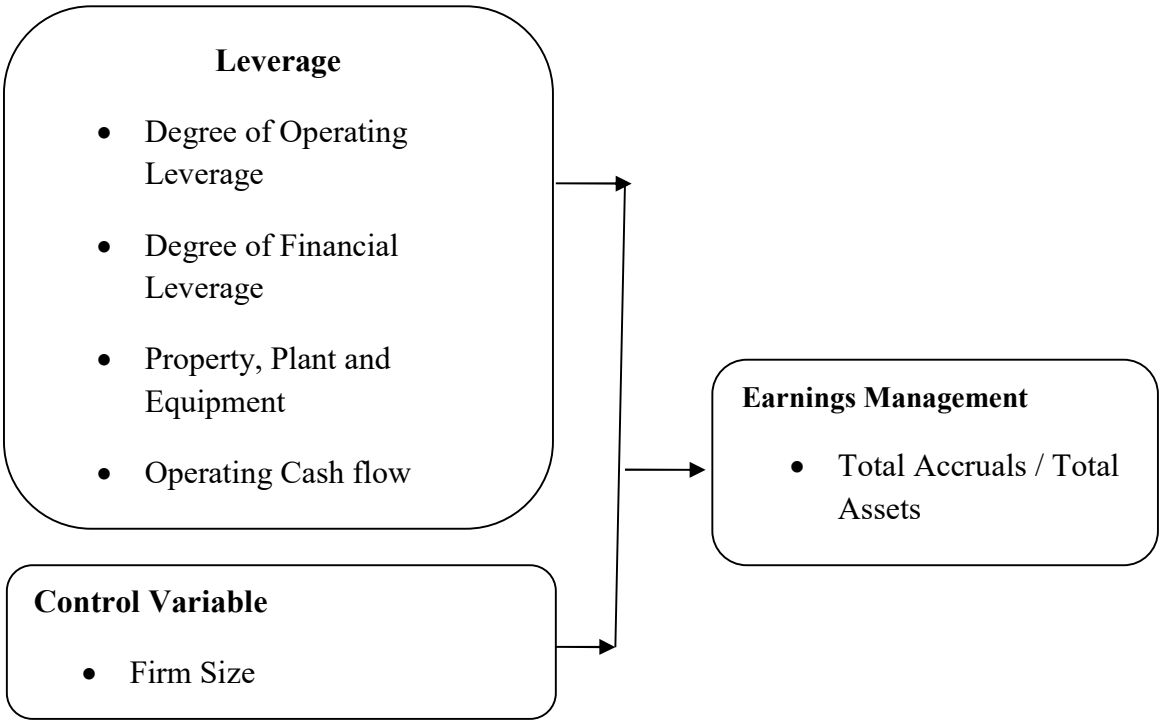
Despite the potential influence of leverage on management manipulation of earnings, the same has attracted limited attention in Kenya as evidenced by a lack of a study – which I am aware of, in relation to firms listed at the NSE. Previous studies have assumed that earnings management is a product of a lack of an effective corporate governance practices and this explains why there has been a bias in this line of research. However, it is possible that the current leverage position and the desired future position might induce managers to practice earnings management. Hence studies done in Kenya differ in respect to the concept investigated in that the relevant studies that have looked at earnings management have attempted to establish how corporate governance influence manipulation of the accounting data to portray a positive position. Therefore, this research will seek to fill in this gap by seeking to determine the link between leverage and earnings management of firms listed at the Nairobi Security Exchange.

2.6 Conceptual Framework

A conceptual framework is a model that gives further details on the relationship and structure of study variables. Fig. 2.1 below not only offers a guidance framework for the interconnections between variables but also allows researchers to achieve the research goal mentioned

The degree of the firm's leverage is represented by both the operating and financial leverage parameters, and the size of the property plant and equipment. In addition, the size of the operating cash flows that the firms have at the end of the respective years will be used to proxy leverage. Firm size will act as a control variable in the study. The level of leverage in a particular year will be proxied by a ratio of total accruals to total assets.

Independent Variables **Dependent Variable**



Source: Researcher (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section contains the various methodological processes and procedures to be followed in the research study. It presents the research design, empirical model, study population, sampling technique, and collection of data procedure and the analysis of data

3.2 Research Design

In research methodology, a research design is a well-structured framework that guides the researcher to achieve the intended research objective. It is a blue print, which is used by a researcher to generate answers to research problems (Mugenda & Mugenda, 2013).

A descriptive research design was adopted because, as Maigua and Mouni (2016) point out, the benefit of this research design is that it requires reasoning to be related in order to apprehend reason and consequence. The researcher was not able to clarify what is going on between the variables, since there was no influence over the variables. As a result, the researcher analysed and explain the influence of leverage on the earnings management of firms listed at the Nairobi Security Exchange.

3.3 Population of the Study

A study population is the complete group of individuals or companies that the researcher wishes to investigate (Sekaran & Bougie, 2010). It is defined in terms of availability of elements, time frame, geographical boundaries and topic of interest.

The population of the Study consisted of the 66 firms at the NSE (Appendix II). Since the population of the study was small, the research was a census.

3.4 Data Collection

The data that was used to analyse the research variables was secondary data obtained from a variety of sources, such as audited financial statements of the respective firms and reports filled at the Capital Market Authority (CMA). The data collected was covering five years from 2016 to 2020. The accounting data collected were those that facilitated measurement of operating leverage, financial leverage, size of tangible assets, cash flow and firm size. The data included total accruals, total assets, fixed operating costs, interest expense and preference dividends. In addition, total value of tangible assets and the net cash flows at end–of-the year was collected for the five-year period.

3.5 Data Analysis

For purposes of interpretation, data analysis includes the translation of study data into functional formats, drawing conclusions and inferences. The analysis was based on both descriptive and panel regression. The descriptive study comprised of the following: the use of arithmetic mean, standard deviations, overall number of observations, maximum and minimum value of observations. The inferential analysis, on the other hand, was based on the regression analysis of the panel data. The regression analysis panel was then used to assess the hypotheses of the study based on a significance level of 5 percent. The Statistical Package for Social Scients (SPSS) – Version 21, was used in the analysis.

3.5.1 Diagnostic Test

Before starting the regression analysis, diagnostic tests are run to see if the data on the study variables is suitable for generating appropriate findings for interpretation, conclusion and generalization. A variety of diagnostic tests was performed. These are normality test, multicollinearity, and heteroscedasticity test. Normality checks are used to determine whether sample data has been collected from a normally distributed population. The assumption of

normality is that the random interest variable is normally distributed or roughly distributed within a normally distributed population. Intuitively, variance inflation factor was used to assess the extent of normality in the dataset.

Multicollinearity is a case of any association of independent variables in a sample (Wooldridge, 2013). High multicollinearity levels contribute to inaccurate predictions, since they increase the p-values in a regression. In determining the correlation degree of the predictor variables, the correlation matrix is used. It is in line with Greene (2012), who reported the presence of a high degree of multicollinearity in r or r^2 above 0.8 or 64. Each of the variables involved was omitted in such a situation. Heteroscedasticity refers to the case that displays persistent indifferent measurements of the residual variances (Verbeek, 2012). In the determination of heteroscedasticity, the Breusch Pagan Godfrey test was used. A p-value greater than 5% means that the model does not suffer from heteroscedasticity.

3.5.2Analytical Model

The leverage position of the firms was measured as a function of degree of operating leverage, degree of financial leverage, value of property plant and equipment while earnings management is measured by a ratio of total accruals to total assets. The control variable was firm size. The analytical model was as follows.

$$Y = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \boldsymbol{\varepsilon}$$

Where:

Y = Earnings Management (EM) = Total Accrual / Total Assets

β_o = The Y intercepts is a constant coefficient and it is not influenced by other variables

X_1 = Degree of Operating Leverage (DOL) = % Change in EBIT / % Change in Sales

X_2 = Degree of Financial Leverage (DFL) = (Interest expense + Preference Dividend) / % Change in EBIT

X_3 = Property, Plant and Equipment (PPE) = Tangible Assets / Total Assets

X_4 = Operating Cash flow (CFO) = Net cash flow / Total Assets

X_5 = Firm Size; = (Log of Total Assets)

$\{\beta_i ; i = 1.2.3,4,5\}$ = The coefficient of values representing the various independent variables.

ε = the error term representing any other variable that can have an influence on earnings management of the firms listed at the NSE.

3.5.3 Significance Test

The regression significance was determined using the F- test whereas R^2which is the coefficient of determination determined the extent of variation in Y that was described by X variables. 5% significance level or 95% confidence level was used and correlation analysis was determined to establish the direction and strength of the association between the leverage and earnings management.

CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1 Introduction

The section presents the results of the data analysis done using the procedures discussed in chapter three. Secondary data in regard to the study variables was collected from respective firms published and audited financial information. The data collected specifically related to total assets, tangible assets, total accruals, sales, EBIT, EBIT and net cashflow. Using appropriate accounting formulae and concepts, the sub variables measured degree of operating, degree of financial leverage, organization property plant and equipment and firm size.

4.2 Descriptive Statistics

Descriptive statistics in research studies are used in describing specific characteristics of a dataset. They give a simple summary with regard to the sample and basic measures used to analyse the trend and structure of the data. In the present study, descriptive statistics particular the mean, standard deviation, minimum, maximum and the range were computed. Presentation of the findings in regard to the statistics were as shown in table 4.1.

Table 4. 1 Descriptive Statistics

Variables	N	Range	Minimum	Maximum	Mean	Std. Deviation
Earnings management	200	1.3989	.0002	1.3991	.122586	.1753724
Degree of operating leverage	200	822.0091	-560.5780	261.4311	2.757574	55.2238166
Degree of Financial Leverage	200	186.8066	-142.1927	44.6139	.730656	12.4197254
Property Plant and Equipment	200	.8878	.0402	.9280	.533281	.2301424
Operating Cashflow	200	.9461	-.4207	.5255	.057579	.1185553
Firm Size	200	3.6660	1.9499	5.6159	3.869839	.9451179
Valid N (listwise)	200					

The range of a dataset explains the degree of the difference between the maximum and minimum value. From the findings, the study established a range of 1.3989 in relation to organizational earnings management. With a minimum value of 0.0002 and a maximum value of 1.3991, it implied that earning management of firms listed at Nairobi stock exchange

varied significantly. The mean ratio of earnings management expressed as total accruals to total assets was 0.122586 thus an implication that accruals of the firms studied are 0.122586 times of total assets. A standard deviation of 0.1754 imply that majority of the data values inclined within the mean value. According t the findings, degree of operating leverage expressed as percentage change in earnings before interest and tax (EBIT) against percentage change in sales, varied significantly with a minimum value of -560.7 and maximum value of 261.43 giving a range of 822.001. In addition, the mean ratio of the variable implies that majority of data values revolved within a value of 2.7575. The findings showed a standard deviation of 55.2238 implying a huge degree of variation among the data values.

Based on the findings in relation to degree of financial leverage that the study expressed as the ratio of percentage change in earning before tax (EBT) to percentage change in EBIT, it was established that among the listed companies, degree of financial leverage varied significantly. With a range of 186.8066, it implies that the difference between the maximum (44.6139) and the minimum (-1421942) is significant. In addition, the mean ratio of 0.7307 imply that majority of data values in relation to degree of financial leverage among the firms listed at NSE were below a value of 1. The standard deviation (12.4197) implies that variation in data values was significant.

The study findings demonstrated that the tangible assets (Property Plant and Equipment) of firms listed at NSE is uniformly distributed with a marginal difference among the firms. The ratio obtained from dividing tangible assets by total assets gave a range value of 0.8878 implying a small difference between the maximum (0.9280) and the minimum ratio value of (0.0402). The resulting mean ratio shows that majority of the data values resonated within 0.533281. The standard deviation (0. 2301424) on the hand further gave an affirmation that the variation within and between the data values was small.

With regard to organizational operating cashflow (net cashflow/total assets), it was established that some firms registered a negative net cashflow while others registered a positive result. The range obtained (0.9461) imply that there was a small difference between the leading firm and the less performing firm as afar as operating cashflow is concerned. The study found a mean ratio of 0.0576 implying that in majority of firms, the net cashflow is a small percentage of total assets. Based on variation characteristic measured by the standard deviation, the study established that among the firms listed, operating cashflow varied insignificantly since the standard deviation (0.1185553) was less than one.

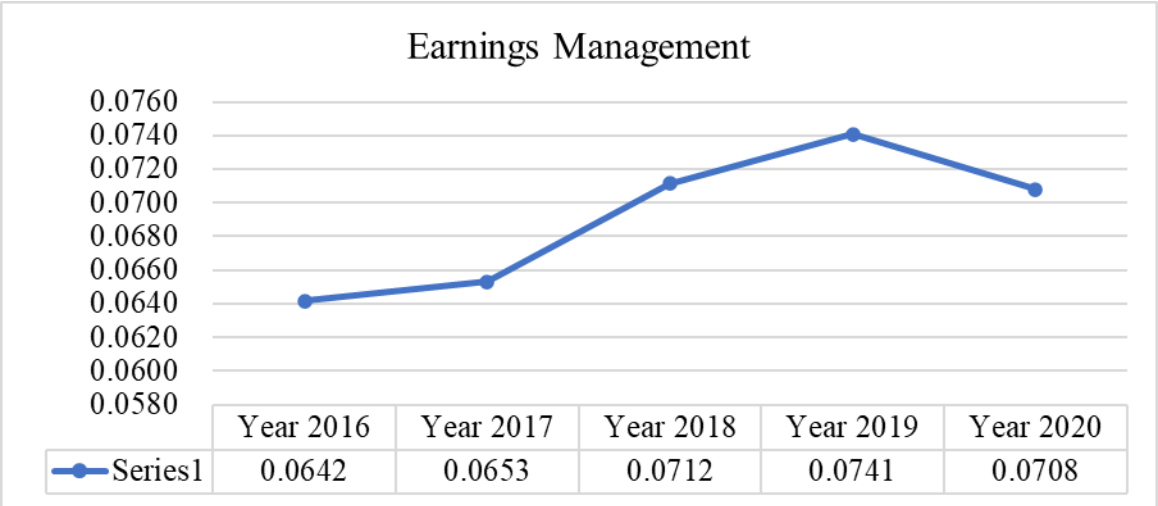
The size of firms was proxied by the log of total asset where by from the findings, it was established that the sizes of the listed firms ranged between 1.95 and 5.6159 units with majority of firms having an average of 3.869839 units. The sizes of these firms did not vary significantly as informed by the low standard deviation of 0.9451179.

4.3 Trend Analysis

In a business environment, trend analysis is used to compare business data over a given time with an aim of identifying consistency in performance or a given trend of performance. In response to identified trend of performance, organizations tend to develop strategies that are aligned with the trend of performance while adhering to organizational goals. Trend analysis also provides significant information with regard to previous and current organization performance which in turn is used to predict future performance. In the current study, the study collected financial data of non-financial firms listed at the Nairobi Stock Exchange. The period of analysis spread over five years from 2016 to 2020.

4.3.1 Earnings Management

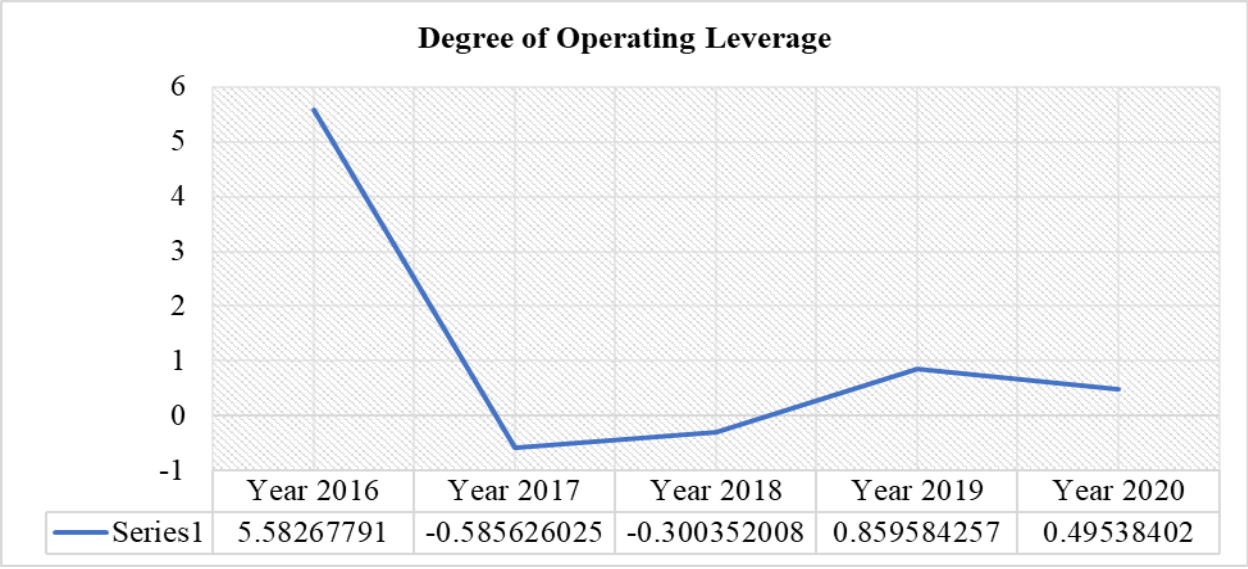
Figure 4. 1 Earnings Management



From figure 4.1, it is evident that for the period of study (2016-2020), earnings management registered the lowest value of 0.0642 in 2016 and the highest value of 0.0741 in 2019. There was a gradual increase in earnings management between 2016 and 2019 and dropped instantly 2020. This might be attributed to harsh economic conditions brought about by the COVID19 pandemic that has negatively affected business operations.

4.3.2 Degree of Operating Leverage

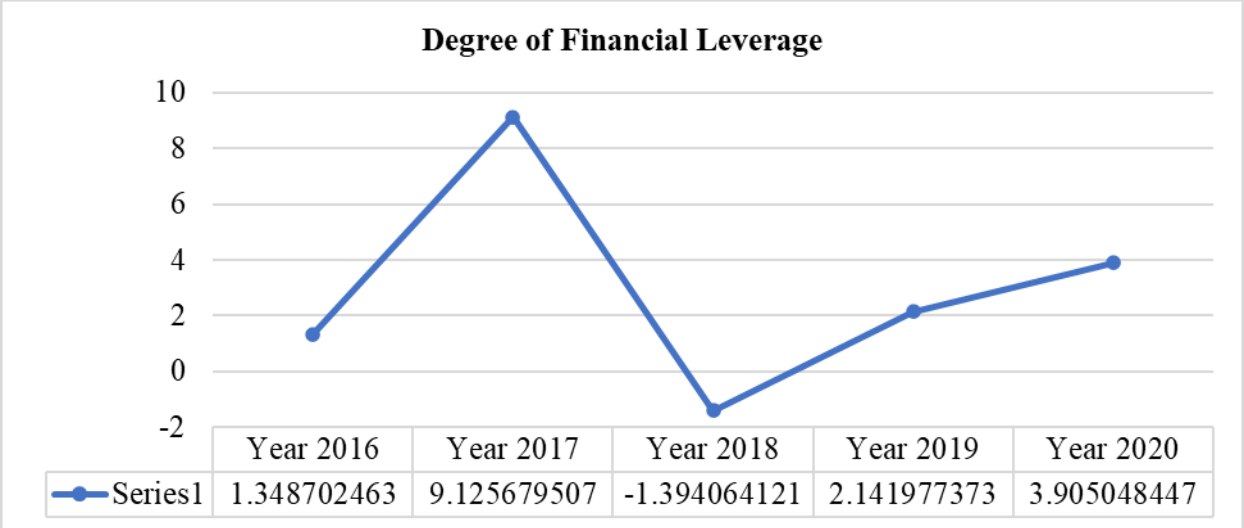
Figure 4. 2 Degree of Operating Leverage



The study findings presented in figure 4.2 shows that the degree of operating leverage of non-financial firms listed at NSE registered erratic trend from 2016 to 2020. The firms registered the highest value of degree of operating leverage in the year 2016 (5.583) and dropped instantly in 2017 to -0.5856. Afterwards, there was an upward trend until 2019 where there was a downward trend. This imply that degree of operating leverage is also affected by the economic environment since in 2020, there were intense disruption of business environment as a result of corona virus that led to reduction of operating hours and closure of some markets.

4.3.3 Degree of Financial Leverage

Figure 4. 3 Degree of Financial Leverage

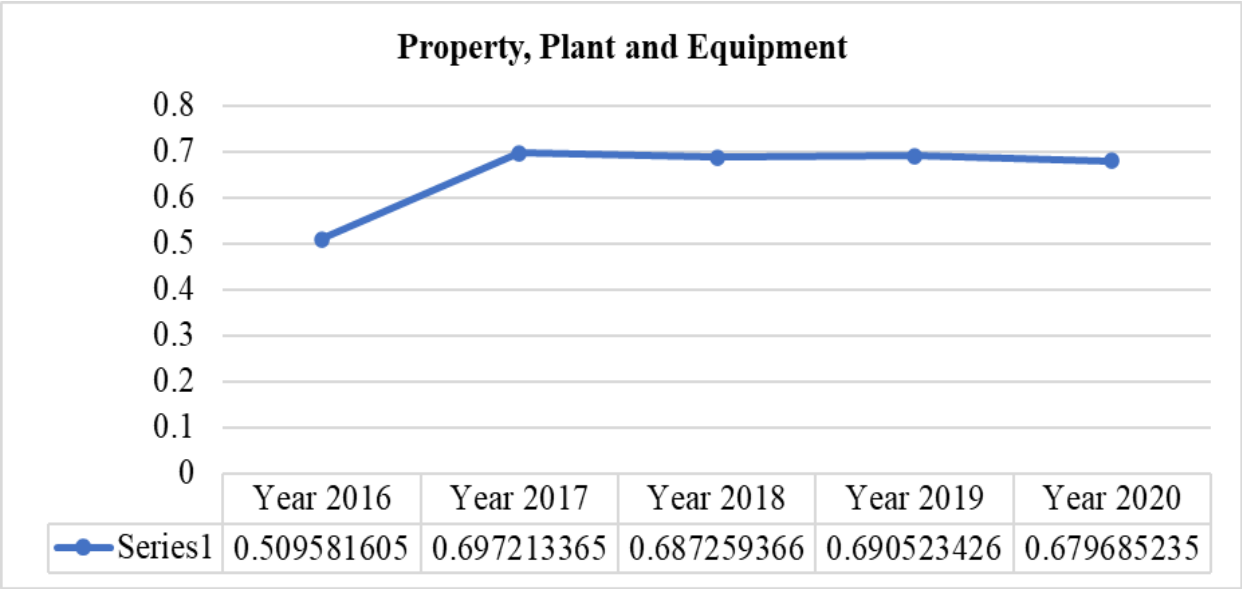


Based on analysis of degree of financial leverage, the study established an unpredictable trend based on a five-year financial performance record. The year 2017 was the year that the firms registered the highest degree of financial leverage (9.1257) whereas 2018 registered the lowest (-1.39406). The outcome can be attributed to the aftermath of the 2017 general elections that affected business operations. The degree of financial leverage has been advancing since the beginning of 2018 until the end of 2020. Therefore, the study predicts an

upward trend in the degree of financial leverage in the following years given every business aspect remaining constant.

4.3.4 Property Plant and Equipment

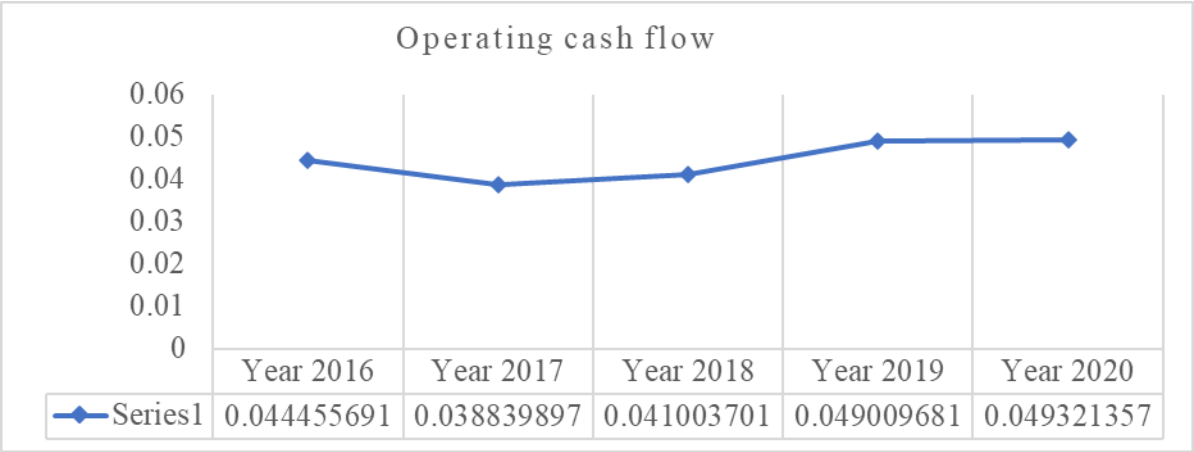
Figure 4. 4 Property Plant and Equipment



From the study findings in relation to organizational tangible assets, the study established that there was a steady increase in property, plant and equipment of non-financial firms listed at NSE. From the year 2017 to 2020, there has been a slight fluctuation in tangible assets of the organizations under study. The trend of imply that there has been minimal investment or disposal of property, plant and equipment of firms listed at NSE and as things stand, there might be a slight disposal of tangible assets such as buildings due to increase in virtual meetings and working from home strategy thus rendering office spaces insignificant.

4.3.5 Operating Cashflow

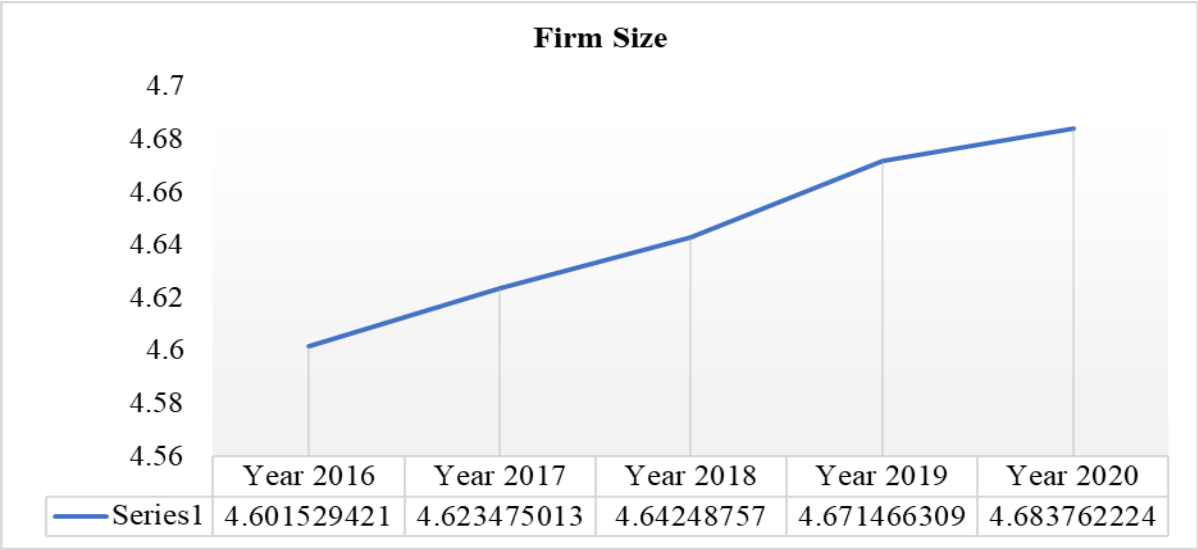
Figure 4. 5 Operating Cashflow



Based on the findings in relation to operating cashflow expressed as net cashflow over total assets shows, it was found that there has been a slight change from 2016 to 2020. The findings showed that 2017 had the lowest average operating cashflow of 0.03884 and from that financial year, there has been a steady increase to 0.049321 in 2020. The future prediction in the trend of operating cashflow might seem to pose a slight increase, according to the study findings.

4.3.6 Firm Size

Figure 4. 6 Firm Size



The size of an organization provides information about profitability benefit arising from economies of scale. In this regard, the study established that on average, the non-financial firms listed at NSE have been increasing steadily from 2016 to 2020 as far as total asset is concerned. This finding might be as a result of continuous investment on intangible assets as well as ploughing back profits.

4.4 Diagnostic Tests

Diagnostic test was done to establish suitability of the secondary data in analysis of inferential statistics. Under diagnostic test, three basic tests for interpretation are computed. This includes the normality test, heteroscedasticity, multicollinearity and serial correlation tests

4.4.1 Tests of Normality

From the secondary dataset collected, testing normality is critical in as far as distribution of data is concerned. Kurtosis and skewness are two typical normality tests that are used to determine if the data is normally distributed but on a huge dataset. Since the dataset was less than fifty, than the Shapiro-Wilk Test was used to determine normality. The Shapiro-Wilk Test is regarded as a reliable approach for determining the spread of data and calculating the arithmetic mean in relation to distribution of entire data values. The null hypothesis for normality test is that all the data values are normally distributed. On interpretation, the decision criterion is that when the significant value is greater than 0.05, we fail to reject the null hypothesis.

Table 4. 2 Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Earnings management	.243	200	.000	.639	200	.000
Degree of operating leaverage	.293	200	.000	.444	200	.000
Degree of Financial Leverage	.350	200	.000	.314	200	.000
Property Plant and Equipment	.086	200	.001	.968	200	.000
Operating Cashflow	.125	200	.000	.918	200	.000
Firm Size	.069	200	.020	.972	200	.000

a. Lilliefors Significance Correction

From the findings in relation to normality test, table 4.2 shows that the significance of Shapiro-Wilk coefficients for all the variables are less than 0.05. This imply that the data values deviates slowly from the normal distribution. In a huge dataset of secondary source, normality is a times compromised due to the nature of data collected. It involves computation of formulae that might result in scattered distributed data without uniformity. Therefore, it was not a big problem on the regression analysis.

4.4.2 Test for Multicollinearity

Multicollinearity result from dependence or relationship between independent variables of a study. Consequently, the regression model is affected since independent variables must not have any kind of relationship to each other for efficient model computation. A variance inflation factor (VIF) technique was used in the present study to examine whether there was existence of multicollinearity problem amongst the variables under study. A high VIF indicates that the association between independent variables is highly collinear thus resulting to multicollinearity. The VIF values always range between 1 and 10.

Table 4. 3 Test for Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Degree of operating leverage	.944	1.059
	Degree of Financial Leverage	.952	1.050
	Property Plant and Equipment	.879	1.138
	Operating Cashflow	.938	1.067
	Firm Size	.893	1.120

From the study findings as shown in table 4.3, the VIF coefficients for the variables are very low indicating absence of multicollinearity problem from the data values attached to the variables. Therefore, the regression model obtained significantly predicts the dependent variable and is free from collinearity of independent variables.

4.4.3 Test of Autocorrelation

The common measure of the serial correlation or autocorrelation is the Dublin Watson serial correlation. The test is done to assess whether the study variables are lagged by their earlier observations over a given period of time. The coefficients of DW range between 0 and 4. A coefficient value of 2 indicates zero autocorrelation, below 2 means positive autocorrelation and above 2 is negative autocorrelation.

Table 4. 4 Test of Autocorrelation

Test	**Statistic**
Durbin Watson	0.826

Based on the findings in relation to the DW statistic, it is therefore evident that there was a positive autocorrelation of the variables given 0.826 DW statistic. This finding implies that among the data values collected, autocorrelation between and within variables was positive.

4.4.4 Heteroscedasticity

Heteroscedasticity measures the level of variability between independent variable and dependent variable across a data set collected. The decision criterion is based on the significance value of the variable coefficients. If the significance values of variable coefficients are greater than 0.05, then it said that the variance of the residuals or variables are unequal over range of measured values.

Table 4. 5 Heteroscedasticity

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.123	.039		3.165	.002
	Degree of operating leverage	.000	.000	.118	1.720	.087
	Degree of Financial Leverage	.001	.001	.052	.763	.446
	Property Plant and Equipment	.187	.040	.330	4.633	.000
	Operating Cashflow	.145	.076	.132	1.920	.056
	Firm Size	-.032	.010	-.231	-3.269	.001

The study findings showed that apart from property, plant and equipment, the other variable; degree of operating leverage, degree of financial leverage, operating cashflow and firm size have coefficient values greater than 0.05. The finding implies that heteroscedasticity was not a problem in majority of the variables and that the variance of the data values was unequal.

4.5 Regression Analysis

Under inferential statistics, regression analysis is done to establish the relationship between the dependent and independent variables. The analysis involves model summary, analysis of variance (ANOVA) and regression coefficients.

4.5.1 Summary Model

The model summary of regression analysis gives the extent of correlation (R), coefficient of determination (R square), adjusted R square and standard error of estimate.

Table 4. 6 Summary Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.246[a]	.060	.036	.1721614

a. Predictors: (Constant), Firm Size, Degree of Financial Leverage, Operating Cashflow, Degree of operating leverage, Property Plant and Equipment

The study findings in relation to the model summary demonstrate that the R coefficient obtained that determined the extent of correlation between the dependent variable and independent variable was 0.246. The finding implies that, using the secondary data, the correlation between the predictor and outcome variable is positive but weak. The coefficient of determination (R square) computed was 0.060 implying that degree of financial leverage, operating cashflow, degree of operating leverage, property plant and equipment intervened by firm size explains 6% of the overall earning management outcome. The findings further imply that the independent variables considered in the study explains small percentage of earning management.

4.5.2 ANOVA

Analysis of variance (ANOVA) describes the goodness of fit of the regression model from the likelihood of F-statistic and the value of F statistic. The decision criterion is based on the significance value of the model whether it is greater, equal or less than 0.05.

Table 4. 7 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.370	5	.074	2.498	.032[b]
	Residual	5.750	194	.030		
	Total	6.120	199			

a. Dependent Variable: Earnings management
b. Predictors: (Constant), Firm Size, Degree of Financial Leverage, Operating Cashflow, Degree of operating leverage, Property Plant and Equipment

From the ANOVA table, it is evident that the significance value of the model is 0.032 which is less than 0.05. The findings therefore imply that the model was fit for the regression data and that the data was statistically modelled efficiently.

4.6.3 Coefficients of Regression Analysis

Table 4.8 represents the variable coefficient, the t-values for every predictor variable and the degree of level of significance.

Table 4. 8 Coefficients of Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.163	.055		2.989	.003
	Degree of operating leverage	.000	.000	.051	.714	.476
	Degree of Financial Leverage	.000	.001	.020	.274	.784
	Property Plant and Equipment	.165	.057	.217	2.917	.004
	Operating Cashflow	.034	.106	.023	.324	.746
	Firm Size	-.034	.014	-.182	-2.477	.014

a. Dependent Variable: Earnings management

From the study findings, the regression analysis has demonstrated that the dimensions or proxies of leverage have varied degree of influence on earning management. It can be deduced from the findings that without leverage practiced incorporated in the study, earnings management will have a constant figure of 0.163 units. Advancement of degree of operating leverage have insignificant effect on earnings management as denoted by a coefficient of 0.000 and a significance value of 0.476 which greater than the p-value (0.05). Similarly, the

study established that degree of financial leverage has also an insignificant impact on earnings management (β=0.000, α=0.784). Additionally, the study established that tangible asset, measured by property, plant and equipment all have a positive (β=0.165) and a significant impact (α=0.004) on earnings management. Operating cashflow on the other hand was found to have a positive (β=0.034) but insignificant (α=0.746) impact on earnings management. The size of a firm, according to the findings, have a negative (β=-0.34) but significant (α=0.014) impact. The resulting regressing model therefore is given by;

Earnings management = 0.163 + 0.000(degree of operating leverage) + 0.000(degree of financial leverage) +0.165(property, plant and equipment) + 0.034(operating cashflow) – 0.034(firm size)

4.7 Discussion of the Findings

The objective of the study was to determine the effect of leverage on the earnings management of the firms listed at the Nairobi Securities Exchange. The independent variables were represented by degree of operating leverage, degree of financial leverage, property plant and equipment, operating cash flows. On the other hand, firm size was taken a control variable. Analysis of data in this chapter involved descriptive and inferential computation based on the secondary data collected from 2016-2020. Descriptive statistics computed suggest that the level of earnings management has increased among the listed firms from 2016 to 2019 and then dropped in 2020. This is attributed to the tough economic times experienced in late 2019 and the whole of 2020 which scaled down the earnings position and incentive to manipulate earnings. However, the degree of operating leverage reduced from a high level registered in 2013 and remained largely within the 2018 period. The same trend was witnessed in the degree of financial leverage. Similarly, operating cash flow for the non-financial firms listed at NSE was found to differ significantly as a result of different operating, financing and investing activities of firms incorporated in the study. However,

despite the negative trend on majority of the variables under consideration, the firm size registered improved performance over the period with the highest asset level being registered in 2020.

Based on inferential statistics, it was established that the degree of operating leverage has an insignificant effect on the firms earning management practices (β=0.000, α=0.476). The results therefore imply that operating leverage is not an important element determining operating leverage and considering that the trend of operating leverage over the period had been declining, it implies that the firms listed had less appetite to use leverage as a reason to manipulate their performance. Consistent with Uwuigbe, Ranti and Bernard (2015), operating leverage did not influence the earnings management of the firms. Similarly, the findings are in tandem with Ujah and Brusa (2011) who established firms with increased operating leverage have less earnings management problem thus an indication that degree of operating leverage has no effect on earning management. However, the results differ with the finding by Veronica (2015) which found that highly geared firms ended up registering higher earnings management due to the associated growth prospects of such firms which then leads them to massage their financial position and thus attract more funding. Thus, the higher the growth potential to a firm, the higher the leverage potential and consequently the higher chances to practice earnings management (Matsumoto, 2002).

On the other hand, the study found that organizational tangible assets positively and significantly affect earnings management of non-financial firms listed at Nairobi security exchange. The findings imply that additional resources on organizational tangible resources greatly affect earning management. As argued by Sari (2013), there exist a strong correlation between a firm leverage and capital expenditure. Consistent with the same, capital

expenditure on tangible assets will affect organization leverage and as a result, highly leveraged firms will tend to get involved in earnings management.

Based on the findings in relation to operating cash flow, the study found that increase in activities that enhances net cash flow of an organization results in enhanced earnings management. As a result, there is a positive relationship between net cash flow and organizational earnings management. The findings support earlier study by Zagers (2009) which found that in the case of leveraged firms, earnings management is done, to among other, maintain the cash flows at a desired level.

The findings further established that firm size has a negative intervening effect between leverage and earnings management ((β=-0.034, α=0.014). The findings can be explained by the fact that larger organization have higher number of directors that is associated with bureaucratic process followed in regard to earnings management. Consequently, there is slow decision-making process which negatively influences earning management process. An increase in company size reduces earnings management. The findings are in tandem with the earlier establishment by Lee and Choi (2012) that larger firms will be more inclined to reporting their finances, as a result, will disclose their financial situations more correctly. Uwuigbe, Ranti and Bernard (2015) similarly arrived to the same findings in regard to the firm size by explaining that larger firms have higher inclination to engage in manipulation of earnings because of the complexity to their operations and users will naturally find it difficult to identify the same. Therefore, larger firms are motivated to adjust their current accruals with a view to exaggerating the earnings position. This position similarly supports the findings by Olatunji and Fakile (2012) and Naz et al. (2011)

CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter discusses the summary of the findings, conclusion and recommendations based on the analysis of the data collected. The subheadings covered are arranged according to the study objectives. The conclusions and recommendations are given in regard to the statistical findings presented in chapter four of this study.

5.2 Summary

The main aim of the study was to establish the effect of leverage on earnings management of non-financial firms listed at the Nairobi Securities Exchange. Leverage was measured based on, degree of operating leverage, degree of financial leverage, tangible assets (property, plant and equipment) and operating cash flow. Firm size was taken as the control variable. The study used secondary data collected from financial year 2016 to 2020. Both descriptive and inferential statistics were computed using advanced statistical software (SPSS). The descriptive statistics results show that both the tangible asset base and the operating cash flow level of the firms is over four – fifths of the total asset base of the firms' total assets. On the other hand, both the degree of financial leverage and operating leverage has doubled over the period and implying that the firm's earnings before interest and tax as well as net income have increased. Apart from the total assets of the firms – which proxied the firm size, all the other variables under consideration reflected a non- linear relationship, which significant decline in the 2019/20 period.

Inferential statics established that both the degree of operating leverage and financial leverage had no effect on earnings management and also found to be insignificant. This implies that additional resources directed towards improving the firms DOL and DGL will not impact the

motivation of managers to practice earnings management in their organization. The level of property plant and equipment held by an organization was found to positively affect earnings management, such that the higher the tangible asset base, the higher the motivation to manipulate the accounts since the complexity of the accounts of such firms also increases and that managers are aware that a common investor or shareholder lacks the capacity to decipher the finer details of the firms accounts.

The study findings in relation to operating cash flow found that there is a positive (β=0.034) and an insignificant (α=0.746) relationship with earnings management. Contrary to the relationship between operating cash flow and earnings management, the study established a negative and significant relationship between firm size and earnings management. From the regression model, an increase in the size of a firm significantly (α=0.014) reduces earnings management by a factor of 0.034. From the overall effect of leverage on earnings management, the coefficient of determination computed was 0.060 implying that the determinants of leverage; degree of financial leverage, operating cash flow, degree of operating leverage, property plant and equipment intervened by firm size explains 6% of the overall earning management outcome. This is a small effect on the outcome variable and the study attributes this finding to ineffective implementation of strategies that reduce earnings management.

5.3 Conclusion

In general, the findings from the analysis reveal a mixed result of both positive and negative association between leverage and earnings management of firms listed at the NSE. The evidence reveal that a significant relationship exists between property plant and equipment, and firm size with earnings management. This result corroborates earlier position that firm

size explains the motivation of firm managers to engage in earnings management because of the perceived complexity of their operations that makes it difficult to flag off any overstatement of earnings.

The findings also show that both operating and financial leverage have no effect on the earnings management of the firms under the study. It can therefore be concluded that both the financial cost and the fixed operating costs structure adopted by the firms does not determine how the managers might be influenced to alter the performance of the firms. It can be concluded therefore that what matters is how the finances is used to make appropriate investment and thus affecting the firm size, that matters in influencing the size of the firm. Therefore, it can be concluded that what drives firms to pursue earnings smoothing is the size of the firm – as determined by the nature of investment and not performance.

5.4 Recommendations for Policy

From the research conclusion that the nature of investment that a firm undertakes is what influences earnings management practices adopted, it is recommended that in order to minimise the effect of earnings management, shareholders and investors implement a robust financial control system that can anticipate and recognize the manager's strategies to conduct earnings manipulation activities during the fiscal year. This will call upon the establishment of an appropriate audit frequency of the financial statements, which might reduce the asymmetry of information between the various economic agents. Similar, to reduce the volume of financial statement scrutiny, it becomes imperative that regulators increase their control effort in quarterly data as well as annual financial information because it might detect seasonality in real activities manipulations and increase the sustainable firm's performance.

The government should further examine the financial statements of firms that are listed locally and are foreign owned because the lowest result for the value of earnings management

is conducted by foreign firm subsidiaries through transfer pricing. Similarly, the top tier firms in each segment should attract increased attention from the regulators as a result of their size.

5.5 Limitation to the Study

The research is limited by the fact that the data used covered only five years (2016 -2020) and bearing in mind that the 2019/20 period had its own unique challenges, the variables used might not be representative over the five-year period. In addition, the research utilized only four variables as the predictors of leverage.

The research employed the real earnings management model (REM) though the accrual model will be appropriate for the listed firms since the total market value of the firms –using market prices can be used to proxy firm size. This will provide a measure of the firm valuation from the point of view of the investors.

5.6 Recommendations for Further Research

The research was limited to a five-year period data for non-financial firms listed at the NSE. Besides only four attributes were investigated. It is therefore recommended that more firms – that includes the financial firms can be considered and that the study period can be extended to be more than the 5-year period. Further future research need to consider the accrual based earnings management and also increase the variables that proxy leverage. Similarly, the further research can consider other firm characteristics such as corporate governance and leadership style.

The research also by virtue of concentrating on listed firms can also be extended to cover unlisted firms in one sector with a view to establishing unique sectoral attributes that might explain earnings management behaviour of managers.

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APPENDIXES

Appendix I: Data Capture Form

Items	Survey items	Variables	2016	2017	2018	2019	2020
Y	Earnings Management	Total Accrual					
		Total Assets					
X_1	Degree of Operating Leverage (DOL)	% change in EBIT					
		% change in sales					
		Ratio					
X_2	Degree of Financial Leverage	% Change in EBT					
		% change in EBIT					
		Ratio					
X_3	Property, Plant and Equipment (PPE)	Tangible Assets					
		Total Assets					
		Ratio					
X_4	Operating Cash flow (CFO)	Net cash flow					
		Total Assets					
		Ratio					
X_5	Firm Size	Log of Total Assets					

Appendix II: Raw Data

Earnings management	Degree of Operating Leverage	Degree of Financial Leverage	Property, Plant and Equipment	Operating Cash flow	Firm Size
0.08032	2.5886562	0.7675496	0.5956951	0.282242	3.7048966
0.08045	6.3623392	0.290703	0.5810724	0.1990568	3.7593732
0.06107	-0.8474734	1.9687224	0.6100151	0.2183807	3.7738596
0.02812	-5.2953692	1.0888103	0.5986689	0.2625135	3.8102997
0.03282	-0.9575622	0.6895198	0.5776916	0.2418052	3.8392769
0.25172	0.8431046	1.2487658	0.8119114	0.0383805	5.201895
0.20865	2.7797677	1.0666755	0.8487727	0.0358557	5.2104389
0.21116	0.8956937	1.24011	0.8426907	0.0543995	5.2207172
0.15715	1.4817012	1.6088079	0.7454598	0.1037218	5.2814175
0.14719	2.3661066	1.4450076	0.7765675	0.122231	5.325442
0.02326	3.5425541	1.2565455	0.8471948	0.001327	2.8814417
0.06014	6.8965277	2.9844376	0.8401604	0.0004335	2.9651076
0.00497	3.2244583	2.0099392	0.8687493	0.000298	2.9570803
0.01019	-2.5006281	0.3604584	0.8483498	0.0316247	2.9741892
0.01160	4.0309227	7.8227311	0.8837234	0.0040059	2.9770831
0.00020	50.470823	-1.951524	0.6188493	0.0516101	3.3671695
0.00143	-17.050552	0.75153	0.6116256	0.0912808	3.307496
0.00245	-42.979273	-2.120017	0.5592607	0.057051	3.3960249
0.01943	196.76855	1.2720748	0.5709788	0.2386129	3.3081374
0.00942	22.556767	0.2359006	0.5490216	0.1816684	3.2882492
0.09887	-35.57572	-0.8308521	0.4890149	0.0262225	2.450557
0.15038	-0.1704862	-56.625968	0.4645038	0.0301527	2.4183013
0.17002	-2.4525868	1.0227848	0.4052946	0.0246085	2.4284588
0.07085	12.790678	0.079646	0.4077217	0.0050912	2.3723596
0.08533	27.870949	-2.0812298	0.4083587	0.0013061	2.361161
0.01051	1.2052102	1.5432891	0.8551372	0.0848649	3.9732202
0.01828	-0.0240822	7.6054528	0.8059904	0.0677697	3.8888756
0.10391	0.0472971	17.922368	0.8022385	0.0190688	3.8875835
1.14509	1.3783361	1.016794	0.8536047	0.0155852	3.9592704
1.39908	33.602401	-2.4148515	0.8882099	0.0344103	3.9651923
0.00458	182.67421	-0.0336215	0.6025225	0.2517641	3.6929878
0.00470	1.4191684	1.0045313	0.6059661	0.1727672	3.6521206
0.00419	61.541562	1.1005377	0.6002196	0.1399699	3.6918062
0.00470	5.3326411	1.245628	0.639726	0.2097308	3.6267509
0.00492	-8.6063277	-3.0462447	0.6940321	0.1060444	3.5933968
0.01783	5.5889899	-7.8380803	0.6722989	-0.0132538	3.4597241
0.20443	0.8408596	0.0798292	0.6794745	0.0064569	3.4974687
0.22458	1.272423	3.303109	0.7973765	-0.0115585	3.5705663
0.01672	1.7664809	1.0334133	0.7970668	-0.0091902	3.6175979
0.14402	-7.484902	3.2439662	0.8186751	0.0014118	3.6564145
0.13778	1.3032626	3.8019393	0.7423604	-0.1261855	2.5793262
0.24758	3.2690411	0.2442481	0.7339044	-0.131528	2.5585886
0.15173	4.6218722	0.077343	0.7664689	-0.1501717	2.5055569
0.05109	-1.6779382	-0.0351452	0.2164119	0.3145615	2.3955011
0.06667	1.1944262	1.4909134	0.2144279	0.3363184	2.3031961
0.01146	-13.766048	0.1622634	0.776582	0.0292347	5.2177786
0.01027	3.423215	0.6403232	0.7709049	0.039451	5.1937339
0.00822	-5.7961266	-0.0747113	0.7153611	0.0414055	5.1783351
0.01936	12.34204	-0.4046764	0.7914695	0.0144872	5.3014142
0.01417	-16.039119	1.0876923	0.7490711	0.0421074	5.2527827
0.23293	1.788659	0.8746545	0.3858481	0.331787	4.0166197
0.23161	1.2763584	0.978002	0.4362266	0.131331	3.9648487
0.23478	0.2314852	3.5797697	0.3992139	0.0664271	3.9496095
0.21852	1.7501341	1.4205502	0.4016021	0.0872904	3.971415

0.21291	3.8215091	0.8900684	0.3768291	0.1170654	3.9581863
0.02623	1.3060719	-17.6706	0.5480195	-0.0793802	3.5776986
0.02424	58.604244	1.0659369	0.615814	-0.1012038	3.5628874
0.07986	5.4596354	-11.504178	0.5816798	-0.0372544	3.6098078
0.04886	57.799805	0.2905426	0.6698682	-0.0171358	3.6228251
0.09076	1.0704787	1.1928102	0.6793923	-0.0393608	3.6079694
0.00038	17.35645	-3.2440429	0.921647	0.2590991	3.7406232
0.00076	16.506758	1.2842151	0.9197585	0.0019131	3.741514
0.00074	-1.5147264	1.5158839	0.919425	6.344E-05	3.7416715
0.00300	8.0110717	1.1565669	0.9266265	-7.19E-05	3.7343437
0.00327	2.0351961	4.3066007	0.9279951	-0.0002585	3.7337027
0.01321	1.2905315	8.8733476	0.1760588	0	4.129896
0.02741	1.0983754	2.2364726	0.6508311	0.2018367	4.0635285
0.07148	0.5653208	0.9132134	0.6823797	0.2042115	4.1044086
0.05877	-4.0413258	7.6831	0.5209107	0.0739309	4.0669331
0.03509	1.963264	8.4939194	0.270249	0.0998315	3.8452717
0.41119	0.8136797	-0.8633747	0.7556813	-0.0006771	3.032659
0.00584	0.8246945	6.7543613	0.2526261	0.3168201	2.8871107
0.02248	2.4796823	2.5885264	0.438306	0.1195539	2.7587605
0.05109	-0.6659421	-2.1890561	0.2164119	0.3145615	2.3955011
0.06667	0.8008131	2.2237223	0.2144279	0.3363184	2.3031961
0.01061	0.8870265	0.6964289	0.1896192	0.1074509	3.2711211
0.01016	-25.127004	0.0686193	0.3174901	-0.00159	3.2457594
0.00735	1.1838194	1.8407047	0.2691992	0.1683368	3.386499
0.02873	0.1195574	4.1020505	0.3119232	0.0239877	3.3811873
0.02733	-0.8737683	4.5128132	0.3692661	0.0237267	3.4029145
0.00573	#DIV/0!	#DIV/0!	0.4136335	-0.0169463	3.3718987
0.00574	2.144777	-2.2990887	0.4567394	-0.0636814	3.249834
0.00729	-0.2943652	2.8649569	0.3425554	-0.04083	3.4296231
0.00970	-3.7598027	-4.0900961	0.3499338	0.0177556	3.4096288
0.00770	-2.1448889	-1.0040059	0.1572427	0.0333862	3.471629
0.12913	0.2437189	2.8974018	0.3552343	-0.0359839	3.5722906
0.19532	7.4968807	0.5092371	0.5258842	-0.1779307	3.4363853
0.21274	23.305646	1.5276322	0.48248	-0.4206551	3.3574393
0.26409	-0.2180899	0.7207485	0.4330849	-0.2390598	3.195872
0.30725	-22443.258	0.8680438	0.7329135	0.0288045	2.9861445
0.09974	-0.3254888	0.8698522	0.2947233	-0.1293436	2.191451
0.12874	5.8278105	2.3662551	0.295755	-0.1461378	2.1574568
0.12869	-13.818222	-0.034419	0.345371	-0.0919238	2.1826999
0.16591	-1.9084666	1.4046569	0.1626701	-0.1198963	2.1883659
0.09539	-57.985361	1.4150667	0.3765586	-0.1558603	2.2052044
0.77447	0.4217488	0	0.4856046	0.206334	2.0178677
0.68698	19.914852	0.9095973	0.778798	0.0292154	2.0784568
0.74054	-10.759317	-0.1707317	0.7441441	0.0099099	2.045323
0.50648	49.602062	1.8105526	0.5208191	0.0901024	2.1658376
0.49463	0.4733623	-0.8606195	0.5009476	0.0922299	2.1994809
0.02163	-0.8168398	-142.19269	0.3516701	-0.0304672	4.6111974
0.10352	1.9945252	-0.6079793	0.9197957	-0.0682806	4.4413133
0.15286	2.6195956	7.3142979	0.7916107	-0.0271125	4.5792461
0.14809	-3.2320022	-0.4278115	0.7322177	-0.0387051	4.6302682
0.17893	-0.7702359	-1.1206951	0.7096259	-0.0498912	4.684533
0.16498	5.8900434	1.1374943	0.521189	0.1993521	4.4189638
0.12378	9.1084032	0.9398981	0.7334567	0.0876255	4.4651002
0.14073	-0.8080329	0.2304729	0.7441252	0.0715231	4.4802082
0.12651	6.3825254	0.9617371	0.7442296	0.0779261	4.4679631
0.10436	-6.672115	0.8657549	0.705609	0.1445046	4.4759035
0.05324	1.1148331	-1.8124525	0.3594961	0.0040591	3.7570542
0.02434	33.206882	0.7613844	0.3156002	0.031219	3.8096405
0.04856	-1.5837867	1.0415286	0.5032754	0.0408396	3.7824941

0.24562	3.3043523	1.2345056	0.3416101	0.0704881	3.7420571
0.29054	2.8930202	3.2080246	0.3213696	0.0539523	3.7505778
0.17328	0.5472937	15.334627	0.429073	0.0050913	3.75557
0.09701	-7.8648493	0.5529822	0.4270712	0.0102537	3.7199028
0.07576	1.6259112	0.2260827	0.4646037	0.0031459	3.7036524
0.11326	261.43107	-0.1667848	0.4500756	0.0146379	3.6894332
0.11332	-1.3516369	2.7540648	0.4914311	0.0112124	3.7000371
0.09027	-6.1375165	1.3020709	0.6287021	-0.0521853	4.4483785
0.10352	5.5318097	1.2124367	0.8574557	-0.0682804	4.4413149
0.15286	37.673686	0.5086034	0.9006985	-0.027115	4.5792473
0.19061	2.7135418	1.1894605	0.8384573	-0.0313025	4.5625427
0.20618	0.9782947	0.3531418	0.8797031	0.0020349	4.5457573
0.00033	-1.2523906	2.0191317	0.2489595	-0.0077048	4.5585334
0.00149	0.7339732	0.2835796	0.258897	-0.0618134	4.5799299
0.00405	73.796692	0.5726906	0.2634052	0.1706416	4.5939381
0.01715	3.3128474	0.443563	0.288228	0.0940511	4.5747799
0.00639	-0.5027389	1.429027	0.2564228	0.2231362	4.6333392
0.01348	6.8083934	0.381929	0.0897997	0.0173243	5.5643564
0.01798	3.8047763	1.2859673	0.8596176	0.0207871	5.5760297
0.02090	0.943412	2.7326397	0.8648475	0.0089189	5.5790435
0.02274	15.643624	-0.0286163	0.8637723	0.0232279	5.6036013
0.01298	2.6009512	0.5267918	0.8534922	0.0130151	5.6158732
0.00918	18.308121	1.9663294	0.8070735	0.0091798	5.4617728
0.00796	8.4710986	1.4078131	0.7920258	-0.0034731	5.5201378
0.00304	-4.9395323	2.852429	0.8120383	-0.0225842	5.5271853
0.00248	-0.423799	36.353711	0.8434446	-0.0165193	5.5165282
0.00318	-560.57802	44.613909	0.8511766	0.012016	5.5122405
0.00203	36.848738	25.175644	0.3752537	0.0513912	3.1839812
0.00207	-34.944596	1.3495446	0.3965096	0.039297	3.214526
0.00200	18.439474	1.3662907	0.385605	0.0478213	3.2169045
0.00209	5.1353846	10.5	0.4116562	0.0379319	3.2112808
0.00217	-17.002579	1.3833399	0.4324578	0.0500117	3.2318772
0.05961	-0.0475733	-4.6968089	0.0897322	0.1306465	4.8923918
0.06067	0.1219109	2.6390534	0.1139552	0.0526828	4.9463815
0.03793	-5.9786219	1.3076356	0.100381	0.0423147	4.9835726
0.04715	5.0060979	1.2038604	0.1087589	0.0519331	5.0075925
0.03431	-0.3795837	1.2994947	0.0402381	0.0699592	5.008019
0.05351	1.7470562	1.0187313	0.3505114	0.0172439	3.3061891
0.05929	2.9453975	1.23638	0.3709565	-0.0029768	3.3044043
0.11239	19.241604	0.5596605	0.3855378	-0.0019474	3.290324
0.16861	-14.447806	0.9961095	0.4155078	0.0099562	3.2667255
0.19861	4.2007695	1.4388144	0.3322772	0.1439109	3.3053514
0.21461	3.3550713	2.4466202	0.5049072	0.2490977	4.2300732
0.26135	8.073609	1.8638027	0.5172084	0.4661155	4.2469907
0.28168	2.7202889	1.3013909	0.513047	0.5254933	4.2487602
0.35901	-1.2075921	3.0774597	0.4603241	0.0825747	4.3411673
0.28729	-13.788417	1.2348544	0.4829076	0.0868163	4.3365718
0.00490	-0.7552066	2.741181	0.0853376	0.5104654	3.2691626
0.00295	-0.0895113	-20.691693	0.1250604	0.0027374	3.2702362
0.00092	60.484573	0.5325173	0.1253386	0.0120125	3.2914355
0.00140	-1.2683392	-0.0217296	0.0969884	0.0684595	3.3177709
0.00078	1.2370569	1.2840397	0.0693789	0.0020186	3.5078559
0.14906	-1.5791205	1.2956339	0.6140474	-8.637E-05	4.764274
0.21487	0.0289168	-2.1533076	0.6034387	0.0317952	4.7826331
0.25514	-10.891636	1.1257105	0.4963479	0.0218356	4.8857812
0.25385	2.3874846	1.8689895	0.5613841	0.1254794	4.8566534
0.16434	1.2974919	0.9976048	0.5353757	0.0105236	4.8871788
0.27353	1.4026073	2.0313434	0.2478806	0.0272523	3.9217697
0.39786	66.038255	0.9589905	0.2761837	0.0306918	3.9756753

0.26291	185.02918	1.077202	0.3216245	0.023035	3.9970673
0.25044	4.1587862	1.2093494	0.8772828	0.0242178	4.0237667
0.19311	-28.539926	1.3919653	0.8151716	0.0231365	4.0556573
0.06958	6.5591398	0.6007752	0.2300786	-0.026936	1.9498777
0.08233	-2.6414516	-1.1662736	0.3570768	-0.0490287	2.0338257
0.10140	-45.129877	0.7735569	0.3557692	-0.0576923	2.058426
0.10515	1.6337426	1.8669177	0.3279412	-0.0316176	2.1335389
0.15214	18.506667	1.2693838	0.3930269	-0.0245642	2.1010594
0.03318	0.5670425	1.0551827	0.5259646	0.0919401	4.9569733
0.03102	-2.5252663	-0.9831271	0.4635559	0.1409655	5.0210549
0.03798	-0.9449897	0.8916388	0.4436819	0.1505506	5.0575429
0.02335	-1.2210507	0.5243813	0.4199462	0.1154702	5.1142002
0.01442	81.718476	0.0318783	0.402343	0.0831153	5.1639469
0.07854	-38.639657	0.2563173	0.3385702	0.1119417	4.5801423
0.07760	0.1839001	5.4473262	0.2945391	0.0773106	4.6230828
0.08185	-79.026204	1.160696	0.3144499	0.1233824	4.6390201
0.13260	0.0820752	24.460923	0.4405288	0.2070193	4.5029471
0.13603	9.9233321	-0.1772683	0.4374459	0.2257267	4.5341582
0.07039	-187.33618	0.6936835	0.763911	0.0713392	4.9224275
0.06085	-5.2746366	1.0182352	0.6589046	0.0850615	4.995744
0.06068	-62.158577	1.3330314	0.6651984	0.0672646	5.0155957
0.06016	-26.964136	0.8073158	0.5813403	0.1362689	5.0977552
0.08785	-59.942552	1.2486293	0.6376421	0.0261167	5.1366004
0.30635	-11.295397	0.9993928	0.6033979	0.1626344	4.4302122
0.35069	20.405058	0.8505605	0.5800875	0.0943243	4.4843767
0.35113	3.4359935	1.5945696	0.57452	0.1310905	4.518194
0.35631	-8.6505143	0.9844827	0.539488	0.0547147	4.5478128
0.37037	28.872943	1.044774	0.5016797	0.0533516	4.5886761