EMPIRICAL EXAMINATION OF APPROPRIATENESS OF FINANCIAL STATEMENT ANALYSIS MODELS IN INFLUENCING SHAREHOLDER WEALTH OF LISTED NON FINANCIAL FIRMS IN KENYA

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A Thesis Report Presented to the Institute of Postgraduate Studies of Kabarak University in Partial Fulfillment of the Requirements for the Award of the Doctor of Philosophy Degree in Business Administration (Accounting)

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The research thesis entitled "**Empirical Examination of Appropriateness of Financial Statement Analysis Models in Influencing Shareholder Wealth of Listed Non Financial Firms in Kenya"** and written by **Alex Tom Obulemire** is presented to the Institute of Postgraduate Studies of Kabarak University. We have reviewed the research thesis and recommend it be accepted in partial fulfillment of the requirement for award of the degree of Doctor of Philosophy in Business Administration Accounting Option.

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DEDICATION

This thesis is dedicated to my mother Risper Makokha Wabuti who upon identification of my intellectual potential relentlessly ensured that I pursued the journey of acquiring university education at a time when that desire appeared elusive. I also dedicate it to my children Robert Wabuti, Solomon Obulemire and Christabel Makoha for their patience during the entire period of my study. Further dedication goes to my late brother Bernard Kulubi for his support and encouragement that made it possible for this work to be accomplished.

ABSTRACT

The market share price is considered by investors to be an observable and real measure of shareholder wealth, despite possibility of mistakes by financial markets in assessment of shareholder wealth. Investing public and market analysts conduct financial statement analysis to accurately measure performance of firms. Due to several users of financial statements a single indicator of performance may not influence share prices. Financial statement users expect fraud and mismanagement issues to be detected by external auditors. Yet to the contrary, corporate irregularities at times erupt immediately unqualified audit reports are released. Unqualified audit reports and market price of shares relied upon by investors seem to be of minimal use as indicators of shareholder wealth. There is need to establish whether change in market price of shares is truly influenced by financial results derived from performance indicators such as profitability, liquidity, operational efficiency, leverage, and market performance ratios. The study objectives were to evaluate appropriateness of profitability, liquidity, operational efficiency, leverage, and market performance ratio models in influencing shareholder wealth of Nairobi Security Exchange (NSE) listed non-financial firms. The study derived support from stakeholder theory, stewardship theory and positive accounting theory. Correlational research design was used. The study population was all firms listed at the NSE for five financial years 2012 to 2016. Purposive sampling was done and secondary data used for the study. Data was collected through computation of average rate of change (AROC) in market price of shares and profitability, liquidity, operational efficiency, leverage, and market performance ratios. Panel data was analysed using descriptive and inferential statistical analysis. Inferential statistics involved development and testing predictive ability of financial statement analysis panel data regression models. The fixed effects model was unsuitable for evaluating appropriateness of profitability, operational efficiency, leverage, and market performance ratios models since p values for the respective Hausman tests were > 0.05. However, fixed effects model was found to be suitable for evaluating appropriateness of liquidity ratios model since the Hausman test resulted in p value < 0.05. The random effects model was suitable for assessing appropriateness of profitability, operational efficiency, leverage and market performance ratios models. Overall, profitability, liquidity, operational efficiency and leverage ratios models had no statistically significant influence on AROC in market price of shares since their respective p values were > 0.05, leading to the conclusion that these ratio models were not statistically significant appropriate in influencing shareholder wealth of NSE listed non financial firms. Further, profitability, operational efficiency, leverage, and market performance ratios models had no evidence of panel effects and could be evaluated using simple ordinary least square (OLS) regression models. Market performance ratio (MPR), price earnings ratio (PER), price to sales ratio (PTSR), dividend payout ratio (DPOR) and dividend yield (DY) had statistically significant influence on AROC in market price of shares since their respective p values were <0.05. Market performance ratios model had statistically significant appropriateness in influencing shareholder wealth of NSE listed non-financial firms since its $p < 0.05$.

Key words: *Average rate of change in market price, Profitability ratios models, liquidity ratios models, Operational efficiency ratios models, Leverage ratios models and Market performance ratios models.*

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ABREVIATIONS AND ACRONYMS

AROC	:	Average Rate of Change
CAT	:	Current Assets Turnover
CIR	:	Cost to Income Ratio
CR	:	Current Ratio
DER	:	Debt Equity Ratio
DOH	:	Days of Inventory on Hand
DPOR	:	Dividend Pay-Out Ratio
DPS	:	Dividend Per Share
DSO	:	Days of Sales Outstanding
DTAR	:	Debt to Asset Ratio
DTER	:	Debt to Equity Ratio
DY	:	Dividend Yield
EBITDA	:	Earnings Before Interest, Taxes, Depreciation and Amortization
EMH	:	Efficient Markets Hypothesis
EPS	:	Earnings Per Share
FAT	:	Fixed Assets Turnover
FLR	:	Financial Leverage Ratio
FTSE	:	Financial Times Stock Exchange
LM	:	Langrangian Multiplier
LSDV	:	Least Squares Dummy Variable
LTDR	:	Long Term Debt Ratio
MPTBVR	:	Market Price to Book Value Ratio
NPM	:	Net Profit Margin
NSE	:	Nairobi Securities Exchange
NWCTTA	:	Net Working Capital to Total Assets
OLS	:	Ordinary Least Squares
OROA	:	Operating Return on Assets
P/CF	:	Price to Cashflow Ratio
PASW	:	Predictive Analytics Software
PAT	:	Positive Accounting Theory
PBV	:	Price to Book Value
PER	:	Price Earnings Ratio

PTM	**:**	Pre Tax Margin
PTSR	**:**	Price to Sales Ratio
ROA	**:**	Return on Assets
ROC	**:**	Rate of Change
ROE	**:**	Return on Equity
TAT	**:**	Total Assets Turnover
TDR	**:**	Total Debt Ratio
WCT	**:**	Working Capital Turnover

OPERATIONAL DEFINITION OF TERMS

Financial statement analysis models refers to a mathematical representation of variables in form of financial statement ratios expressed in form of regression estimates and used to forecast market price of shares (Schmidt, 2017).

Shareholder wealth refers to capital gain or loss of stocks as indicated by changes in the market share price of listed firms (Dita & Murtaqi, 2014).

Liquidity ratios model refers to financial ratios that allow shareholders to establish resource base at the disposal of the firm, for meeting short-term debt obligations, such as payment of dividends to stockholders, without liquidating long term assets (Arkan 2016).

Market performance ratios model refers to indicators of market value that change whenever stock prices change and are looked upon by investors on a daily basis in an effort to forecast changes in stock prices (Arkan, 2016).

Leverage ratios model refers to financial ratios that measure the ability of a firm to meet long term obligations as determined by the amount of external debt financing relative to equity (internal) financing. Leverage ratios are used to assess the level of risk that the owners of a firm face. High leverage is associated with higher expected returns (Arkan, 2016).

Profitability ratios model refers to ratios that measure returns earned by a company on its capital and how the company is able to financially cushion itself from each shilling of sales. Profitability ratios play a critical role among investors at the security exchange by providing an understanding of how resources are utilized in the generation of profit and creation of shareholder value in the company (Arkan, 2016).

Operational efficiency ratios model refers to metrics of firm efficiency that consider its assets, disbursement of payables, collection of receivables, and inventory (Gitman & Zutter, 2012). Creation of shareholder value and achievement of competitive edge largely depends on better operational efficiency and productivity of firms (Hussain, 2014).

Level of disclosure in financial statements refers to the public duty and legislative requirement by both small and large corporate to fully disclose matters concerning their operations by publishing their financial statements for review by the general public (Anaja & Onaja, 2015).

Credibility of financial statements refers to the authenticity and accuracy of auditors approved financial statements (Anaja & Onaja, 2015).

Industry practice refers to accounting procedures associated with firms within a certain industry that ought to be considered during calculation of financial ratios (Robinson, Greuning, Henry & Broihahn, 2009).

Event window refers to the period before and after the date of announcement of published financial statements of non financial firms listed at the NSE (Dmitry et al., 2003).

Study hypothesis refers to hypothesis derived from specific objectives of the study and tested in order to achieve the specific and ultimately overall objective of the study

Test hypothesis refers to hypothesis for conducting statistical tests on specific aspects of analysis used to establish appropriateness of panel data financial statement analysis models.

Non financial firms refer to firms in all other industry sectors listed at the NSE other than banking and insurance sector firms (Abdulkadir, 2016).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globalization and competition for investment and business opportunities have forced managers of firms all over the world to concentrate their efforts on maximizing wealth of shareholders who hired them. According to Damodaran (2010), stock price for publicly listed firms is considered by investors to be an observable and real measure of shareholder wealth. Despite this general recognition by investors that stock price is the market's measure of stockholder wealth it is possible for markets to make mistakes in their assessments. This implies that efforts need to be put in place by the global investing public to address the ever increasing need for accurately measuring performance and financial strength of firms. Accurate measurement of performance of firms will facilitate prediction of wealth attributable to shareholders well in advance, instead of relying on the market value only as reflected by market share prices of firms (Pandey, 2013).

In order to realize the objective of measuring firm performance and financial strength to gauge shareholder wealth, investors and financial markets analysts widely engage in financial statement analysis as a way of acquiring information that will enable them and or their clients to make wise investment decisions (Irungu & Gatuhi, 2013). Analysis of information contained in financial statements enables users to interpret and predict financial health and operational efficiency of a company in terms of future earnings and dividends. It is on the basis of financial statement analysis outcome that investors are able to make choices concerning investment vehicles that will cause them to achieve their investment objectives.

Information on financial health of an entity is often expressed in monetary terms and is usually communicated to users by accountants. The communication objective is often achieved through preparation, presentation, analysis and publication of financial reports based on prescribed international financial reporting standards and specific legislative requirements (Barry & Jamie, 2011). According to Robinson, Greuning, Henry, and Broihahn (2009), financial reports, which include financial statements and other data, provide information necessary for evaluating a firm and establishing how the outcome of the evaluation process relates to the value of its securities. To be of value, acceptable and reliable among users, financial statements must reflect legal, stock market, and professional standards requirements needed for their preparation. However, Edmonds et al., (2016) asserted that despite the usefulness of financial statements, they are designed for general purposes and not aimed at achieving the needs of a specific user group. This implies that information disclosed may be irrelevant to some user groups but vital to other user groups. It is therefore necessary that users of financial statements employ varied analytical techniques to identify information they perceive to be most relevant for a particular decision.

Dita and Murtaqi (2014) have shown that there are several user groups, such as creditors and investors who rely on financial statements for decision making. Financial statements and reports therefore ought to reflect a true and fair view of the financial conditions that they purport to represent. Financial statements prepared based on requirements of international financial reporting standards and the specific legislative requirements are considered by users to provide an objective indication of performance, financial strength and shareholder value of an organization. Robinson (2009) has indicated that firms usually differ significantly with regard to size and on that basis it is of no use comparing their performance using absolute money amounts. Other metrics such as financial

statement ratios are considered by analysts and investors to provide a powerful tool of financial statement analysis, capable of eliminating the size factor thereby facilitating more relevant comparison.

To corroborate this assertion Irungu and Gatuhi (2013), established that a single indicator of financial performance is not enough to influence the market price of shares. Rather, it is the combined influence of key financial indicators that has a significant effect on market price of shares. A single indicator of financial performance therefore cannot be solely relied upon by investors to gauge movement in the market price of shares. Additional financial performance metrics such as dividend per share and earnings per share, as obtained from financial statement analysis need to be considered for prudent and effective investment decision making. It is apparent that the combined effect of key financial indicators such as ratios and are likely to have a significant influence on market price of shares listed at the securities exchange. Financial statement analysts and investors at the securities market therefore need to refer to a multiplicity of factors and metrics before making decisions on what shares to buy, retain for future speculation or sell-off.

Wandera and Kibe (2013) in their research, established that users of financial statement reports rely heavily on analysis of audited and published financial statements to make investment decisions. Based on this background, one can easily conclude that financial indicators of performance such as profitability, liquidity, operational efficiency, leverage or solvency, and market performance or value ratios or metrics constitute significant tools for deriving meaning from financial statement information. The end result of the analysis and interpretation process is that investors, both current and potential, are able to make appropriate investment and financial decisions that will help them realize their

strategic goals, based on their perception of corporate governance practices of firms they are investing in.

1.1.1 General Perspective of Financial Statements

According to Anwaar (2016); Gitman and Zutter (2012) the four basic financial statements that ought to be understood by stakeholders of a firm, because of their key role in measuring financial performance and strength include the income statement, statement of financial position, statement of changes in stockholder's equity and the statement of cash flow. According to Edmonds et al., (2016); Gitman and Zutter (2012) and Schonbohm (2013) information contained in these four basic financial statements is of great significance to the investing public, who on a continual basis need data to conduct financial statement analysis using ratio analysis technique, to facilitate establishment of comparative levels of financial performance and strength for individual firms. Gitman (2003) has also indicated that the four are the basic and key financial statements required by the US Securities and Exchange Commission (SEC), a securities' market regulatory body that governs the sale and listing of securities, for reporting to shareholders. Edmonds et al., (2016) further indicated that of great relevance in understanding financial statements are the notes that accompany financial statements.

While the income statement matches revenue with expenses that were incurred to generate that revenue, the statement of changes in stockholder equity explains the effect of transactions on stockholders equity during the accounting period. The other financial report referred to as the statement of financial position indicates the financial strength of an organization in terms of assets, liabilities and equities, while statement of cash flow explains how a company has obtained and used cash during the accounting period (Edmonds et al., 2016).

According to Bagherzadeh, Safania and Roohi (2013) financial statements still remain the most significant source of information on companies for the external investing public and are widely relied upon by stakeholders to establish economic value of firms based on the assumption that accounting numbers have a certain relationship with equity market values. Further, Anwaar (2016) indicated that financial information as reported in financial statements is one major element considered by investors to make investment decisions about which stock to invest in or not based on evaluation of past, present and future financial performance and position potential of firms.

Individuals and organizations use financial statements for different purposes. Such individuals and organizations range from private individuals with scanty knowledge about financial statements, to large investment brokers and institutional investors with capability of using complex analytical techniques to derive meaning from financial statements. Financial statements as indicators of performance have a number of shortcomings that include the fact that, they are difficult to simplify, condense and report complex business transactions at a level that is not easily understandable by non professionals without accounting knowledge. Moreover, international financial reporting standards only prescribe reporting targets for users that have reasonable knowledge of business (Edmonds et al., 2016). Investors with scanty accounting knowledge are therefore left to rely on primary or secondary information obtainable from professional financial analysts to make investment decisions.

1.1.2 Overview of Financial Statement Analysis

Financial statement analysis is an accounting tool that helps to provide meaning and guide interpretation of information reported in financial statements. Tugas (2012) asserted that financial statement analysis is one of those structured and scientific bases

on which investment decisions of a firm are anchored. According to Edmonds et al., (2016) financial statement analysis should aim at isolating information needed to make a particular decision from the totality of information contained in financial statements and reports. Due to diversity of users, varied information needs and the general nature of financial statements, a variety of analytical techniques have been developed to assist in deriving meaning from financial statements.

Three methods of analysis identified by Edmonds et al., (2016) include horizontal analysis, vertical analysis, and ratio analysis. Horizontal analysis is where the behaviour of an individual financial statement item is studied over several accounting periods. This type of analysis is used to study trends using two approaches; these are trends of absolute amounts in shillings or trends in percentages also referred to as horizontal percentage analysis. Analysis of absolute amounts has drawbacks caused by differences in materiality levels among different size companies. However percentage analysis overcomes the materiality level problem of different size companies. Vertical analysis uses percentages to compare individual items of financial statements to a key financial statement figure within the same period. For instance, vertical analysis of the income statement may involve converting each item of the income statement to a percentage of sales revenue. The last technique ratio analysis is where relationships between different items reported in the financial statements are expressed in form of ratios (Edmonds et al., 2016).

According to Edmonds et al., (2016) horizontal analysis and vertical analysis only rely on percentages and absolute amounts in the analysis of information making the two techniques less preferred tools of financial statement analysis. Comparatively, ratio analysis is still considered a prominent and preferred tool of analysis because it does not

use absolute money amounts to compare performance of firms. In addition, it facilitates more relevant comparison of financial statements by eliminating the size factor (Robinson et al., 2009). Further, ratio analysis groups financial statements information into distinct categories with each category measuring a different aspect of performance of a firm. Categorization facilitates comparison and investigation of relationships between financial reports information and return on shares (Ross, Westerfield & Jordan, 2010).

1.1.3 Accounting Ratios as Indicators of Shareholder Value

Ratios describe the relationship between different items in the financial statements. The use of accounting ratios in financial statement analysis is integral in the assessment and improvement of company performance. Ratios help in focusing attention to the areas of the business that need additional analysis and also provide a measure of profitability and cash position of a company. The comparison can only be meaningful and decisions made useful when similar ratios are compared, a fact whose realization is made possible through categorization of ratio (Barry & Jamie, 2011). Arkan (2016) in a study on importance of financial ratios in influencing stock price trends concluded that investors rely on a set of financial ratios to predict stock price trends for each sector of companies listed at the Kuwait financial market as such, the investing public can confidently rely on financial statement analysis as provided by financial ratios when making financial and operational decisions.

Ross, Westerfield and Jordan (2010) stated that traditionally, financial ratios are grouped into five categories to facilitate comparison and investigation of relationships between financial reports information and return on shares. The five categories of ratios include: profitability ratios, leverage (long term solvency) ratios, liquidity (short term solvency)

ratios, asset utilization (operational efficiency) ratios, and market value or performance ratios. Further, to support the assertions by Ross, Westerfield and Jordan (2010), Robinson et al., (2009) have argued that for ease of use due to the large numbers, ratios should be grouped into five broad categories that include activity, liquidity, solvency, market valuation and profitability. Each category measures a different aspect of performance of a firm, but generally all the five categories are useful in evaluating a company's overall ability to generate cash flows from business operations, operational efficiency and the associated risks. Further Gitman and Zutter (2012) indicated that for convenience, financial ratios should be divided into five basic categories; profitability ratios, liquidity ratios, debt/leverage ratios, activity/operational performance ratios, and market value or performance ratios.

Schmidt (2017) asserted that the term financial statement metrics should be preferred over the term 'financial ratio' among business people because not all ratios are true ratios as they are not expressed in ratio format such as working capital. Metrics refers to measurements. Therefore financial metrics are measurements that are as a result of applying certain analysis to data obtainable from financial statements. Financial metrics in business belong to two categories. The first category constitutes the cashflow metrics (that help evaluate cash flow estimates and investment outcomes) while the second category constitutes the financial statement metrics (based on figures obtainable from financial statements) used to evaluate the strengths and weaknesses of a firm in terms of financial position and financial performance over a period of time. Further, Schmidt (2017) reiterated that financial statement metrics can be categorized into liquidity metrics, activity and efficiency metrics, leverage metrics, profitability metrics, valuation metrics and a sixth category called growth metrics. Despite the use of the term metrics,

the categorization is similar to that of Ross, Westerfield and Jordan (2010), and Robinson et al., (2009).

Barry and Jamie (2011) have indicated that, although ratios are useful indicators of performance, they have limitations that relate to factors within and outside an organization. Many ratios are industry specific and therefore specific ratios cannot be interpreted to mean the same thing for all industries. Certain firms may have different lines of business which may cause distortion in aggregate financial ratios. Distortion of ratios may also be caused by variations in accounting methods, differences in corporate strategies and level of disclosure requirement in the financial statements.

However, despite these limitations the use of financial statement ratios in financial statement analysis is paramount in the assessment and improvement of company performance and ultimately shareholder value. Also, financial statement ratios make it possible for users to focus attention on areas of the business that need additional analysis by providing a measure of profitability and cashflow position of a company (Barry & Jamie, 2011).

1.1.4 Nairobi Securities Exchange (NSE) and Shareholder Wealth

The economy of a country is largely based on development of the corporate sector, and to finance growth of the corporate sector funds may be raised through the securities market (Balakrishnan, 2016). Dita and Murtaqi (2014) have indicated that securities markets worldwide play a significant role in the economic development of their respective countries by acting as intermediaries between investors and institutions that trade in financial instruments such as stocks and bonds. Further, it is through economic and finance functions of securities markets that the economic development objective is achieved.

In Kenya, dealing in shares commenced around 1920 without a trading floor and transactions were carried out on a gentleman's agreement. As trading activities continued to shape up, officials of London Stock Exchange accepted the establishment of Nairobi Stock Exchange (NSE) as an overseas stock exchange, an arrangement that culminated in the registration of NSE as a voluntary association of stock brokers under the societies Act, charged with the responsibility of developing the securities market and regulating trading activities. Business was transacted by telephone and prices determined through negotiations. The NSE operated as a regional market for East African countries; Kenya, Tanzania and Uganda until the dissolution of the East African community. In 1990, Capital Markets Authority was formed and took over the responsibility of promoting and facilitating the development of an orderly and efficient capital market in Kenya. To reflect diversity of activities as a result of its evolution into a full service securities exchange, the Nairobi Stock Exchange limited changed its name to Nairobi Securities Exchange limited on July 6th 2011 (Nairobi Securities Exchange [NSE], 2017).

Osoro and Jagongo (2013) reiterated that NSE plays a significant role in transferring savings to investments instead of keeping the savings idle. Unavailability of proper mechanisms of channeling savings into wealth creation activities would automatically lead to mis-allocation or waste of those savings. Ndeda (2013) reiterated that it is through the process of financial intermediation that the global investing community is connected to the financial market players. Stockbrokers play the financial intermediation role by bringing together investors on one hand and securities exchange on the other hand. Ndeda (2013) further stated that stockbrokers through use of financial statements and financial markets analysis techniques are able to provide information and advice to both current and potential investors about the viability of various investment alternatives.

Investors at the capital market are concerned with the stock return of their investments, also referred to as shareholder wealth or value. Shareholder wealth is measured in terms of gain or loss of stock value and any cash distributions over a period of time usually expressed as a percentage of beginning period investment value (Dita & Murtaqi, 2014). Hobarth (2006) showed that users of financial statements usually consider three performance indicators when assessing the value of a firm (shareholder wealth) namely: cash flow performance (measured by dividend per share), profitability (measured by returns on investment) and market performance (measured by changes in market prices of shares). Balakrishnan (2016) posited that generally security prices are perceived by investors to be a reflection of company performance. Gatua (2013) also argued that market share price is a yard stick for gauging performance of a firm and ultimately its value. This further implies that variations in market price of shares serve as a major indicator of economic health and value of firms. Variations in market price of shares depend on internal (firm specific) factors such as earnings per share, dividends and book value or external factors such as interest rate, gross domestic product, inflation, government regulations and foreign exchange rate.

Damodaran (2010) gives a contrary opinion by noting that although share price is assumed to be the market's measure of shareholder wealth, there exists a possibility of markets making mistakes in their assessment, yet investors follow the trend of share prices when making decisions on stocks to invest in. Research findings by Ngure (2012) indicate that investors use information contained in financial reports, and consequently share price behaviour upon announcement of financial results is significantly different from its behaviour during other times. This response may generate abnormal returns. Irungu and Gatuhi, (2013) have shown that, whenever there is a change in accounting earnings share price also changes in the same direction. Further they revealed that

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majority of securities investing public rely on word of mouth to obtain information for making investment decisions, which sometimes turns out to be misleading when making key share investment decisions. In conclusion, they recommended that stock brokers and market analysts ought to include key financial indicators in their advice to clients, because financial performance has statistically significant influence on share prices.

According to Ndeda (2013), the link between the public and financial markets in Kenya has continued to face challenges such as unpredictable market environment that has made it difficult to give proper advice to investors and failure by market regulators such as capital markets authority, central bank, retirement benefits authority and insurance regulatory authority to regulate trading at the NSE. This has on some occasions caused the NSE to send wrong signals concerning performance of listed firms, as is indicated by changes in the market price of shares. Through the development and establishment of appropriateness of financial statement analysis models in the determination of share prices, investors will be able to gain insight on performance of various firms leading to rational and efficient allocation of capital to the most deserving investment alternatives.

1.2 Statement of the Problem

According to Wandera and Kibe (2013) financial statements users expect external auditors to safeguard their interests by detecting fraud and mismanagement issues likely to negate integrity of financial reports. Despite this expectation, corporate irregularities and fraud have often erupted immediately unqualified audit reports are released both globally and locally as was the case of Enron scandal of 2001 that led to bankruptcy of Enron Corporation (Pavel & Encontro, 2012), and locally in Kenya at Uchumi Supermarkets where external auditors report failed to address evident corporate misdeeds. This failure by the auditors led to decline in share value of Uchumi

Supermarket to junk status and eventually its suspension from NSE (Abdulkadir, 2016). Such mismanagement issues happen without the knowledge of shareholders. Unqualified audit reports, market share price, dividends per share and returns on investment mostly relied upon by investors seem to be of minimal use as indicators of financial strength and shareholder wealth. Since incidences of undetected corporate failures have continued to be encountered, the question that arises is whether change in market share prices really reflects results of published financial statements. Published financial statements of firms should be subjected to empirical examination, analysis and interpretation to establish the relationship of a wider range of performance indicators such as profitability, liquidity, operational efficiency, leverage and market performance with market share prices. The sole question that the findings of this study endevoured to address therefore was whether an empirical examination of financial statement analysis models can influence market prices of shares of firms listed at the NSE since this is an issue of great interest to capital market researchers in accounting.

1.3 Research Objectives

The general objective of this study was to empirically examine the appropriateness of financial statement analysis models in influencing shareholder wealth of listed non financial firms in Kenya.

1.3.1 Specific Objectives

The specific objectives were:

i.   To evaluate appropriateness of profitability ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

ii.   To analyse appropriateness of liquidity ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

iii.   To assess appropriateness of operational efficiency ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

iv.   To examine appropriateness of leverage ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

v.   To investigate appropriateness of market performance ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

1.4 Research Hypotheses

The research hypotheses were:

H_{O1}: Profitability ratios model does not have statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

H_{O2}: Liquidity ratios model does not have statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

H_{O3}: Operational efficiency ratios model does not have statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at the Nairobi Securities Exchange.

H_{O4}: Leverage ratios model does not have statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at the Nairobi Securities Exchange.

H_{O5}: Market performance ratios model does not have statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at the Nairobi Securities Exchange.

1.5 Justification of the Study

Majority of investors in stocks do not have accounting knowledge and are forced to rely on share price movements to select investments to acquire or dispose off. Due to the forces of demand and supply, their response can cause an unrealistic decline or appreciation of market prices. This study sought to provide investors with a mechanism of utilizing accounting ratios derived from financial data generated internally and available in the public domain to determine future returns of their investments. By providing a link between accounting measures of performance, such as profitability ratios, liquidity ratios, operational efficiency ratios, leverage ratios and market value ratios as derived from published financial statements and expected return on shareholder value, the possibility of markets making mistakes in their assessments thereby giving wrong signals to current and prospective investors will be avoided.

1.6 Significance of the Study

Previous studies on predictive ability of accounting information, as obtained from published financial statements of listed firms, on market price of shares have targeted firms listed on developed securities markets with little attention being directed towards firms listed on emerging markets such as NSE. The findings of this study sought to significantly provide knowledge on relationship between accounting information as derived from financial ratios and shareholder wealth of non financial firms in an emerging securities market such as the Nairobi Securities Exchange in Kenya. This information can be of great help to both internal and external stakeholders such as management, investors, academicians, researchers and creditors of listed non financial firms in Kenya and globally.

Management is involved in the day to day running of businesses. Managers are under obligation to maximize the wealth of shareholders and therefore need information helpful for evaluating performance of firms and its likely effect on share prices. Such information enables managers to compare actual performance with expected or targeted performance well in advance so that appropriate remedial action is taken. The results of this study can also help managers determine changes in share prices of their firms based on the outcome of financial statement analysis models without having to wait for market signals.

Investors are the providers of funds for the operation of a business and as a result, they always want to know whether their funds are being utilized properly or not. They need information for establishing in advance, the profitability and financial position of firms and the likely effect it will have on market price of shares. Despite the fact that the technical advice of financial experts derived from financial statement analysis is necessary for making investment decisions, majority of investors in a growing economy such as Kenya may not afford such a service. This study aimed at developing financial ratio models whose appropriateness can assist investors with minimal accounting knowledge to determine well in advance, the likely returns on various investment alternatives.

Academicians and scholars devote their time and resources expanding the sphere of knowledge in their respective areas of specialization. On that basis, this study endeavours to broaden and enrich the understanding of academicians, particularly capital market researchers in accounting, on appropriateness of financial statement analysis models in influencing returns to shareholders of listed non financial firms at the NSE. Also the study can be of benefit to scholars who may utilize the findings as a basis for

further research on unresolved issues related to financial statement analysis and how it relates to shareholder wealth.

Creditors are suppliers of goods and services on credit. Money lenders on the other hand, give out loans to various firms. Creditors are quite often interested in knowing the financial position and performance of the firm before giving out credit facilities. Their paramount objective is to ensure that firms advanced credit do not eventually experience liquidity problems, payment difficulties and are able to maintain stable credit rating levels throughout the credit period. Financial statement analysis ratio models of liquidity and solvency can enable creditors to anticipate in advance, the ability of a firm to meet its long and short term obligations as and when they fall due.

1.7 Scope of the Study

This study was confined to establishing the appropriateness of profitability, liquidity, leverage, operational efficiency and market performance ratios models in influencing shareholder wealth. The study covered all non-financial firms that were quoted at the NSE for the period 2011 to 2017 and for 5 financial years 2012 to 2016. Firms in the finance sector had unique financial statements disclosure requirements as provided by the generally accepted accounting principles and the specific companies Acts (such as banking Act and insurance Act) that govern their way of reporting. Information provided in the annual financial statements of financial sector firms and the uniqueness associated with the manner in which specific elements of financial statements were classified and stated often hinders computation of certain ratios (Davis, 1976). Further Santos (2001) asserted that financial sector companies are always highly regulated by the central bank which often is conservative on issues of liquidity, cash holding and provision for bad debts among other factors. Financial leverage of financial companies is therefore not

comparable to that of non-financial companies (Mwangi, Anyango & Amenya, 2012). It is on the basis of these facts that financial sector firms were excluded from the study.

1.8 Limitations and Delimitation of the Study

While conducting this study the researcher anticipated challenges such as certain firms listed at the NSE having different financial year ends, data inaccessibility and unavailability. Some of the companies listed at the NSE had financial years that ended in December others in March some in June while others in September. To address the challenge of different financial year ends, the researcher made adjustments while computing the rate of change in share prices of respective firms quoted at the NSE. This was done in such a way that, the period covered in the computation of rate of change in share prices coincided with the financial year end of the respective firm. To address the challenge of inaccessibility of data, the researcher ensured that relevant legal instruments for data collection were obtained from the relevant authorities so as to avoid suspicion. Unavailability of data for computing certain ratios was addressed through access of the capital markets authority website and the website of the respective companies whose data was found to be missing. In extreme cases of data unavailability, telephone calls were made and physical visits done to headquarters of specific companies to obtain the missing data. The study was also limited to those ratios that could be computed using publicly available information derived from investor handbook 2015-2016, investor handbook 2016-2017 and published financial statements of non financial firms listed at the NSE.

1.9 Assumptions of the Study

The study assumed that financial statements of all non financial firms quoted at the NSE were prepared using similar accounting policies and were based on the requirements of International Financial Reporting Standards.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter considered literature on related concepts, theories and past studies carried out in different areas related to the study. It is categorized into sections such as introduction, principals and concepts of financial ratios, empirical literature on appropriateness of profitability, liquidity, operational efficiency, leverage and market performance ratios, critique of existing literature, theoretical literature review and conceptual framework. Under principals and concepts of financial ratios section, a conceptual description of various categories of ratios was done. It focused on the main concepts and principles of financial statement analysis ratios and shareholder wealth. The various financial statement analysis metrics of profitability, liquidity, operational efficiency, leverage and market performance of firms were described and the various ratios used to measure each aspect discussed. The empirical literature section focused on related studies undertaken. Also discussed was shareholder wealth of firms and explanation of methods of its measurement. The critique section looked at the short comings of the existing literature and the research gaps that needed to be filled. Under theoretical literature review section, theories related to the study such as stakeholder, stewardship and positive accounting theories were discussed. For each theory, an illustration was given to show how it relates to the study. Finally, the conceptual framework presented a diagrammatic interrelationship of the dependent and independent variables.

2.2 Principles and Concepts of Financial Ratios

2.2.1 An Overview of Financial Ratios Technique

Financial ratios is also known as accounting ratios (Davis, 1976), or financial statement metrics because not all of them are true ratios such as the working capital metric (Schmidt, 2017). Financial ratios are the oldest, simple and practical planning and financial analysis tools that first appeared in the mid nineteenth century. Ever since, they have been in use among accountants, financial analysts and internal and external users for making economic decisions such as investment and performance evaluation decisions. During the past decades, many financial and accounting models have been developed with an aim of trying to unravel the predictive potential of financial statement ratios (Kabajeh, Nu'aimat & Dahmash, 2012).

Ratio analysis originated around the turn of the 20th century with development of the current ratio by New York bankers to indicate the debt bearing capacity of clients. Within no time, proliferation of other ratios followed, with each ratio being designed to provide information about a particular aspect of a firm's activity (Davis, 1976). According to Wijaya (2015), development of financial ratios was a product of the evolution of accounting procedures and practices in the United States and the use of financial ratios as a tool of financial statement analysis has been practiced ever since the late 19th century.

According to Baruch (1974), prior to the mid 1960's little empirical work was done on ratios as tools of financial statement analysis. Most literature concentrated on ratio calculation with little effort being devoted to evaluation of the usefulness of ratios and development of an integrated explanatory theory. However, Davis (1976) predicted that ratio analysis technique will continue to proliferate and will consequently warrant closer

examination by researchers in the area of financial statement analysis. According to Lai and Cho (2016), over the past few decades there has been considerable research interest in financial ratios and their ability to influence stock returns. As such, a number of studies have been devoted to determining which of the financial ratios currently in use is the most effective in determining stock returns in the securities market in the recent years.

The accounting ratios have therefore become a principle analytical tool and as a result their use is synonymous with financial statement analysis. Lai and Cho (2016) have asserted that financial ratios are currently widely acknowledged as being accurate indicators of investment potential of firms and are depended upon by investors as major providers of insight into the liquidity, leverage, operational efficiency as well as the extent to which assets are being used to generate returns in firms. For example, according to Lai and Cho (2016) it is an accepted norm in finance that the behaviour of stock returns can be explained by firm specific and macroeconomic variables. Financial ratios are considered an accurate measure of some of the firm specific variables.

A study by Lewellen (2004) established that financial ratios were widely acknowledged to be an effective tool for aiding potential investors at the securities market to determine the financial health and operational efficiency of firms in terms of their effectiveness in utilization of assets as well as their ability to meet financial and non financial obligations as they occur. Lewellen (2004) further indicated that the use of financial ratios is not only confined to the latter, as is acknowledged by a number of authors but also applied to stock markets as a tool capable of influencing stock returns.

2.2.2 Categorization and Role of Financial Ratios in Evaluation of Corporate Performance

In the modern economic era, investment in securities is considered an investment option attractive to both foreign and local investors. With increased regulation and ease of accessibility to the securities market, stocks as an investment instrument, are no longer demanded by top-class investors only, but have also attracted the interest of small investors. The motive for investing funds in stocks is dictated by expectation of high rate of return reflected by stock prices. Stock prices in the securities market are influenced by factors such as financial policy, monetary policy, foreign trade policy, other macro-economic factors, financial information and other firm internal factors (Anwaar, 2016).

Results of business activities and financial position as provided by financial information contained in financial statements do not provide sufficient information for managerial decision making. Therefore, financial statement analysis is required to extract information from financial reports to facilitate managerial decisions. Many analytical tools are available and the ones selected majorly depend on the needs and requirements of the analyst. Ratio analysis remains the strongest tool for financial statement analysis because of its wider coverage compared to other tools. As a result it is more capable of providing valuable information to decision makers (Anis & Mohammad, 2014). Tugas (2012) has shown that since financial statements are lengthy, financial ratios offer an important tool of financial statement analysis that efficiently and strategically picks up figures that matter and plugs them in pre-defined formulas developed over time by finance and accounting scholars.

According to Robinson et al., (2009) each ratio category or financial statement metric as referred to by Schmidt (2017) measures a different aspect of a firm's performance such

as activity or operational efficiency, liquidity, solvency, market valuation and profitability. Also, some financial ratios measure multiple aspects of the business for instance, an activity ratio that measures speed of collection of accounts receivable can be used to assess liquidity of a firm. To derive maximum value from financial ratios as tools of financial statement analysis, ratio should be interpreted by comparison with benchmarks or standard ratios, other company ratios or industry average ratios (cross sectional analysis) and to past similar ratios of the company (trend analysis) to enable analysts, investors and shareholders track company progress by comparing the current to past performances (Gitman & Zutter, 2012). It is therefore desirable that financial metrics (ratios) that fall under each category be analysed together in form of a financial statement analysis model (such as activity and operational efficiency model, liquidity model, solvency model, market valuation model and profitability model) that addresses a particular aspect of a firm's performance.

2.2.3 Issues to Consider and Limitations of Financial Ratios Analysis

Robinson et al., (2009) have noted that financial statement analysts should consider three factors when evaluating financial ratios as tools of corporate performance measurement. The first factor is company goals and strategy which will enable the analyst to determine whether objectives are being attained and whether the results are consistent with the company strategy. The second factor is industry norms or practice. When industry norms and commercial practices are not considered during calculation of financial ratios and making of judgment, care must be taken because many ratios are industry specific and not all of them are important. As a result, ratios cannot be interpreted to mean the same thing to all industries. Analysts therefore, ought to consider variations in industry practice before making judgement. Companies may have several different lines of business which is likely to cause aggregate financial ratios to be distorted. Also,

differences in accounting methods and corporate strategies used by companies can distort certain financial ratios. The third factor is economic conditions whereby for cyclic companies financial ratios tend to improve when the economy is strong and weaken during recession (Barry & Jamie, 2011).

Barry and Jamie (2011) have further indicated that although ratios are useful indicators of performance, they have shortcomings that relate to external and internal factors of an organization and also problems specific to consolidated accounts. External factors include the fact that ratios need to be interpreted putting into perspective the political and economic environment in which a firm operates. Internal factors include the need to interpret ratios by considering notes in annual reports that help explain changes in ratios. It also entails the reliability of financial statements as being true and fair representatives of financial position, and also being without the risk of fraudulent misrepresentation such as window dressing. Distortion of ratios may also be because they are based on end of period figures that are not a reflection of year long business operations. Also, the use of different measurement bases and application of different accounting policies could invalidate inter-company comparisons.

However, according to Barry and Jamie (2011) the lack of uniformity problem in company reports has been progressively addressed through development and adoption of global financial accounting standards by public limited companies. Consolidated accounts also pose a problem because they are prepared for holding company shareholders and may be irrelevant to the needs of other users such as creditors.

2.2.4 Financial Statement Metrics of Profitability

According to Arkan (2016) profitability ratio category assists investors in assessing the ability of a company to earn profit on sales, assets and equity. An assessment of long

term profitability of a company is important in determining its survival as well as projecting benefits that are likely to accrue to investors from the company. Anaja and Onaja (2015) indicated that investors contemplating investment in a firm expect returns on their investment in form of dividends and capital gain. These forms of shareholder wealth depend on expected future profitability of the firm. According to Edmonds et al., (2016), profitability refers to a firm's ability to generate earnings from resources at its disposal. Management and external users assess the success of a firm in generating profits during a given period through the use of profitability ratios (metrics). Robinson et al., (2009) have indicated that return on sales profitability ratios express subtotals on the income statement (such as gross profit, operating profit, net profit) as a percentage of sale or revenue, while return on investments profitability ratios measure income relative to asset, equity or total capital employed by a company. Profitability ratios can be categorized into two. First, are return on sales profitability ratios that include gross profit margin, operating profit margin, pre-tax margin and net profit ratio, and second are return on investments profitability ratios that include operating return on assets (OROA), return on assets (ROA), return on total capital (ROTC), return on equity (ROE), and return on common equity (ROCE).

2.2.5 Financial Statement Metrics of Liquidity

Liquidity ratios focus on cash flows and measure the company's ability to meet its short-term obligations as they fall due (Gitman & Zutter, 2012; Khotimah & Mortagi, 2015). Liquidity ratios include current ratio, quick ratio (Edmonds et al., 2016; Arkan, 2016), net working capital to total assets, interval measure (Rose, Westerfield & Jordan, 2010) and according to Robinson et al., (2009) cash ratio and defensive interval ratio. Other financial statement metrics of liquidity that are not in ratio form include cash conversion cycle and working capital. Liquidity is a function of efficient utilization of assets and

how quickly these assets can be converted into cash. The level of liquidity differs from industry-to-industry and also based on the anticipated need for funds at any given time. Liquidity ratios reflect company position at any given time and therefore use data from the ending statement of financial position (Robinson et al., 2009).

2.2.6 Financial Statement Metrics of Operational Efficiency

Operational efficiency ratios also referred to as asset utilization or activity ratios measure how efficiently a company manages it activities, particularly how efficiently and effectively it manages working capital and day-to-day tasks (Robinson et al., 2009). According to Gitman and Zutter (2012), operational efficiency provide a metric of efficiency of a firm by considering its assets, disbursement of payables, collection of receivables, and inventory. Generally, operating efficiency ratios combine information from the income statement in the numerator with balance sheet items in the denominator.

Income statement measures performance over a period of time whereas balance sheet shows financial position of a firm at a given point in time therefore, average balance sheet data of only two points (beginning and end of the year) is taken for consistency (Robinson et al., 2009). Accounting ratios used to measure operational efficiency of a firm are Cost to Income Ratio (CIR) (Hussain, 2014), inventory turnover, Days of Sales Outstanding (DSO) (Schonbohm, 2013), Days of Inventory on Hand (DOH), Receivables Turnover, Payables Turnover, Number of Days of Payables, Working Capital Turnover, Fixed Assets Turnover and Total Assets Turnover (Robinson et al., 2009; Rose, Westerfield & Jordan, 2010).

2.2.7 Financial Statement Metrics of Solvency or Leverage

Leverage (long term solvency) group of financial ratios measure the percentage of a company's capital structure that comprises of debt obligation owed to parties external to

the organization. Leverage ratios measure a company's ability to meet long-term obligations (Arkan, 2016). According to Gitman and Zutter (2012), leverage ratio is an indicator of the amount of other people's resources being used by the firm to generate profits as compared to owners' resources. According to Robinson et al., (2009) leverage ratios are also known as "long-term debt" ratios. Long term solvency ratios can be classified into two categories. First, are debt ratios that include debt to assets ratio, debt to capital ratio, debt to equity ratio (DER) and financial leverage ratio. The second category is coverage ratios which encompass interest coverage and according to Arkan (2016) cash coverage ratio and fixed charge coverage ratio. Other ratios according to Rose, Westerfield and Jordan (2010) include total debt ratio, long-term debt ratio and times interest earned ratio.

2.2.8 Financial Statement Metrics of Market Performance

Market performance category of ratios indicates market value of a stock in terms of some company fundamental metrics such as earnings per share and dividends that are associated with ownership of a specified claim (Arkan, 2016). Market performance ratios provide investors with insight on potential risks and returns associated with a particular firm in the market place (Khotimah & Mortagi, 2015). Market performance ratios are metrics of a firm's market value in relation to its accounting values and provide an indication on how performance of a firm is perceived by investors in terms of risk and return (Gitman & Zutter, 2012).

Market performance ratios have been classified into three categories. First category referred to as valuation ratios includes price earnings ratio (P/E), price to cash flow ratio (P/CF), and price to sales ratio (P/S). Arkan (2016) also adds market price to book value ratio and book value per share in this category. The second category referred to as per-

share quantities ratios includes basic earnings per share (EPS), diluted earnings per share, cash flow per share and earnings before interest, tax, depreciation and amortization (EBITDA) per share. According to Robinson et al., (2009), although EPS is considered to be a critical metric in valuation of earnings performance, it simply defines the amount of earnings attributable to each share of common stock and should not be viewed in isolation to provide information for comparing one company with another. This is because differences in EPS may not necessarily be a reflection of differences in profitability. Companies with identical profits and profitability values may still have different EPS just because of differences in the number of common shares outstanding (Robinson et al., 2009). The third category which is referred to as dividend-related quantities ratios includes ratios such as dividend payout ratio, retention ratio and sustainable growth rate (Robinson et al., 2009).

2.3 Theoretical Literature Review

Several authors have advanced theories that provide the basis for and an explanation regarding the ability of financial statements and the associated metrics to appropriately predict shareholder wealth of firms expressed in terms of share price. These theories include stakeholder theory, stewardship theory and positive accounting theory.

2.3.1 Stakeholder Theory

According to Gunay (2008) the use of the term stakeholder can be traced to the time period when settlers in the United States of America were called upon to stake out their claims by demarcating land they owned. Edith Penrose is considered the pioneer of stakeholder theory since she first examined the internal environment of a firm and included stakeholders in the theory of the firm. However, it was until the post depression period that stakeholder approach originated when it was first applied by General Electric

Company during the identification of the company's four major stakeholder groups that were found to comprise customers, employees, shareholders and the public.

Freeman (1984) after considering the works and insights of original proponents of stakeholder philosophy was the first to propose the term stakeholder theory in his book, Strategic Management: A Stakeholder Approach. Stakeholder theory as described by Freeman (1984) was based on the assumption that firms that devote substantial efforts on managing their stakeholder relationships effectively were bound to survive in the long term and more comfortably than those that did not.

In support of stakeholder theory, Hillman and Keim (2001) reiterated that, a corporate can be viewed as a set of interdependent relationships among various stakeholder groups for which in case their desired values are not met, there arises a possibility of undesirable effects on their present and future expectation which could ultimately lead to lower stock prices and further negative consequences on all other stakeholders. Freeman (1984) therefore suggested that firms should focus their efforts on development of stakeholder competencies that will help address the needs of stakeholders. Such stakeholder competencies include monitoring the interests of their stakeholders, development of strategies that would effectively deal with stakeholder concerns, classification of stakeholder interests into manageable segments and ensuring that functions of an organization address the needs of their stakeholders.

According to Freeman, Harrison, Wicks, Parmar and Collie (2010) stakeholder theory states that, the purpose of a business is trade and value creation for the benefit of all stakeholders. Based on this theory for any business to succeed in the long run, managers must keep the interests of all stakeholders aligned and focused in the same direction. Stakeholders are all those individuals and groups that can affect or are affected by

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accomplishment or non accomplishment of organizational objectives. Because stakeholder interests are interrelated, to realize value creation, attention should be directed on how each stakeholder value will be created. Inability to meet the interests of a particular stakeholder can be a hindrance in meeting the goal of another. One of the limitations of Stakeholder theory is that organizations are set up for the purpose of value creation for investors and therefore an attempt to address the needs of other stakeholders will amount to sacrificing the value to investors (Freeman et al., 2010).

The relevance of stakeholder theory to this research study is based on the fact that financial statements are general purpose statements aimed at addressing the needs of various users (stakeholders). It is on the basis of the results obtainable from financial statement analysis that each stakeholder group is able to independently derive useful interpretation and meaning from financial statements. The information derived from these statements is necessary for making relevant decisions about profitability, liquidity, solvency, operational efficiency and market value of the firm. The general perception of various categories of stakeholders will have a bearing on the market share price movement of the relevant stock. This research study is an attempt at establishing the appropriateness of individual financial statement analysis, ratio models of profitability, liquidity, solvency, operational efficiency and market value of the firm, in measuring the extent to which the interests of each stakeholder group has been addressed as is reflected by market share price movement.

2.3.2 Stewardship Theory

Donaldson and Davis (1991) developed stewardship theory that has its roots anchored in psychology and sociology as a paradigm shift from the agency theory with roots in finance and economics that has dominated the realms of academic research and corporate

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governance. Stewardship theory is considered a modern philosophy to corporate governance and a new perspective in trying to understand the relationship between owners and managers of organizations. Davis, Schoorman and Donaldson (1997) reiterated that stewardship theory depicts subordinates as collectivists, pro-organizational and trustworthy unlike the agency theory which depicted subordinates as being individualistic opportunists with self-serving interests that are divergent and conflicting with those of their principals. According to Larson (2013), stewardship theory assumes that corporate executives are stewards of business resources with behaviour and objectives consistent with those of the principals. According to Cossin, Ong, and Coughlan (2015), stewardship theory states that managers will always act as responsible stewards of the resources that they control on behalf of their principals. Stewardship is based on the notion of accountability, long term orientation and responsibility for protecting assets of the business overtime. The motives of management executives are aligned to the goals and objectives of the organization, a philosophy that directs them to act in a pro-organizational manner with no self-interest because by doing so, they derive greater utility than they would gain by engaging in individualistic behaviour.

Donaldson and Davis (1991) in support of stewardship theory identified situational factors that influence executives to becoming stewards. The situational factors which refer to the surrounding cultural context rather than an organization's work environment include working in an involvement oriented management system as opposed to working in a control-oriented management system. The situational factors also encompass collectivistic culture as opposed to an individualistic culture and provision of corporate governance systems that give executives authority and discretion. Such corporate management systems empower managers and cause them to believe that development of

controls and a monitoring system is not necessary because the goals of the steward and the principal are already aligned.

Davis et al., (1997) proposed the use of stewardship theory in corporate governance by identifying four psychological factors that predispose executives to becoming stewards which include, higher order motivation, identification with the firm's objectives, value commitment orientation and greater use of personal power as a basis of influencing others. Cossin et al., (2015) contributed towards development of stewardship theory by identifying three aspects that characterize stewards at the corporate level. These aspects entail development of corporate purpose that provides employees with a sense of belonging, identity, and fulfillment of higher order needs, giving consideration to the impact of the actions of employees in the present and overtime, and interaction with internal and external stakeholders. Well stewarded companies strive to make internal stakeholders understand their critical roles and responsibility in the fulfillment of corporate purpose, while external stakeholders are managed such that they become enablers in the fulfillment of the corporate mission.

According to Dita and Murtaqi (2014) financial statements that provide the blue-print upon which financial statement analysis is based are perceived by users to provide a true and fair view of the financial position and performance of a firm. While preparing financial statements, accountants are expected to exercise discretion in the selection of appropriate accounting bases and methods without any bias or subjectivism. This study is therefore supported by stewardship theory in the sense that the theory prescribes an organizational environment where preparers of financial statements of public companies quoted at the NSE are considered to be trustworthy, empowered and driven by organizational interest that is devoid of self interest and have their goal aligned to those

of their principals (Davis et al., (1997); Larson, (2013); Cossin, Ong & Coughlan, (2015)). The financial statements of companies quoted at the NSE are presumed to be free from bias and personal interest of the accountant, and are therefore a true reflection of the financial strength and position of the firm (Cossin, Ong & Coughlan, 2015). A combination of multiple ratios, which address individualized needs of various categories of users of financial statements, into a mathematical model is bound to produce better results if based on existence of the tenets of stewardship theory in the corporate governance structure of firms being considered, and for the purpose of this study firms of interest are those that are listed at the NSE.

2.3.3 Positive Accounting Theory (PAT)

According to Melis (2007), Positive Accounting Theory (PAT) is considered to be one of the most innovative as well as controversial theories in accounting, whose origin can be traced to the works of Watts and Zimmerman that was published in accounting review journal of 1978. According to Ghanbari et al., (2016), positive accounting theory states that accounting information is useful in explaining and influencing changes in stock market prices. It also explains and influences the types of accounting bases, practices and policies used by management and why they are used. Further, Kabir (2011) asserted that PAT has continued to spawn a great deal of empirical research on association between accounting numbers and stock prices on one hand and returns and determinants of accounting choices by management on the other. The large number of research articles based on the two paradigms of PAT published in major accounting journals and the dominance of PAT in PhD research in the United States and other universities all over the world provides testimony on the dominant position PAT has taken in the realms of capital market research in accounting.

Prior to mid 1970, accounting theory was predominantly normative with financial accounting literature focusing on prescription of content of financial statements. Minimal focus was directed to the explanatory and predictive ability of financial statements information in addressing real world phenomena as provided for under PAT (Melis, 2007). According to Kabir (2011), normative accounting research was the dominant research tradition in accounting with researchers primarily concerned with recognition and measurement issues in accounting. This view is also shared by Ghanbari et al., (2016) in their work on developing accounting principles. Normative accounting theorists were only preoccupied with accounting questions and answers such as whether to recognize changes in market prices even if the entity is not a party to the transaction and what basis (e.g. historical cost, market value, etc.) to use in preparing financial statements. Kabir (2011) in further support for PAT asserted that normative accounting literature unlike positive accounting that stems from PAT, championed claims that accounting earnings numbers were meaningless and had no predictive value because they were computed using multiple valuation bases. These claims have lately been refuted due to observed association between unexpected earnings and abnormal rate of return experienced over a short period of time around the information announcement event. This fact reveals that accounting earnings number reflects factors relevant to the valuation of stock despite not being calculated on a single basis (Kabir, 2011).

Another proponent of PAT Graffikin (2007) indicated that around 1970 there was a dramatic change in the methodological direction that accounting research had taken. This change was from the normative approach (that was prescriptive) to the positive approach (that was descriptive) and whose defining characteristic was its commitment to empiricism. The commitment of PAT to empiricism has therefore stirred a major change in the pattern of accounting theories by incorporating scientific methods similar to those

applied in the natural sciences, in accounting research, (Ghanbari et al., 2016). The shift was made possible due to availability of large financial databases, application of sophisticated statistical techniques for hypothesis testing and increased availability and use of computers (Graffikin, 2007).

Kabir (2011) while further advocating for PAT indicated that, over the past four decades PAT has become one of the most effective research programs in academic accounting research. Positive accounting as the outcome of PAT is a branch of academic accounting research that seeks to explain and predict actual accounting practices. It however contrasts with normative accounting which is the outcome of normative accounting theory that seeks to derive and prescribe optimal accounting standards. PAT has therefore led to more empirical research on the relationship between accounting numbers as obtained from financial statements, equity price and return on equity as well as factors affecting choice of accounting practices made by management (Kabir, 2011). According to Graffikin (2007), consideration has been made by accounting researchers to refer to this type of research as neo-empirical accounting research (neo (new) because of its commitment to empiricism and systematic use of empirical evidence).

All neo- empirical accounting research is based on the assumption of an efficient market as derived from efficient markets hypothesis (EMH). The efficient market hypothesis has remained a hypothesis because despite the more than forty years of research aimed at testing it all attempts have failed to confirm it, thereby making it remain a hypothesis and not a theory given that a theory is a confirmed hypothesis (Graffikin, 2007). Graffikin (2007) has indicated that research based on EMH assumption about the relationship of information to security prices is referred to as capital markets research. Capital markets research first emerged in the 1960 from the work of researchers in

economic and finance at the University of Chicago and was later taken up by accounting scholars Ray Ball and Philip Brown, believed to be the fathers of capital market research in accounting, at the same University of Chicago. All capital market research in accounting is based on PAT (Graffikin, 2007).

According to Melis (2007), prior to development of PAT research in accounting never addressed the role of conflict of interest in financial statements yet managers exercise discretion while choosing among the various types of accounting bases, practices and policies to be used. Explaining and influencing types of accounting bases, practices and policies used by management and why they are used falls under the second paradigm of the PAT theory (Ghanbari et al., 2016). Therefore, financial statements (and their content) should be analysed as the equilibrium outcome of a conflict of interest between different corporate stakeholders and according to the empirical evidence from corporate practices (Melis, 2007).

Positive accounting theory (PAT), being a major contributor to capital markets research in accounting, a research area where the current study falls and derives support as is purported by the various proponents of the theory, is of great relevance to this research study in a number of ways. For instance, PAT enables one conduct an empirical examination of stock market prices and information content of financial statements thereby determining the effect of new accounting information on stock prices. The current study is of the type of an event study that investigates the association between financial statement information announcement, expressed in the form of models of the five categories of financial ratios (accounting performance measures), and behaviour of share prices over a short time period. According to PAT, through empirical examination of stock market prices and information content of financial statements, it's possible to

determine the effect of new accounting information on stock prices. Stock prices are taken to be an objective and external indicator of the usefulness of accounting information contained in the financial statements (Graffikin, 2007).

The current study involves the use of large financial database from financial statements, incorporation of systematic empirical research methodology and application of scientific methods such as statistical techniques for hypothesis testing, similar to methods applied in natural sciences. It is therefore evident that the concepts and techniques used in the current study are grounded on the tenets of PAT and positive accounting.

2.4 Empirical Literature

2.4.1 Profitability Ratios Model and Shareholder Wealth

Anwaar (2016) conducted a study to establish the impact of firm performance on stock return by considering firms listed on Financial Times Stock Exchange (FTSE)-100 index and London Stock Exchange during the period 2005 to 2014. In this study, firm performance was measured using five independent variables namely: earning per share, quick ratio and three profitability ratios; return on assets, return on equity and net profit margin, while the dependent variable was stock return. Data was analysed using panel regression analysis method. The results obtained indicate that profitability ratios: net profit margin ratio and return on assets ratio had significantly positive impact on stock returns while return on equity had insignificant impact on stock return. The study by Anwaar (2016) considered only three profitability category ratios, one market performance ratio and one liquidity ratio. No consideration was given to other ratio categories such as solvency and operational efficiency which are important indicators of performance among investors and other stakeholders such as creditors. Also, London

Stock Exchange is a more advanced security exchange compared to Nairobi Securities Exchange that is considered to be an emerging security market.

Arkan (2016) studied the importance of 12 financial ratios in influencing trends of stock prices in emerging markets by obtaining data from 15 companies distributed in three sectors of Kuwaiti financial markets over the years 2005–2014. A multiple regression model was used to estimate the stock price in each sector after non-effective variables were eliminated using Stepwise method. The results for the industrial sector indicated that return on assets, return on equity and net profit ratio had strong positive and significant relationship on stock price trends. As for the investment and service sectors, there was a positive significant relationship between return on assets and return on equity with stock price. Net profit ratio had a positive significant relationship with stock price among the service sector companies. The study by Arkan (2016) only considered three sectors of the financial market namely: industrial, investment and service sectors. Other sectors were not considered to establish how they influence the movement of market share prices. This is unlike the current study that considers all the sectors of the securities market.

A study conducted by Stefano (2015) sort to identify whether simultaneously or individually, financial ratios had significant impact on stock return of property sector companies listed in Indonesia Stock Exchange by considering only one ratio for each of the ratio categories. The results obtained showed that individually only return on assets had significant impact on stock return of property sector industry in Indonesia. Further a study by Wijaya (2015) revealed that partially, return on assets had significant effects on stock returns. While Stefano (2015) only considered one ratio for each of the ratio

categories, the current study employed multiple ratios which are more preferred in corporate performance evaluation analysis.

Dita and Murtaqi (2014) in their study endeavoured to establish the relationship between net profit margin (NPM), price to book value (PBV), and debt-equity ratios (DER) on stocks return of consumer goods companies listed in Indonesia Stock Exchange during the period of 2009 – 2013, using the multiple linear regression analysis method. From the results of their study, NPM, PBV, and DER had significant effects on stock return. NPM and DER had positive significant impacts to the stocks return, while PBV had a significantly negative relationship to stocks return. NPM gave the most significant influence to the stocks return, followed by the PBV and the last one was DER. It is worth noting that Dita and Murtaqi (2014) only considered consumer goods sector firms listed on the Indonesia stock exchange. Also, not all the five ratio categories were considered by Dita and Murtaqi, who only dealt with profitability and solvency measures of performance. The current study differs from Dita's and Murtaqi's in that it considered all the five ratio categories as well as all the sectors of the securities market of firms listed on the Nairobi Securities Exchange.

Razdar and Ansari (2013) conducted a study aimed at establishing the effect of profitability ratios (which consists of gross profit margin, financial expenses ratio, return on equity, return on assets) on return on assets and stock price of a sample of 66 companies listed on the Tehran Stock Exchange during 2005-2009. The results obtained indicate that there is a positive significant relationship between gross profit margin ratio and stock price. In addition, there was no significant relationship between financial expenses ratio and stock price. Lastly, there is a positive significant relationship between

return on assets ratio and stock price and also the relationship between return on equity ratio and stock price is positive and significant.

Kabajeh, Nu'aimat and Dahmash (2012) in their study examined the relationship between return on assets (ROA), return on equity (ROE) and return on investment (ROI) ratios combined together and separately with share price of Jordanian public insurance companies during the period 2002-2007, using four regression models to test the hypotheses. Based on empirical evidence several conclusions were made. First, the three ratios ROA, ROE and ROI together showed a strong and positive relationship with market share prices of Jordanian public insurance companies thereby implying a strong explanatory power. Second, the results from the separate analysis showed a positive but low relationship between each of ROA and ROI ratios and market share prices of public Jordanian insurance companies.

However, the separate analysis showed no relationship between ROE ratio and market share prices of public Jordanian insurance companies thereby implying no explanatory power. Razdar and Ansari (2013); Kabajeh, Nu'aimat and Dahmash (2012) only considered profitability ratios of firms listed at the security exchange without consideration to other indicators of performance such as liquidity, solvency, operational efficiency and market performance relevant to other stakeholder groups. This study differs from the current one in the sense that it only considered firms in the insurance sector and one ratio category unlike the current which took into consideration all non financial sector firms as well as the five ratio categories.

2.4.2 Liquidity Ratio Model and Shareholder Wealth

A study by Anwaar (2016) where five independent variables were used with quick ratio being the only financial ratio in the liquidity category revealed that there was an

insignificant relationship between quick ratio and stock returns. A study by Arkan (2016) revealed that for industrial and service sector companies there was no significant statistical positive relationship between current ratio and stock price movement implying that the ability of current ratio to explain the stock price trends for listed companies was too poor. In the same study, results from investment sector companies revealed existence of a significant positive correlation between current ratio and stock price trend. Unlike the current study where multiple liquidity category ratios are developed into a liquidity model, Anwaar (2016) only considered quick ratio, while Arkan (2016) only considered current ratio under liquidity ratio category. However, a study by Khotimah and Murtagi (2015) on effect of current ratio, book value to market ratio and total asset turnover on stock price revealed that current ratio had a significant negative effect to stock return.

A study of the role of liquidity in pricing stock returns in the Hong Kong stock market by Lam and Tam (2011) yielded results that showed liquidity was an important factor for pricing returns after taking well-documented asset pricing factors into consideration. After comparing alternative factor models, the study concluded that the liquidity four-factor model (market excess return, size, book-to-market ratio, and liquidity) was the best model for explaining stock returns in the Hong Kong stock market. Lam and Tam (2011) employed the liquidity four-factor model to analyse how liquidity affects stock returns, rather than ratio analysis as is the case in the current study.

Abdulkadir (2016) conducted a study on the effect of leverage, liquidity, firm size, days accounts receivables, days accounts payables on financial performance, measured in terms of returns on equity and return on assets of non-financial firms listed at Nairobi Stock Exchange using panel data over a five year period covering the years 2009 to 2013. In these research regression coefficients were interpreted using the E-views

software output and the results revealed that liquidity had a positive effect on returns on assets and returns on equity in non-financial firms in Kenya. Abdulkadir (2016) used E-views software output to analyse the regression equation and considered returns on assets and returns on equity as the dependent variables unlike the current study that endeavours to use stata software in the analysis of the regression equation and market price of shares as the dependent variable.

2.4.3 Operational Efficiency Ratios Model and Shareholder Wealth

A study by Arkan (2016) established that for industrial sector companies there was a significant positive relationship between fixed assets turnover ratio and stock price movement and no significant relationship between total assets turnover ratio, current assets turnover ratio and stock price among industrial sector companies. The correlation of these ratios with stock price was weak thereby making their ability to explain stock price movements to be poor. Further, results obtained among the service sector companies revealed that total assets turnover ratio, fixed assets turnover ratio and current assets turnover ratio had no significant relationship with stock price trend making their ability to explain the stock price trends to be poor. As earlier noted, Arkan (2016) only considered industrial and service sector firms when assessing the effect of ratios on stock price however, the current study considered all sectors of non financial firms listed at the Nairobi Securities Exchange.

A study conducted by Khotimah and Mortagi (2015) on effect of current ratio, book value to market price and total asset turnover ratio on stock return revealed that total asset turnover ratio had a significant positive effect to stock return. Warrad and Omari (2015) conducted a study to establish the effect of activity ratios, total asset turnover ratio and fixed asset turnover ratio on performance of firms, whereby performance was

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measured in terms of return on assets (ROA), among 11 Jordanian industrial sector firms listed on the Amman Stock Exchange during the period 2008 to 2011. This study involved an examination of financial reports of the firms and a simple linear regression model used to test the relationship between dependent and independent variables. The research findings showed that total asset turnover ratio had a significant impact on ROA. Also, it was established that fixed asset turnover ratio had a significant impact on ROA. Finally, the results showed that activity turnover ratios; total asset turnover ratio and fixed asset turnover ratio jointly had a significant impact on performance of Jordanian Industrial sectors firms. Despite availability of various operational efficiency ratios as indicated by Robinson et al., (2009); Ross, Westerfield and Jordan (2010), Khotimah and Mortagi (2015) only considered total asset turnover ratio to establish the effect of operational efficiency ratios on stock return. Also, Warrad and Omari (2015) analysed the effect of operational efficiency ratios on return on assets of industrial sector listed firms, unlike the current study that considers effect of operational efficiency ratios on market price of shares.

Santosuosso (2014) conducted a study that examined how efficiency ratios, total asset turnover, inventory turnover, accounts receivable turnover and revenue per employee can help investors explore firm profitability, stock market value and operational cashflow, using multiple regression model. Data was obtained from a sample of 215 non-financial firms listed on the Italian Stock Exchange between 2004 and 2013. The results obtained revealed that, first, there was a significant association between efficiency ratios (i.e. total asset turnover, accounts receivable turnover and inventory turnover ratio) and measures of profitability such as EBITDA to asset ratio. However, other measures of profitability such as ROA and ROE registered a weaker correlation. Secondly, a strong correlation was observed between efficiency ratios, total asset turnover and accounts receivable

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turnover ratio and measures of cashflow (such as cashflow to assets, cashflow to debt and cash flow to accounts payable). The results also showed that the greater the total asset turnover, the higher the substitution of debt with accounts payable. Moreover, as accounts receivable turnover increases it allows firms to reduce accounts payable. Thirdly, the association between turnover ratios and measures of stock market value such as market price to book ratio, price to earnings ratio and market to sales ratio was found not to be significant. Revenue per employee had no explanatory power on stock market value. Santosuosso (2014) considered performance measures such as profitability, stock market value and operational cash flow as dependent variables and not market share price.

Hussain (2014) conducted a study that used cost to income ratio approach to examine the operational efficiency of a randomly chosen sample of 26 (constituted as 10 private and 16 public) commercial banks in India, by collecting data on earnings and expenses over a five year period covering 2007 to 2011. The objectives of the study were to explore a benchmark average cost to income ratio to be used to compare operational efficiency of banks based on their ownership and size. The results revealed that cost to income ratio had remained a popular tool for assessing operational efficiency of banks and on that basis banks with low cost to income ratio were likely to be more profitable. Size and ownership differences were found to have a greater significance on cost to income ratio of banks. The results also revealed that other factors such as balance sheet differences in form of capital fund, nature of deposits, technological development, level of decentralization and short communication channels influence the magnitude of cost to income ratio. The study by Hussain (2014) targeted both private and public commercial banks in India to examine how cost to income ratio approach could be used to assess operational efficiency. Hussain's study differed from the current one in the sense that

while its interest was in the private and public commercial banks, the current one concentrated on all sectors of non financial firms that were listed in the Nairobi Securities Exchange.

Sandeep (2012) conducted a study to examine the relationship between operating efficiency and solvency of five top companies in the food processing industries in India using convenience sampling method. The findings of the study revealed that the presence of high level operational efficiency does not necessarily imply satisfactory solvency level. This conclusion was based on the fact that there was an insignificant relationship between efficiency and solvency parameters among the sampled companies. The study by Sandeep (2012) only considered firms in the food processing industry without consideration to other sectors of firms listed at the securities market. Further, solvency was considered as the dependent variable under the study by Sandeep (2012), yet in the current study solvency is considered as an independent variable. The current study also differs from Sandeep's in the sense that it considered all sectors of non financial firms listed at the Nairobi Securities Exchange.

A study conducted by Abdulkadir (2016) revealed that both days accounts payable and days accounts receivable had a negative and insignificant effect on returns on assets and returns on equity respectively. These implies that days in accounts payable and days in accounts receivable do not affect profitability of non-financial firms listed at the Nairobi Securities Exchange in Kenya. Unlike the current study, Abdulkadir (2016) considered the effect of days in accounts payable and days in accounts receivable on financial performance and not share holder wealth measured by changes in market share prices of non financial firms listed at the NSE.

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2.4.4 Leverage Ratios Model and Shareholder Wealth

Results of a study by Arkan (2016) showed that for industrial sector companies listed at the Kuwait financial market a significant positive relationship existed between short term debt to equity ratio and stock price movement. As for service sector firms, the results showed that short term debt to equity ratio had no significant relationship with stock price trend and therefore its ability to explain the stock price movement was too poor.

However for investment sector companies, short term liabilities to equity ratio and total debt to equity ratio did not show any significant positive correlation with stock price. The correlation between these ratios and stock price was negative. These results are in agreement with a study conducted by Wijaya (2015) on listed Indonesian manufacturing companies during the period 2008-2013 whose results showed that debt-to-equity ratio does not have partial significant effect on stock returns.

It is apparent that Arkan (2016) gave no consideration to other sectors of firms listed at the securities exchange. Further Wijaya (2015) only considered debt-to-equity ratio while assessing the influence of leverage ratios on share price movement. The current study endeavours to consider all sectors of firms quoted at the Nairobi Securities Exchange while incorporating multiple leverage ratios to form a leverage ratios model whose appropriateness in influencing market share price is one of the objectives of this study.

Also Abdulkadir (2016) in the study on non financial firms listed at Nairobi Securities Exchange established that leverage had a statistically insignificant relationship with financial performance variables such as returns on equity and return on assets of listed non-financial firms in Kenya. Despite the fact that the study area covered by Abdulkadir (2016) is similar to the study area considered under this study, Abdulkadir considered the

relationship between leverage and financial performance while the current study considered the relationship between leverage ratios and market share price movement.

2.4.5 Market Performance Ratios and Shareholder Wealth

Lai and Cho (2016) conducted a study on the relationships between stock returns and corporate financial ratios based on a statistical analysis of corporate data from 17 firms listed at the Hong Kong Stock Market using a multiple regression analysis technique. The study involved comparing the effectiveness of a number of independent variables such as price-to-sales, market-to-book value, earnings per share, dividend yield and market capitalization against the dependent variable stock returns received by investors in stocks. In this study, Lai and Cho (2016) established that although literature suggested that there was a clear relationship and dependence between the variables price-to-sales, market-to-book value, earnings per share, dividend yield, market capitalization and stock returns, the results of their research proved inconclusive. As such, from their study it was not possible to categorically state which one of the financial metrics (price-to-sales, market-to-book value, earnings per share, dividend yield and market capitalization) under investigation was the most effective in influencing stock returns and as a result more useful to prospective investors.

Anwaar (2016) also analysed the effect of earnings per share, drawn from the market performance ratio category, on stock returns. The study established that earnings per share had a significantly negative impact on stock returns. Further, the results of a study by Arkan (2016) revealed existence of significant positive relationship between market to book value ratio and book value per share ratio, with stock price. However, market performance ratios such as EPS and price earnings ratio did not show a significant relationship with stock price. The implication was that the correlation of market

performance ratios and price earnings ratio with stock price was weak which meant that their ability to explain stock price trends was poor. In the case of investment and service sector companies, the results revealed significant positive relationship between price earnings ratio, market to book value ratio, book value per share and EPS ratio with stock price trend. A study by Khotimah and Murtagi, (2015) revealed that book value to market ratio had a significant positive effect to stock return. Wijaya (2015) conducted a study that indicated that partially dividend yield, earnings yield and book to market have significant effects on stock returns.

Menike & Prabath (2014) conducted a study on the impact of accounting variables such as dividend per share (DPS), EPS and book value per share (BVPS)) on stock price of a sample of 100 companies listed in the Colombo Stock Exchange (CSE), Sri Lanka, from 2008 to 2012. The study employed a single and multiple regression models. The results revealed that EPS, DPS, BVPS had a positive significant impact on the stock price in the CSE. The results further showed that EPS had least impact on the price in the CSE. Although DPS and BVPS showed significant impact on the share price, DPS was the most sensitive variable on stock price in the CSE.

Even though a number of studies have been conducted to establish the effect of market performance ratios on share price in advanced security markets (Anwaar, 2016; Arkan, 2016; Khotimah & Murtagi, 2015; Menike & Prabath, 2014), little effort has been made to establish the same among non financial firms in emerging security markets such as NSE in Kenya. The current study will expand the spheres of knowledge by establishing the effect of market performance ratios on share price in an emerging financial market such as NSE.

Umar and Musa (2013) examined the relationship between earning per share and stock prices by employing a panel of 140 firms out of a total population of 216 firms listed in Nigerian Stock Exchange (NSE) over the period from 2005 to 2009. Simple linear regression model was used to establish the relationship between stock price as dependent variable and earnings per share as independent variable. The results revealed that there was an insignificant relationship between earning per share (EPS) and stock prices of the firms quoted at the Nigerian Stock Exchange, implying that earnings per share (EPS) had no predictive power for the stock prices.

In Kenya Musyoki (2011) conducted a study on the predictability of accounting earnings (Earnings per share, Dividend yield, Price to earnings ratio) using changes in share prices of eleven companies listed at the Nairobi Stock Exchange in the finance and investment sector, for the period between the years 2001 and 2005. Share price, earnings per share, price earnings ratio and the dividend yield were changed into logarithm so as to standardize the data. The results indicate that there is a positive change in accounting earnings in relation to changes in the share price with some companies showing a strong positive correlation and others showing a weak correlation. Unlike the current study, Musyoki (2011) considered accounting earnings as the dependent variable and share price as the independent variable when analysing the relationship between market performance ratios and share price.

2.4.6 Joint Financial Ratios and Shareholder Wealth

According to Arkan (2016) investors rely on a set of financial ratios to predict stock price movement for each sector of companies listed at the Kuwait financial market. As such, they can confidently rely on financial statement analysis results when making financial and operational decisions. Also, Khotimah and Murtagi, (2015) in a study to

investigate the joint effect of current ratio, book value to market price ratio and total asset turnover ratio on stock price of Indonesian public listed companies belonging to food and beverage manufacture sector, concluded that financial ratios especially book value to market price ratio and total asset turnover ratio are useful in making investment decisions. The study by Khotimah and Murtagi (2015) considered the joint effect of financial ratios drawn from various ratio categories such as liquidity, profitability and operational efficiency.

A study by Stefano (2015) to identify whether simultaneously and individually financial ratios as measures of corporate financial performance had significant impact on stock return of property sector companies listed in Indonesia Stock Exchange produced results that showed a stronger relationship when ratios are considered simultaneously as compared to when the same ratios are considered individually. However, Stefano (2015) only selected one ratio for each ratio category. This is unlike the current study where multiple ratios are used for each category of ratios.

A study by Wijaya (2015) sought to establish the effect of financial ratios on stock returns using judgmental sampling method to collect data. The data collected was processed using PASW (Predictive Analytics Software) Statistics 18 and analysed using multiple regression analysis. The study revealed that return on assets, debt to equity, dividend yield, earnings yield and book to market simultaneously have a significant effect on stock returns.

Er and Vuran (2012) conducted a study to establish factors affecting stock returns of 64 manufacturing firms continuously quoted in Istanbul Securities Exchange (ISE) during the period of 2003-2007 using the Dynamic Panel Data Analysis Methods. The results obtained show that factors such as activity ratios, profitability ratios, stock performance

ratios, financial structure, oil prices, economic growth, exchange rate, interest rate and money supply can be used to explain the stock returns. The study by Er and Vuran (2012) considered both internal and external factors to establish their effect on stock price this is unlike the current study that only considers internal factors as measured by financial ratios.

Martani, Mulyono and Khairurizka (2009) examined the value relevance of accounting information in explaining stock return of listed companies in manufacturing industries actively trading in Indonesia Stock Market during the period 2003 to 2006. Profitability, liquidity, leverage, market ratio, size and cash flow were used as proxies of accounting information while cumulative abnormal return and market adjusted return were used as stock return variables. The study established that profitability, turnover and market ratios had significant impact on stock return. Martani, Mulyono and Khairurizka (2009) considered cumulative abnormal return and market adjustment return and not share price as is the case with the current study.

Taani and Banykhaled (2011) conducted research on the effect of accounting information using five categories of financial ratios on earnings per shares. They considered a sample of 40 Jordanian industrial sector companies listed on the Amman Stock Market. Under this study, multiple regression method and stepwise regression models were used. Profitability, liquidity, debit to equity, market ratio, size (derived from a firm's total assets) and cash flow from operation activities were used as the independent variables while earning per share was used as the dependent variable. The results obtained indicated that profitability ratio, return on equity (ROE), Market ratio, price to book value (PBV), cash flow from operation/sales ratio, leverage ratio and debt to equity ratio (DER) had significant impact on earnings per share. A part from profitability where only

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two ratios (net profit margin and return on equity) were used to establish level of profitability, other categories of ratios used only one ratio to establish level of liquidity, leverage and market performance. Unlike the current study where share price is the dependent variable, Taani and Banykhaled (2011) considered earnings per share as the dependent variable.

Irungu and Gatuhi (2013) conducted a study to establish whether financial performance indicators (total assets, net advances, total liabilities, deposits and profit before tax) influence market price of shares of banks listed at the Nairobi Securities Exchange in Kenya. The study employed a multiple regression model with market share price of commercial banks as the dependent variable and total assets, net advances, liabilities, customer deposits and profit before tax as the independent variables. The market price of shares was measured by use of annual average market price of shares for the period 2004 to 2011. The study revealed that a single financial indicator is not enough to influence the market price of shares. It is the combined influence of key financial indicators that have a significant effect on market price of shares. Irungu and Gatuhi (2013) in their study targeted banks and considered independent variables that are not financial ratios unlike the current study that targeted non financial firms listed at the NSE.

A study by Waswa, Ndede and Jagongo (2014) sort to analyze the determinants of dividend payout among firms listed at the Nairobi Securities Exchange belonging to the Agricultural sector. In this study, panel data estimation technique and multiple regressions analysis were used as they were considered best methods for dealing with micro-units in the economy. The results showed existence of a positive relationship between the two independent variables liquidity and profitability and dependent variable dividend payout. Further, the results showed a negative association between the

independent variable leverage and dividend payout. Unlike the current study which considered share price as the dependent variable, Waswa, Ndede, and Jagongo (2014) considered dividend payout as the dependent variable.

A study by Marangu and Jagongo (2014) set to establish the relationship between price to book value ratio as dependent variable and financial statement variables, dividend payout, return on total assets, return on equity, return per share, dividend per share and growth rate of earnings after tax as independent variables for companies quoted at the Nairobi Securities Exchange (NSE) comprising the NSE 20 share index. Multiple linear regression analysis was used to estimate the price to book value ratio. The study results indicated that there was a statistically significant relationship between price to book value ratio and financial statement variables return on total asset, return on equity, return per share and dividend per share for companies quoted at the NSE in Kenya. Return on total assets, return on equity and return per share all had a positive effect on price to book value ratio while dividend per share had a negative effect on price to book value ratio. Also, the result indicated that there was no statistically significant relationship between price to book value ratio and financial statement variables dividend payout ratio and growth in earnings after tax for companies quoted at the NSE in Kenya. The point of divergence between the study by Marangu and Jagongo (2014) and the current study is that the former considered price to book value as the dependent variable while the latter considered share price as the dependent variable.

2.4.7 Share Price as a Measure of Shareholder Wealth

Aroni, Namusonge and Sakwa (2014) carried out a study to examine the effect of dividend payout on investment in shares among Kenyan retail investors applying the behavioural finance theory. Primary data was collected from 311 respondents randomly

sampled from the population of 836,250 investors participating at the Nairobi Securities Exchange as at March 2013. The results revealed that dividend payout had a significant influence on decisions to invest in shares.

Gatua (2013) conducted a study that sought to identify factors that influence share prices of firms listed in various sectors at NSE by developing models for share price determination over a period of five years (2008-2012). Regression analysis was utilized to determine the effect of selected macroeconomic variables, Interest rate, Foreign exchange rate, Equity turnover, NSE 20-share index, NSE all-share index and lagged share price of stock on share prices (analysed in terms of change in magnitude) of seven companies in seven sectors at NSE. The results obtained showed that there is no one model that can be used to influence share prices at NSE. The results also showed that out of the seven companies studied only one had a model that could be used to determine share prices based on the variables under study. However, a study by Irungu and Gatuhi, (2013) used annual average market price to measure the market price of shares of listed commercial banks at the NSE. A study by Martani, Mulyono and Khairurizka (2009) established that financial ratios have a significant effect on the year-on-year change in stock price thereby providing evidence that different financial ratios have an effect on the market price of stocks in different security exchanges.

2.5 Critique of Existing Literature

Reviewed literature of researchers such as Arkan (2016); Stefano (2015) and Dita and Mortagi (2014) considered the effect of individual ratios; return on equity, return on assets, and net profit margin that belong to the profitability ratio category on stock prices of firms listed at the security exchanges. The three profitability ratios were found to have a significant strong positive relationship with market prices. It is also clear that authors

such Anwaar (2016); Arkan (2016); Stefano (2015) and Dita and Mortagi(2014) only considered the effect of profitability ratios on stock return of specified industry sector firms such as consumer goods companies, property sector and insurance companies that were listed on the security exchange. Research by Anwaar (2016); Kabajeh, Nu'aimat and Dahmash (2012) considered the combined effect of profitability ratios; return on assets, return on equity and return on investment on market share price. Other ratio categories were not considered in this study to establish their effect on share price of listed companies.

Research studies conducted to establish the relationship between liquidity category ratios and stock return have mainly used current ratio (Anwaar, 2016) and quick ratio (Arkan, 2016; Khotimah & Murtagi, 2015) as independent variables. Lam and Tam (2011) established that the liquidity four-factor model (market excess return, size, book-to-market ratio and liquidity) was the best model for explaining stock return in the Hong Kong stock market a view that differs from other authors who prefer financial statement ratios. In Kenya, an attempt to establish the effect of liquidity on firm performance considered return on assets and return on equity among non-financial firms and not stock market return as is considered in this study. It is also worth noting that information about return on assets and return on equity is not available to the general public as is the case with market share price and cannot be relied upon by the general public to make investment decisions.

From the literature reviewed, it is apparent that most researches on operational efficiency have only considered the effect of operational efficiency category ratios on other financial ratios such as return on assets (Warrad & Omari, 2015), EBITDA to asset ratio, return on assets, return on equity, measures of cash flow and measures of stock market

value (Santosuosso, 2014), solvency (Sandeep, 2012) and not stock return. Also evident from the literature is the observation that only a few of the leverage category of ratios have been considered by authors to provide a link relationship with stock return as evidenced by the works of Arkan (2016); Wijaya (2015) and Abdulkadir (2016). Other authors such as Taani and Banykhaled (2011) carried out studies whereby earning per share (EPS) ratio was used as the dependent variable and financial statement analysis ratios as independent variables.

In Kenya, researches conducted among firms listed at the NSE have only considered the relationship between financial statement analysis metrics as independent variable and other indicators of performance that are not market share price. For consideration, a study by Musyoki (2011) on firms listed at the NSE considered predictability of profitability related accounting earnings using changes in share prices rather than predictability of share prices using profitability accounting earnings as is the case in the current study.

Waswa, Ndede, and Jagongo (2014) carried out a study that only considered determinants of dividend payout among agricultural sector companies listed at the NSE. The study by Waswa, Ndede, and Jagongo (2014) differs from the current study in the sense that, the current study considers the effect of various measures of performance such as liquidity, leverage, operational efficiency, market performance and profitability on market price of shares. The study by Marangu and Jagongo (2014) only considered the relationship between price to book value ratio and other financial statement variables. A study by Abdulkadir (2016) considered the effect of liquidity, leverage and operational efficiency category of ratios on return on assets and return on equity among non financial firms listed at the NSE in Kenya.

From the empirical literature, it is evident that most researches on financial statement analysis ratios and market share prices have only covered more advanced security exchanges in developed countries with limited research being conducted on emerging securities markets in developing countries such as Kenya. Also, majority of researchers have used one ratio from profitability, liquidity, operational efficiency, leverage and market performance ratio category as independent variables. This research gap was also observed by Stefano (2015) who asserted that previous researches only used one representative ratio for each financial ratio category. This study will address the research gap through the use of multiple representative ratios from each financial ratio category. For each ratio category, representative ratios will be combined to form mathematical models whose appropriateness in influencing the dependent variable, stock market price, will be established. Establishment of the appropriateness of financial statement analysis ratios models in influencing the market share prices will widen the spheres of knowledge on ability of ratios computed using information available to the general investing public to influence shareholder wealth.

2.6 Conceptual Framework

Conceptual framework is a systematic or diagrammatic presentation of the relationship between variables that the researcher wishes to study (Kenya Institute of Management, 2009). According to Mugenda and Mugenda (2003), a conceptual framework is a hypothesized model that describes graphically or diagrammatically the concepts under study and their relationship. The researcher puts the conceptual model to test with an ultimate objective of establishing the significance of the proposed relationship.

Barry and Jamie (2011) have asserted that financial statement analysts and investors ought to consider variations in industry norms and practices before making judgments

about the effects of financial statement ratios on market price of shares. This is because many ratios are industry specific and cannot be interpreted to mean the same thing to all industries. Also, existence of different lines of business, variations in accounting methods and corporate strategy may lead to distortion of ratios.

According to Barry and Jamie (2011), the disclosure requirement in financial statements is dictated by international financial reporting standards and specific company Acts that govern reporting of financial information for specific industry firms. Variation in the level of disclosure should be considered when carrying out comparative financial statement analysis since it creates challenges during computation and interpretation of ratios. However, lack of uniformity problem in financial statements among firms has progressively been addressed through development, adoption and harmonization of global financial accounting standards for public limited companies quoted at security exchange markets (Barry & Jamie 2011).

Profitability ratios model;

Pre-tax margin, Net profit margin, Returns on assets, Returns on equity

Liquidity ratios model;

Current ratio, Net working capital to total assets

Operational efficiency ratios model;

 Working capital turnover, fixed asset turnover, Total asset turnover, Current asset turnover

Shareholder Wealth
Average rate of change in market price of shares

Leverage ratios model;

Debt to assets ratio, Debt to equity ratio, Financial leverage ratio, Total debt ratio, Long term debt ratio

Market performance ratios model;

Price earnings ratio, Price to sales ratio, Market price to book value ratio, Earnings per share, Dividend pay-out ratio, Dividends per share, Dividend

Industry Practice and norms, disclosure level required, corporate strategy and accounting methods

Intervening Variables

Figure 1: Conceptual Framework

The conceptual framework sought to establish the influence of financial statement analysis models on average rate of change in market price of shares (dependent variable) of non financial firms listed at the NSE in Kenya. The financial statement analysis

models studied were the profitability ratios model, liquidity ratios model, operational efficiency ratios model, leverage ratios model and market performance ratios model. The study sort to establish the influence of various independent variables for each of the financial statement analysis models on share holder wealth measured as average rate of change in market price of shares. The intervening variables in this relationship were industry practice and norms, disclosure level required, corporate strategy and accounting methods.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the methods and procedures that were used to carry out the study. The subsections considered by the researcher therefore include research design, population, target population, sampling frame, sampling techniques, sample size, data collection instruments, data collection procedure, data processing and analysis, validity and reliability, and ethical consideration.

3.2 Research Design

Research design refers to an arrangement of conditions that provide a blue print for collection, measurement and analysis of data (Kothari, 2013). It is the road map that the researcher uses in his or her endeavour to generate answers to the research problem. Research design guides the researcher in the various stages of research thereby enabling him or her to draw inferences concerning relations among variables under investigation and ultimately come up with solutions to the research problem (Nachmias & Nachmias, 2002).

For the purpose of this study, correlation research design was used. Correlation research design was chosen for a number of reasons. First, it enabled quantitative measures of variables to be studied without any attempt to influence them with an objective of determining whether they showed a consistent pattern of relationship. Second, it was preferred because it allowed the researcher to analyse how several variables either singly or in combination affected a particular phenomenon that was being studied (Mugenda and Mugenda, 2003). Confirmation of existence of a relationship made it possible to predict the outcome of the dependent variable given the value of one or more

independent variables. The main purpose of correlation research design was to establish that a relationship existed between two or more variables, establish the direction of the relationship, describe the nature or form (i.e. whether linear or non-linear) of the relationship and lastly describe in quantitative terms the degree to which variables were related (Kenya Institute of Management, 2009; Mugenda & Mugenda, 2003).

3.3 Location of the Study

This study fell under the study area of capital markets research in accounting. The location of the study was taken to be Nairobi city, Kenya, because the study covered non financial firms listed at Nairobi Securities Exchange whose headquarters is in Nairobi.

3.4 Population of the Study

Population refers to all the items under consideration in any field of inquiry (Kothari, 2013). Kenya Institute of Management (2009) refers to population as the totality of all possible values (measures, counts, subjects or respondents) of a particular characteristic for a specified group of objects. In a broader sense, population is considered as a complete set of individuals, cases, or objects, with some common observable characteristics that differentiate it from other populations (Mugenda & Mugenda, 2003). For the purpose of this study, the population comprised all firms listed at the Nairobi Securities Exchange (NSE) during the period January 2011 to December 2017. Table 1 shows the frequency distribution of all firms listed at the Nairobi Securities Exchange during the years 2011 to 2017. Appendix IV shows the list of all the firms listed at the Nairobi Securities Exchange as at 20th January 2018.

Table 1: Frequency Distribution of All Firms Listed at Nairobi Securities Exchange

Year	2011	2012	2013	2014	2015	2016	2017
Frequency of All Firms listed at the Nairobi Securities Exchange	57	58	61	64	64	65	64

Source: (Nairobi Securities Exchange, 2018 January 20th)

The population to which a researcher wants to generalize the results of a study is referred to as target population (Mugenda & Mugenda, 2003). The target population for this study was all non financial firms listed at the Nairobi Securities Exchange whose securities were actively traded during the period January 2011 to December 2017. This period (January 2011 to December 2017) was found to be relevant because some non financial firms had the beginning of the financial year 2012 appearing during the year 2011 while others had the end of the financial year 2016 appearing during the year 2017. The target population which was the same as the accessible population was presented in Table 2 below. Mugenda and Mugenda (2003) referred to accessible population as the proportion of the target population that was experimentally accessible. Further, they asserted that the rationale for defining and identifying accessible population should be based on some theory, previous studies or professional experience. Due to variations in the nature, classification and description of elements disclosed and scope of disclosure in published financial statements, it was not possible to compute certain categories of ratios for financial sector firms captured in this study. As a result, financial sector firms which were considered to comprise of firms in the banking sector (11) and insurance sector (6) were excluded from the study. Table 2 below shows the frequency distribution of various industry sectors and representative non financial firms listed at the NSE constituting target population of the study.

Table 2: Frequency Distribution of Various Industry Sectors and Respective Non Financial Firms Listed at Nairobi Securities Exchange

Sectors of Firms Listed at NSE	2011	2012	2013	2014	2015	2016	2017
Agriculture	7	7	7	7	7	7	7
Automobiles and Accessories	3	3	3	3	3	3	2
Commercial and Services	9	9	11	11	11	11	11
Construction and Allied	5	5	5	5	5	5	5
Energy and Petroleum	4	5	5	5	5	5	5
Investment Services	3	3	4	6	6	6	6
Manufacturing and Allied	7	7	8	9	9	9	9
Telecommunication	2	2	1	1	1	1	1
Real Estate Investment Trust	-	-	-	-	-	1	1
Non financial firms listed at the NSE	40	41	44	47	47	48	47

Source: (Nairobi Securities Exchange, 2017)

3.5 Sampling Frame

Sampling frame was considered to be that list, indexes, or other population records from which a small proportion of a population was selected for observation and analysis (Kenya Institute of Management, 2009). The sampling frame for this study comprised all non financial firms listed at the NSE during the period 2011 to 2017. This was because some non financial firms had their financial years 2012 and 2016 beginning in 2011 and ending in 2017 respectively. Table 2 above shows the total non financial firms listed at the NSE from various sectors during the period 2011 to 2017.

3.6 Sampling Techniques/Design and Sample Size

Sampling technique also referred to as sample design, has been defined by Kothari (2013) as a definite plan for obtaining a sample from a given population and usually determined before any data are actually collected. Due to the small population involved in this study, all non financial firms listed at the NSE were considered. Upon review of their financial statements, only those firms, whose published financial statements were

available, signed and their respective dates of announcement clearly determinable for all the financial years 2012 to 2016, were purposively selected to constitute the sample size. The number of all non financial firms listed at the NSE from which the sample size was drawn and the sample size used in this study for the respective financial years 2012 to 2016 was as shown in Table 3 below. Further, Appendix V and Appendix VI show the list of all the non financial firms listed at the NSE from which the sample size was drawn and the sample size used in this study respectively for the financial years 2012 to 2016.

Table 3: Frequency of Non Financial Firms Listed at the NSE and Sample Size for the Financial Years 2012 to 2016

Year ending	2012	2013	2014	2015	2016
Non financial firms listed at the NSE	41	44	47	47	48
Sample size of non financial firms listed at the NSE	36	36	36	36	36

Source: (Nairobi Securities Exchange, 2017)

A review of financial statements of non financial firms listed at the NSE established that out of all non financial firms listed at the NSE only 36 firms had their published financial statements available, signed and the dates of announcement of published financial statements clearly indicated throughout for the financial years 2012 to 2016. The 36 non financial firms listed at the NSE therefore constituted the sample size for this study. The financial statements of the 36 firms were reviewed for the 5 financial years 2012 to 2016 giving rise to 180 observations.

Financial sector firms were excluded from the sample because of their unique disclosure requirements and classification of financial statement elements a fact that made it difficult to compute common financial statement ratios. Further, one Real estate investment trust sector firm was also excluded because it had been quoted at the NSE for a period of seven months only during the financial year 2016.

3.7 Data Collection Instruments and Data Collection Method

Secondary data was used to carry out this study. According to Zikmund (1997) secondary data can be defined as data collected and recorded by someone else before being utilised to meet the present researchers' requirements. The secondary data was obtained from past published financial statements and records of daily market prices of shares of non financial firms listed at the NSE. Published financial statements of non financial firms listed at the NSE were obtained from the websites of individual companies, Capital Markets Authority website, websites of data vendors such as mystock.co.ke, dyerandblaironline.com/research, investor hand book 2015-2016 and investor hand book 2016-2017 that were readily accessed from the NSE website. In addition, records of daily market prices of shares were obtained from the NSE data service center. Therefore, no respondents or subjects were accessed by the researcher because the required data was already assembled and available to the public. Moreover, it was believed that investors often rely on information that is publicly available. On this basis, data collection instruments in the form of data collection matrix were used to extract information from published financial statements and daily market price of shares records for non financial firms listed at the NSE which constituted the sample size.

Review of daily market prices of shares was used as the data collection method. Review of daily market prices of shares from NSE data service center and published financial statements (obtained from individual companies, Capital Markets Authority website, websites such as dyerandblaironline.com/research, mystock.co.ke and the investor handbook 2015-2016 and investor handbook 2016-2017) was conducted so as to extract information for computing rate of change (ROC) in market price of shares within the event window period and computing the relevant financial statement ratios respectively. A review of the published financial statements of all non financial firms listed at the NSE

was done so as to determine the date of financial statement announcement. The date of financial statement announcement was taken to be the date when the financial statements were approved for issue by the board of directors of the non financial firm listed at the NSE. The date of financial statement announcement was used as a basis upon which an event window period was identified. An event window period of -20 days to +20 days after event date was used to cover the entire period of interest for each non financial firm listed at the NSE and included in the sample size.

3.8 Definition and Measurement of Variables

This section provided a description of how the dependent and independent variables used in this study were defined and measured.

3.8.1 Measurement of Shareholder Wealth

Rate of change (ROC) in market price of shares for firms that were listed at the NSE and included in the sample during the event window period was used as a measure of change in shareholder wealth for the individual firms. ROC refers to percentage increase or decrease in market price of shares over a given period of time. The average ROC (AROC) in market price of shares was established through determination of daily ROC in market price of shares of non financial firms listed at the NSE during the event window period (period around the date of financial statement announcement). According to Dita and Murtagi (2014), the formula for determining the daily ROC is expressed as:

$$ROC = \frac{Pt - Pt\text{-}1}{Pt\text{-}1}$$

Where: Pt= Market price of shares during day t

Pt-1= Market price of shares during day t-1

Average ROC in market price of shares was then determined through computation of the geometric mean of daily ROC in market price of shares for each individual non financial firm listed at the NSE and included in the sample size. Since it was not possible to compute geometric mean of negative figures, adjustments were made to accommodate the negative ROC figures. The adjustment involved addition of one to all the ROC figures thereby changing all the negative to positive figures. One unit was then deducted from the AROC figure to remove the effect of one that had been added earlier.

3.8.2 Determination of the Event Window

In accounting literature, the effect of earnings announcement on stock prices has received great attention (Kothari & Warner, 2007). According to Hauswald (2003), event studies measure the stock market's reaction to a major announcement by a publicly traded firm. Event studies have therefore become a major subject of capital markets research in accounting (Kothari & Warner, 2007). According to Dmitry et al., (2003), event window is the length of time over which the price reaction of a particular announcement is measured. Jeng (2015) reiterated that event studies with daily returns have event windows that cover a few days before the announcement (or event) date and some days after the announcement (or event) date in case the date of interest is known. This is in line with Hauswald's (2003) assertion that markets respond to new information that is event specific. They also respond to anticipated event information before it is officially announced because some market participants may have had inside information and already trading on it. According to Jeng (2015), parameter changes occur only in the event window and there after the parameters will return to their original levels.

According to Dmitry et al., (2003), despite extensive literature on event studies, less information has been documented about the length of time over which to measure price

reaction. Further, Jeng (2015) affirmed that one of the greatest difficulties in event studies is the determination of the event window, pre-event and post-event periods. Three possible approaches for determining the event window advanced by Dmitry et al., (2003) are fixed length approach, ad hoc approach and the rule approach (where a rule based on the trading behaviour of the stock during the potential event window is formulated). Fixed length event window approach where an arbitrarily predetermined number of days over which stock price react to an announcement such as publication of financial statements by listed firms, is followed in most academic event studies. This is in line with the findings by Dmitry et al., (2003) that apart from only one all the studies included in their survey used the fixed-length approach and had event windows ranging from two days to one year.

This study therefore used the fixed-length event window method and a window period of -20 trading days to +20 trading days to cover the entire period of interest. This approach is often considered desirable for studies that measure the reaction of a large number of stocks to an event and is therefore more applicable in cases where it might not be practical to determine event window length separately for each stock in the sample (Dmitry et al., 2003). Further, this decision was supported by the assertion by Jeng (2015) that earlier studies in capital markets research had used a period of -20 days to +20 days to cover the entire window period. Appendix II provides a summary of how the dependent and independent variables were operationalized, defined and measured in order to realize the study objectives.

3.9 Data Processing and Analysis

3.9.1 Data Processing

Data processing involved processes such as validation - ensuring that data collected was clean, correct and useful for computing the relevant ratios and average rate of change in market price of shares (Freedman, 2005), editing-detecting errors and omissions in the computation of ratios and average rate of change in market price of shares and where necessary correct the errors and omissions. It also entails classification – which involved grouping the ratios into homogeneous categories based on some common characteristics (Kothari, 2013) such as profitability ratios, liquidity ratios, leverage ratios, operational efficiency ratios and market performance ratios. The final step undertaken by the researcher in the data processing stage involved computation of profitability ratios, liquidity ratios, leverage ratios, operational efficiency ratios and market performance ratios used in the study.

Computation of daily rate of change in market price of shares during the event window period for individual non financial firms listed at the NSE for each financial year ending 2012 to 2016 and computation of the average rate of change in market price of shares for each non financial firm listed at the NSE using Microsoft Excel computer application were also undertaken.

3.9.2 Data Analysis

Panel data which is also known as longitudinal or cross-sectional time series data (Oscar, 2007) was analysed using descriptive statistical analysis and inferential analysis methods with the help of Strata software.

Descriptive Statistical Analysis

Descriptive statistics included mean, standard deviation and range of the financial statement analysis ratios and average rate of change in market price of shares of non financial firms quoted at the NSE.

Inferential Analysis

Inferential analysis involved development of financial statement analysis panel data multiple regression model using various independent variables derived from different ratio categories such as profitability ratios, liquidity ratios, leverage ratios, operational efficiency ratios and market performance ratios as well as evaluation of appropriateness of financial statement analysis panel data multiple regression models in influencing shareholder wealth.

Development of Financial Statement Analysis Panel Data Multiple Regression Models

Before the research hypotheses were tested, panel data multiple regression analysis models based on the Oscar (2007) panel data analysis models that expressed average rate of change (AROC) in market price of shares of non financial firms listed at NSE as a function of profitability, liquidity, operational efficiency, leverage and market performance ratios were developed. This phase of inferential analysis involved development of panel data multiple regression models, selection criteria of panel data regression model and choice of appropriate panel data regression model. According to Oscar (2007), panel data regression model is expressed as:

$Y_{it} = \beta_o + \beta_{k,}X_{k,it} + e_{it}$

Where: Y_{it}=Average rate of change in market price of shares

$\quad \beta_o$ = y intercept and constant of the regression equation

β_k = coefficient of the independent variable k

$X_{k,it}$ = independent variable k for firm i at time t

i - Stands for the non financial firms (cross-sectional units) and represents sample size such that i varies from i = 1...36.

t - Stands for the time period and represents the five financial year periods from 2012 to 2016 such that t varies from t = 1...5

k = number of independent variables in a model such that k=1...7 depending on the model

The profitability, liquidity, operational efficiency, leverage and market performance ratios models are expressed below:

Profitability ratios model:

$$AROC_{it} = \beta_o + \beta_1 PTM_{it} + \beta_2 NPM_{it} + \beta_3 RAO_{it} + \beta_4 ROE_{it} + e_{it}$$

Where PTM is pre-tax margin, NPM is net profit margin, ROA is return on assets and ROE is return on equity.

Liquidity ratios model:

$$AROC_{it} = \beta_o + \beta_1 CR_{it} + \beta_2 NWCTTA_{it} + e_{it}$$

Where CR is current ratio and NWCTTA is net working capital to total asset

Operational efficiency ratios model:

$$AROC_{it} = \beta_o + \beta_1 WCT_{it} + \beta_2 FAT_{it} + \beta_3 TAT_{it} + \beta_4 CAT_{it} + e_{it}$$

Where WCT is working capital turnover, FAT is fixed asset turnover, TAT is total asset turnover, and CAT is current asset turnover

Leverage ratios model:

$$AROC_{it} = \beta_o + \beta_1 DAR_{it} + \beta_2 DER_{it} + \beta_3 FLR_{it} + \beta_4 LTDR_{it} + \beta_5 TDR_{it} + e_{it}$$

Where DAR is debt to asset ratio, DER is debt to equity ratio, FLR is financial leverage ratio, LTDR is long term debt ratio and TDR is total debt ratio.

Market performance ratios model:

$$AROC_{it} = \beta_o + \beta_1 PER_{it} + \beta_2 PSR_{it} + \beta_3 MPTBVR_{it} + \beta_4 EPS_{it} + \beta_5 DPOR_{it} + \beta_6 DPS_{it} + \beta_7 DY_{it} + e_{it}$$

Where PER is price earnings ratio, PSR is price to sales ratio, MPTBVR is market price to book value, EPS is earnings per share, DPOR is dividend pay-out ratio, DPS is dividend per share and DY is dividend yield.

According to Oscar (2007) panel data allows the behaviour of entities to be observed over time. It also enables the researcher to control for variables that cannot be observed or measured such as difference in business practices across firms or variables that change over time but not across entities such as national policy, inflation, government regulation etc. Panel data accounts for individual heterogeneity. Therefore, based on these facts the panel data regression model was found to be the most appropriate for this study. Panel data regression models were developed for each of the ratio categories namely: profitability, liquidity, operational efficiency, leverage and market performance.

Selection Criteria for Panel Data Regression Models

Panel data refers to a data set that contains data from the same firms, countries, or people (cross-section units) observed over a period of time (time-series). Panel data is considered to be more advantageous because cross-sectional units are held constant over time making it possible to compare what happens across time more easily. Panel data allows the researcher to study changes across both time and cross-section units thereby making it a better method of detecting and measuring effects that cannot be observed in either cross-section or time-series data. Panel data takes explicit account of individual-specific heterogeneity and results in increased sample size compared to an ordinary cross-section or time-series resulting in more degrees of freedom (Halcoussis, 2005). Vijayamohanan (2016) noted that panel data is preferred because it results in more

variability, more information and less multicollinearity among the variables. It is associated with the possibility of controlling for individual or time heterogeneity a situation which the pure cross-section or pure time series data cannot control. Lastly, panel data also widens the scope for dynamic analysis.

According to Vijayamohanan (2016) there are three main types of panel analytic models these are: (1) pooled regression (constant coefficients) models, (2) fixed effects models, and (3) random effects models

Pooled Regression (Constant Coefficients) Models

Pooled regression refers to models whereby there is neither significant cross sectional nor significant temporal effect such that all the data is pooled and runs as an ordinary least squares (OLS) regression model with intercept 'a' and slope coefficients 'b' constant across companies and time. Note that for OLS regression in Stata, we need not initiate the command "xtset" panel data rather, the data analyst goes directly to OLS regression (Vijayamohanan, 2016).

Fixed Effects Models

The fixed effects models incorporate differences between cross-sectional units such as the different sectors of firms drawn from the NSE thereby allowing the intercepts to change. Although the intercepts are different for each cross-sectional unit, each intercept stays constant over time. The fixed effects model assumes the intercepts differ because the cross-sectional units (non financial firms listed at the NSE) have fundamentally different characteristics. Also, in the fixed effects model the error terms are assumed to be fixed (Halcoussis, 2005).

According to Vijayamohanan (2016) there are two models under the fixed effects model these are: (1) Fixed effects (Least Squares Dummy Variable (LSDV)) model and (2)

Fixed effects (Within-groups regression) model. Fixed effects (LSDV) model is associated with problems such as (1) it hosts too many regressors due to the use of dummy variables making the model numerically unattractive thereby infecting it with the problems of multicollinearity, (2) as the number of regressors increases, the degrees of freedom fall and the error variance rises leading to the possibility of Type 2 error in the inference (i.e. not rejecting a false null hypothesis), (3) inability of the model to identify the impact of time-invariant variables such as gender, ethnicity, and education. Fixed effects (Within-groups regression) model provides for a simple way of estimating the fixed effects model without using dummy variables. Despite the challenges associated with this model, it helps overcome problems associated with fixed effects (LSDV) model.

Random Effects Models

The random effects model also incorporates differences between cross-sectional entities by allowing the intercepts to change, however, the amount of change is random. The different intercepts for different cross-sectional units are considered to be randomly drawn from a normal probability distribution and therefore the differences between the intercepts occur because of random variations (Halcoussis, 2005). According to Vijayamohanan (2016), the fixed effects model assumes that the error terms are fixed and therefore the main problem with this model is specification with too many parameters resulting in heavy loss of degrees of freedom. This problem can be averted if the error terms are assumed to be random as is provided for by the random effects model.

Choice of the Appropriate Panel Data Regression Models

The Fixed effects model and random effects model were considered for use in the analysis for this study. The pooled regression (constant coefficient) model was not

considered for this study because of the following reasons: it assumes that the intercepts and slope coefficients are the same over time for all the cross-sectional units therefore, it would end up ignoring important differences that exist over time or between cross-sectional units; variability in industry sectors of firms listed at the NSE leading to non conformity with assumptions of OLS and the fixed and random effects models cater for heterogeneity or individuality among the cross-sectional units by allowing intercepts to change for each cross-sectional unit. In order to make the decision as to which model between fixed effects model and random effects model was appropriate in addressing the objectives of the study, the Hausman test was conducted (Halcoussis, 2005). Hausman test was used to test the suitability of fixed or random effects model in evaluating the appropriateness of panel estimates of financial statement analysis models. The model selected was subjected to further interpretation and evaluation regarding its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE while the one not selected was not subjected to further interpretation and evaluation. According to Oscar (2007), a significant Hausman statistic (i.e. if p-value is $\leq$ 0.05) would mean that the null test hypothesis that random effects model was the suitable estimation method be rejected in favour of alternative test hypothesis that fixed effects model was the suitable estimation method.

Evaluation of Appropriateness of Financial Statement Analysis Panel Data Multiple Regression Model in Influencing Shareholder Wealth

Evaluation of appropriateness of financial statement analysis panel data multiple regression models in influencing shareholder wealth was conducted using various inferential and diagnostic tests. Inferential and diagnostic tests involved testing of several test hypothesis.

Inferential Tests

Inferential test used to evaluate appropriateness of financial statement analysis panel data multiple regression models in influencing shareholder wealth included p-values, coefficients of panel regression models and interclass correlation (rho). P-values were used to establish whether the effect of financial statement analysis ratios on AROC in market price of shares was statistically significant. P-values were also used to assess the overall appropriateness of financial statement analysis ratio models in influencing shareholder wealth of non financial firms listed at the NSE. This was achieved through comparison of p-values obtained and the critical significance level of 0.05 percent set for this study.

Interclass correlation coefficient (rho) was used to measure how strongly units of the dependent variable (AROC in market price of shares) in the same group resemble each other. Interclass correlation coefficient provides an indication of level of serial dependence.

Coefficients of panel regression models were used to establish the magnitude and direction of relationship between AROC in market price of shares of non financial firms listed at the NSE and the respective financial statement analysis ratios.

Diagnostic Tests

Diagnostic evaluation of financial statement analysis models was conducted using tests such as Breusch and Pagan langrangian Multiplier (LM) test, Pasaran Cross-Sectional Dependence test, Heteroskedasticity test, Shapiro Wilk test of normality of distribution and test for stationary.

Breusch and Pagan langrangian Multiplier (LM) test was conducted with a view to establish suitability of either random effects regression model or simple OLS regression

model in evaluating the appropriateness of financial statement analysis models in influencing shareholder wealth of non financial firms listed at the NSE.

Pasaran Cross-Sectional Dependence Test: This test was conducted so as to establish whether the residuals were correlated across non financial firms listed at the NSE or whether there was cross-sectional dependence.

Heteroskedasticity Test: Was used to test whether error term of variables monitored over a specific period of time was non- constant. It is the opposite of homoskedasticity which refers to a condition in which the variance of the error term in a regression model is constant. Heteroskedasticity does not cause bias in the coefficient estimates. It only makes them less precise. Lower precision increases the likely hood that the coefficient estimates are further from the correct population value. The error term is a variable in a statistical model that is created when the model does not fully represent the actual relationship between the independent and dependent variable. It is an indication of the amount of variability in the dependent variable not explained by the predictor variable.

Testing Normality of Distribution of Variables

The Shapiro-Wilk test was conducted in order to establish whether data obtained for the dependent and independent variables was normally distributed. Normality test was conducted to establish whether population from which samples were taken was normally distributed in order to able to draw accurate and reliable conclusions. However, with large sample sizes (> 30 or 40) violation of normality assumptions does not cause major problems. Meaning, parametric procedures can still be conducted even when data are not normally distributed, because in large samples (> 30 or 40) the sampling distribution tends to be normal regardless of the shape of the data (Asghar & Saleh, 2012).

Testing for Stationarity

Time series data consists of observations which are considered to be random variables that can be described by some stochastic processes. In order to conduct statistical analysis on time series, the data should be stationary. A stationary process has statistical properties (mean, variance and covariance) that do not change over time. Therefore, it is important that one should first test a time series to see if it is stationary or not (Brockwell, 2011). In order to analyze the relationship between two or more time series variables data must be assumed to be sort of stable over time. A stochastic process that fails to satisfy these requirements is said to be a non-stationary process.

A non-stationary series can have strong influence on its behaviour and its properties thereby leading to spurious regressions (results that look good but valueless in reality). Various formal methods of testing for stationarity such as Dickey-Fuller (DF) unit root test, Augmented Dickey-Fuller (ADF) unit root test, Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests and the Phillips-Peron (PP) unit root test, Harris-Tzavalis, Breitun and Hadri LM test have been developed (Abdulkadir 2016). A combination of unit root test methods were conducted to determine the stationarity of market performance ratios of non-financial firms listed at the NSE. The criterion for decision making was to accept the outcome of majority of the test results to be the guideline.

3.10 Validity of the Instruments

Validity refers to the degree to which an instrument measures what it is supposed to measure while reliability refers to accuracy and precision of a measurement procedure. A measurement instrument is considered to be reliable if it provides results that are consistent (Kothari, 2013). To ensure validity, the researcher used standard formulas that have general acceptance in measuring certain dimensions of financial statement analysis

(such as profitability, liquidity, leverage, operational efficiency and market performance), among authorities in financial statement analysis as indicated from literature search.

3.11 Reliability of the Instruments

Reliability of research instruments ensures accuracy in data collection leading to minimization of error variance. Error variance refers to variability of measures due to random fluctuations whose basic characteristic is that they are self - compensating (Kenya Institute of Management, 2009). To ensure that reliability was achieved, the researcher used standard formulas generated using Microsoft Excel computer application to compute similar ratios from published financial statements for all the non financial firms listed at the NSE. Sound measurement should satisfy the test of validity and reliability.

3.12 Ethical Consideration

In order to fulfill the ethical requirements for undertaking any research inquiry, the researcher sought permission from National Commission for Science, Technology and Innovation (NACOSTI). The researcher also sought assurance from Nairobi Securities Exchange on authenticity and reliability of information contained in the investors hand book 2015-2016 and the data service centre. Other ethical issues considered during the study were maintaining privacy of non financial firms listed at the NSE from which data was collected and maintaining confidentiality of financial reports reviewed.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter provides details of research findings, interpretation of results and discussion of research findings. Data presentation, interpretation and discussion of research findings were organized on the basis of each of the five specific objectives of the study. The results were presented into subsections such as descriptive statistical analysis, inferential statistical analysis and diagnostic tests. The results obtained therefore formed the basis for discussion of the predictive ability of each of the financial statement analysis models that influenced market price of shares for non financial firms listed at the Nairobi Securities Exchange.

4.2 General Information and Demographic Data

The researcher sought to establish general information and demographic characteristics of firms listed at the NSE.

4.2.1 General Information

The general information obtained about the study population comprised of composition of various industry sectors listed at the NSE during the period 2012 to 2016 dates of financial year end and dates of publication of annual financial statements of firms listed at the NSE.

Composition of Various Industry Sectors of Firms Listed at the NSE During the Period 2012 to 2016

Table 4 below shows the various industry sectors of firms listed at the NSE, the number of firms in each industry sector for the financial years 2012 to 2016 and the total number of firms listed at the NSE for the financial years 2012 to 2016.

Table 4: Total Number of Firms Listed at the NSE in Each Industry Sector

S/No.	NSE Industry Sector	Firms in Each Industry Sector				
		2012	**2013**	**2014**	**2015**	**2016**
1	Agriculture	7	7	7	7	7
2	Automobile and Accessories	3	3	3	3	3
3	Banking	11	11	11	11	11
4	Commercial and Services	9	11	11	11	11
5	Construction and Allied	5	5	5	5	5
6	Energy and Petroleum	5	5	5	5	5
7	Insurance	6	6	6	6	6
8	Investment Services	3	4	6	6	6
9	Manufacturing and Allied	7	8	9	9	9
10	Telecommunication and Technology	2	1	1	1	1
11	Real Estate Investment Trust Sector	0	0	0	0	1
	Total Number of Firms Listed at the NSE	58	61	64	64	65

The results presented in Table 4 above indicate that between the years 2012 and 2016 there was a steady increase in listing of firms at the Nairobi Securities Exchange as indicated by the change in number of firms listed from a total 58 firms in 2012 to a total of 65 firms in 2016. This signified an increase of 12.1 % in the number of firms listed at the NSE. Also, observed from the results was the fact that the total number of industry sectors at the NSE increased from 10 sectors in 2012 to 11 sectors in 2016 signifying a 10 % growth in the number of industry sectors listed at the NSE. The most recently introduced industry sector was the Real Estate Investment Trust Sector which was introduced in the year 2016. Although some industry sectors such as Agriculture, Banking, Construction and Allied, Automobile and accessories, Real Estate Investment Trust Sector and insurance comprising 54.6 % of the total number of industry sectors had shown no change in the number of firms listed at the NSE during the years 2012 to 2016, indicating no growth Telecommunication and Technology industry sector comprising about 9.1 % of the total industry sectors had shown a decline in the number of firms

listed at the NSE. It was also established that 36.4 % of industry sectors listed at the NSE comprising of Commercial and Services, Energy and Petroleum, Investment services, and Manufacturing and Allied had shown an increase in number of firms listed at the NSE over the period 2012 to 2016.

Dates of Financial Year End and Publication of Annual Financial Statements of Firms Listed at the NSE.

Financial statements of non financial firms listed at the NSE were found to be having financial years ending on dates such as 29th February, 31st march, 30th June, 30th September, and 31st December for the years 2012 to 2016. This resulted in announcement dates of some non financial firms listed at the NSE whose financial years ended on 30th September 2016 to have their annual financial statements approved for issue by the board of directors during the month of January and February 2017. However, non financial firms listed at the NSE whose financial years ended on 31st December 2016 had their annual financial statements being approved for issue by the board of directors during the first six months of 2017 despite their financial years ending on 31 December 2016. Finally, it was further established that non financial firms announced their financial statements within a period of 6 months after the end of financial year with majority of these firms making announcement within a period of 3 months as stipulated by guidelines that govern listing of firms at the NSE.

4.2.2. Demographic Data

The researcher sought to establish the demographic characteristics of the study population during the period 2012 to 2016. The demographic characteristics investigated included number of financial firms listed at the NSE, number of non financial firms listed at the NSE, non financial firms listed at the NSE with and without complete

records and non financial firms with complete record expressed as a percentage of total non financial firms listed at the NSE. Table 5 shows the demographic characteristics of the study population.

Table 5: Demographic Characteristics of Study Population

Year Ending	2012	2013	2014	2015	2016
Financial firms listed at the NSE	17	17	17	17	17
Non financial firms listed at the NSE	41	44	47	47	48
Total number of firms listed at the NSE	58	61	64	64	65
Listed Non financial firms without complete records	5	5	5	5	6
Non financial firms Listed at NSE with complete records	36	39	42	42	42
Percentage of non financial firms listed at the NSE with complete record (Response rate)	87.8	88.6	89.4	89.4	87.5
Sample size	36	36	36	36	36

Information presented in Table 5 above shows that there was no change in the number of financial firms listed at the NSE over the years 2012 to 2016. Specifically, the number of financial firms listed at the NSE remained at a constant figure of 17 firms over the years 2012 to 2016. On the other hand, the number of non financial firms listed at the NSE generally increased from 41 firms in 2012 to 48 firms in 2016 implying a general increase of 17.1 % in the number of non financial firms listed at the NSE. It is also evident from the data in Table 4.2 that the number of listed non financial firms whose records did not have all the relevant information necessary for analysis remained constant at 5 firms from the year 2012 to the year 2015 and then increased to 6 firms in the year 2016. On the other hand, the number of non financial firms listed at NSE whose records had complete information ranged from 36 firms in 2012 to 42 firms in 2016. Expressed in form of percentages it shows that the percentage of non financial firms

listed at the NSE with complete record to the total number of non financial firms listed at the NSE varied from a minimum of 87.5 in 2016 to a maximum of 89.4 % in 2014 and 2015. According to Mugenda and Mugenda (2003), a response rate of 50% is considered to be acceptable for analysis and publishing of research findings.

Non financial firms listed at the NSE whose records were unavailable or did not have complete information over the period 2012 to 2016 were excluded from analysis. Only those non financial firms listed at the NSE whose records were available and had complete information necessary for analysis over the period 2012 to 2016 were considered for analysis leading to a sample size of 36 firms. The reasons for incomplete information were varied ranging from shares of the respective firm not trading at the NSE during the event period, published financial statements not being signed and approved for issue to the public leading to inability to identify the event date for that period from the published financial statements and also the unavailability of the published financial statements. These factors made it impossible to obtain the relevant information necessary for analysis leading to the exclusion of the affected firms.

4.3 Descriptive Statistics of Average Rate of Change in Market Price of Shares and Financial Statement Analysis Ratios

Descriptive statistics provide information on how data obtained in respect to the dependent and independent variables of interest relate to each other (Kenya Institute of Management 2009). Descriptive statistics were used to help summarize the overall tendencies of the data used. They also provided an understanding of how varied the financial statement analysis ratios and average rate of change in the market price of shares were in comparison to others (Creswell, 2012). The descriptive statistics used in

this study included measures of central tendency (measured using mean) and measures of dispersion (measured using standard deviation and range).

4.3.1 Descriptive Statistics of Profitability Ratios

In this section, the study sought to describe the characteristics of the independent variables pre-tax margin (PTM), net profit margin (NPM), return on assets (ROA) and return on equity (ROE) in terms of measures of central tendency and variability. The mean, standard deviation, minimum and maximum values of the profitability ratios are presented in Table 6 below together with the total number of observations used to derive the descriptive statistics.

Table 6: Descriptive Statistics of Profitability Ratio

Variable	Mean	Std Deviation	Minimum	Maximum	Observation (N)
PTM	0.0674829	0.3958314	-2.60464	1.263843	180
NPM	0.0840905	0.4521311	-1.543206	4.864481	180
ROA	0.0475503	0.1587272	-0.518895	1.431822	180
ROE	0.0958499	0.4884255	-2.321594	4.177741	180

The results presented in Table 6 above show that the non financial firms listed at the NSE had a mean pre-tax margin (PTM) ratio of 0.0675 and a standard deviation of 0.396. The minimum and maximum PTM ratio for non financial firms listed at the NSE was -2.60464 and 1.263843 respectively for all the 180 observations made during the period 2012 to 2016. The mean net profit margin (NPM) ratio was 0.0841 with a standard deviation of 0.4521. The minimum and maximum NPM ratio for non financial firms listed at the NSE was -1.5432 and 4.8645 respectively for all the 180 observations made during the period 2012 to 2016. Return on Assets (ROA) and Return on Equity (ROE) had a mean of 0.04755 and 0.09585, with associated standard deviation of 0.1587

and 0.4884 respectively for all the 180 observations made during the period 2012 to 2016. The results therefore show that the means of all the profitability ratios were positive and less than unit. This implies that on average the non financial firms listed on the NSE during the period 2012 to 2016, and which were used in this study, had a pre-tax return (earnings before Tax) of Kenya shillings 0.0675 in every Kenya shilling of sales, a net profit of Kenya shillings 0.0841 in every Kenya shilling of sales, a net income (return) of Kenya shillings 0.04755 in every Kenya shilling of average total assets invested and a net income (return) of Kenya shillings 0.0958499 in every Kenya shilling of average total equity invested by shareholders.

The value of ROE for non financial firms used in this study was found to be higher and almost double the value of ROA. These findings are in agreement with the assertions of Edmonds et al., (2016) that ROE is usually higher than ROA because of financial leverage. Further, according to Robinson et al., (2009), a company's sustainable growth rate is viewed as a function of its profitability which is measured in terms of ROE. A higher ROE of 9.585 % is an indication of an overall higher sustainable growth rate of non financial firms listed at the NSE. An estimate of a company's growth rate is a factor that is commonly used in equity valuation and selection of investment alternatives by shareholders. Financial leverage refers to a situation where firms use debt financing to increase the amount of assets available to a business beyond the amount of assets that are financed by owner's equity. As long as a firm's ROA exceeds its cost of borrowing (interest expense), the owners will earn a higher return on their investment in the company by using borrowed money (Edmonds et al., 2016).

Despite the fact that results obtained from non financial firms listed at the NSE had mean profitability ratios that were positive and less than unit indicating positive returns on

sales, assets and equity, some of the firms encountered negative returns on sales, assets and equity as indicated by the negative minimum values for all the profitability ratios. The worst observation was a negative pre-tax return of Kshs 2.60464 in every Ksh of sales, followed by a negative return of Kshs 2.321594 in every Ksh of equity invested by the shareholders. It is also apparent from the results obtained that some non financial firms listed on the NSE registered positive returns on sales, assets and equity that were greater than unit as indicated by the positive maximum values for all the profitability ratios. The best case was a positive net profit of Kshs 4.864481 in every Ksh of sales followed by a positive return of Kshs 4.177741 in every Ksh of equity invested by shareholders.

According to Edmonds et al. (2016), non financial firms that make up the Dow Jones Industrial Average had on average a ROA of around 9 percent, ROE of 26 percent, NPM of 12 percent in the recent years. Comparatively, results obtained for non financial firms listed on the NSE and used in this study showed that on average ROA had a mean of 4.76 percent, ROE had a mean of 9.58 percent and NPM had a mean of 8.41 percent. These results therefore clearly show that on average non financial firms listed on the NSE performed below the average standard as provided by the Dow Jones Industrial Average. This situation therefore signals the need for shareholders to take up active roles such as monitoring affairs of firms in which they have invested their wealth with an ultimate objective of improving performance.

4.3.2 Descriptive Statistics of Liquidity Ratios

According to Arkan (2016) liquidity ratios allow shareholders to establish resources at the disposal of the firm for meeting short-term debt obligations without liquidating long term assets. Under this section, the researcher sought to describe the characteristics of the

independent variables Current ratio (CR) and Net working capital to total asset (NWCTTA) that were used in the development of the liquidity ratios model. Liquidity ratios were used to evaluate the possibility of ability to meet short-term obligations as they fall due in influencing changes in the market price of shares of non-financial firms listed at Nairobi Securities Exchange. Table 7 shows the mean, standard deviation, minimum and maximum values of the liquidity ratios together with the total number of observations used to derive the statistics.

Table 7: Descriptive Statistics of Liquidity Ratios

Variable	Mean	Std Deviation	Minimum	Maximum	Observation (N)
CR	2.382025	3.143129	0.176521	20.7939	180
NWCTTA	0.085739	0.306960	-2.444156	0.8791	180

From the results presented in Table 7, it is apparent that non financial firms listed on NSE which formed the sample size for this study had a mean current ratio (CR) of 2.382025 and a standard deviation of 3.143129. The minimum and maximum current ratio observed for the non financial firms that were studied was 0.1765206 and 20.7939 respectively for the 180 observations during the period 2012 to 2016. On the other hand, the mean Net Working Capital to Total Assets (NWCTTA) ratio was 0.0857385 with a standard deviation of 0.3069597. Further, the minimum and maximum NWCTTA ratios for the non financial firms considered under this study were -2.444156 and 0.8790651 respectively. The results obtained therefore show that all the liquidity ratios had means that were positive with the mean of the current ratio being greater than unit (i.e. 2.382025) while the mean of the NWCTTA ratio was less than unit (i.e. 0.0857385). This implied that non financial firms that were studied on average had current asset values that were more than two times the value of current liabilities.

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Therefore, for these firms current liabilities were fully covered by the respective current assets.

The research results obtained from this study showed a high current ratio that was more than one unit implying that non financial firms listed at the NSE had a greater ability of meeting their short term obligations as they fall due. According to Robinson et al., (2009), a high current ratio implies that there is no reliance on operating cash flow and outside financing to meet short term obligations as they fall due. The results obtained therefore are in agreement with the findings of Abdulkadir (2016) that non-financial companies quoted at the NSE on average followed a conservative working capital financing policy by maintaining a higher level of current assets in relation to current liabilities leading to high level of working capital. The major part of working capital is financed by the long-term sources of funds such as equity and debentures.

Also, the results obtained from this study indicate that some of the firms listed on the NSE had current ratios that were less than unit as shown by the minimum current ratio of 0.1765206 indicating a tendency of these firms to drift towards inability to meet their short term obligations as they fall due through utilization of current assets. According to Rose, Westerfield and Jordan (2010) a low current ratio may not necessarily be a bad sign especially for a firm with a large reserve of untapped borrowing power.

Some firms included in this study had a current ratio of 20.7939 as shown by the maximum value of the current ratio. According to Rose, Westerfield and Jordan (2010), to a creditor, the higher the current ratio the better the credit rating level of the firm. Although a high current ratio may indicate liquidity on the part of the firm, it may also indicate inefficient utilization of cash and other short-term assets. Further, Edmonds et al., (2016) have reiterated that in recent years the average current ratio of non-financial firms that constitute the Dow Jones Industrial Average was approximately 1.29 which is

lower than the mean current ratio of 2.382025 obtained for non financial firms quoted at the NSE. The results of this study showed that net working capital frequently viewed as short-term liquidity (Rose, Westerfield & Jordan, 2010) constituted approximately 8.57385 percent (i.e. 0.0857385) of the total assets.

4.3.3 Descriptive Statistics of Operational Efficiency Ratios

This section provides a description of the independent variables Working capital turnover (WCT), Fixed asset turnover (FAT), Total asset turnover (TAT) and Current asset turnover (CAT) used to develop the operational efficiency ratios model for non-financial firms listed at Nairobi Securities Exchange. Operational efficiency ratios also referred to as asset utilization or activity ratios measure how efficiently a company manages it activities particularly how efficiently and effectively it manages its working capital and day-to-day tasks such as the collection of receivables and management of inventory (Robinson et al., 2009). In this study, operational efficiency ratios were used to evaluate the appropriateness of operational efficiency ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange. The mean, standard deviation, minimum and maximum values of the operational efficiency ratios together with the total number of observations used to derive the descriptive statistics are presented in Table 8 below.

Table 8: Descriptive Statistics of Operational Efficiency Ratio

Variable	Mean	Std Deviation	Minimum	Maximum	Observation (N)
WCT	6.495462	50.23395	-419.0175	300.245	180
FAT	2.286013	3.480082	0.0782827	23.64103	180
TAT	0.912523	0.9916048	0.0696378	5.890543	180
CAT	2.290105	1.698156	0.118984	8.65804	180

Table 8 shows that the non financial firms listed at the NSE had a mean working capital turnover (WCT) ratio of 6.495462 and a standard deviation of 50.23395. The minimum and maximum WCT ratio for non financial firms listed at the NSE was -419.0175 and 300.245 respectively for 180 observations that were made during the financial years 2012 to 2016. The mean fixed assets turnover (FAT) ratio was 2.286013 with a standard deviation of 3.480082. The minimum and maximum FAT ratio was 0.0782827 and 23.64103 respectively for non financial firms listed at the NSE and used as the sample in this study. The total assets turnover (TAT) ratio and the current assets turnover (CAT) ratio had means of 0.9125226 and 2.290105 respectively. The standard deviation for total assets turnover (TAT) ratio and current assets turnover (CAT) ratio was 0.9916048 and 1.698156 respectively while TAT ratio had the minimum and maximum value of 0.0696378 and 5.890543 respectively. CAT had the minimum and maximum value of 0.118984 and 8.65804 respectively.

A working capital turnover ratio of 6.495462 indicates that on average non financial firms listed at the NSE generate Kshs. 6.495462 of revenue for every Ksh. 1 of working capital invested. The results therefore imply that non financial firms listed at the NSE have a high level of efficiency in their utilization of working capital to generate revenue. The findings are in agreement with the assertions of Robinson et al., (2009) that a high working capital turnover ratio is an indication of greater efficiency in the utilization of working capital to generate revenue for the firm. Out of all the operational efficiency ratios considered under this study only working capital turnover ratio had a negative minimum value of -419.0175. This implies that some of the non financial firms listed at the NSE had negative working capital values that were as a result of their value of current liabilities being greater than their value of current assets. This fact resulted into negative working capital that eventually caused WCT to be negative. The maximum

working capital turnover of 300.245 shows that some of the non financial firms quoted at the NSE were able to generate Kshs. 300.245 in revenue for every Kshs. 1 invested in working capital. This result implied that these firms were very efficient in their utilization of working capital to generate revenue.

A mean fixed asset turnover ratio of 2.286013 indicates that non financial firms listed at the NSE are able to generate Kshs 2.286013 in revenue for every Kshs 1 invested in fixed assets. A high FAT ratio observed was an indication that non financial firms listed at the NSE were more efficient in their utilization of fixed assets to generate revenue for the firm. These findings were in agreement with the assertions of Robinson et al., (2009) that a high FAT ratio indicates more efficient use of fixed assets in the generation of revenue. The minimum FAT ratio of 0.0782827 reveals two issues about non financial firms listed at the NSE. The first is that all the non financial firms listed at the NSE were able to generate positive revenues of at least Kshs 0.0782827 for every Ksh 1 invested in fixed assets. The second is that the minimum FAT ratio of 0.0782827 shows that some of the non financial firms listed at the NSE were inefficient in generating revenue from their fixed assets. According to Robinson et al., (2009), a lower FAT ratio can be an indication of inefficiency, existence of capital intensive business environment or a new business that is not yet operating at full capacity. It could also entail other factors that are not efficiency related such as having newer assets that are less depreciated and reflected in published financial statements at a higher carrying value as compared to a firm with old assets that are more depreciated and as a result reflected at a lower carrying value. It is also evident from the results that some of the non financial firms listed at the NSE were very efficient in their operations to the extent of generating Kshs 23.64103 in revenue for every Ksh 1 invested in noncurrent assets as indicated by the maximum FAT ratio of 23.64103.

The mean total asset turnover (TAT) ratio of 0.9125226 shows that non financial firms listed at the NSE were able to generate on average Kshs 0.9125226 for every Ksh 1 invested in both noncurrent and current assets during the period 2012 and 2016. According to Edmonds et al., (2016), the TAT ratio for non financial firms used to compute the Dow Jones Industrial Average averaged 0.91 meaning that the annual sales revenue for these firms constitutes approximately 91 percent of the total assets. The results obtained from the study therefore show that the TAT ratio of 0.9125226 for the non financial firms listed at the NSE is similar to the Dow Jones Industrial Average of 0.91. The minimum TAT ratio of 0.0696378 shows that some of the non financial firms quoted at the NSE had a lower level of efficiency to the extent of generating as little as Kshs 0.0696378 of sales revenue for every Ksh 1 invested in total assets. The lower TAT ratio may have been as a result of other factors not related to efficiency such as inefficient working capital management given the fact that TAT ratio includes both noncurrent and current assets (Robinson et al., 2009).

The mean current assets turnover of 2.290105 shows that non financial firms listed at the NSE on average generated Kshs 2.290105 in sales revenue for every Kshs 1 of current assets. The research findings obtained from this study therefore imply that on average current assets were turned over 2.29 times during the financial years 2012 to 2016 by the non financial firms listed at the NSE. A high CAT ratio is an indication of a high intensity of the current asset usage by firms. It is therefore evident that firms listed at the NSE on average have good policies for inventory, accounts receivable, cash and other current assets management. A high CAT ratio would result in low amount of financial resources needed to maintain operations of firms while a low CAT ratio would indicate an increase in the amount of financial resources needed to maintain operations of firms. Therefore, the higher the CAT ratio the better the financial position of a firm.

4.3.4 Descriptive Statistics of Leverage Ratios

Leverage ratios provide a measure of ability of non financial firms listed at the NSE to meet their long-term obligations as they fall due. The leverage group of ratios provides an indication of amount of external resources used by firms to generate profits as compared to owners' resources (Gitman and Zutter (2012). Under this section, the researcher sought to describe the characteristics of independent variables debt to asset ratio (DAR), debt to equity ratio (DER), financial leverage ratio (FLR), long term debt ratio (LTDR) and total debt ratio (TDR) used in the development of the leverage ratios model. Leverage ratios were therefore used to evaluate the appropriateness of leverage ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange. Table 9 shows the mean, standard deviation, minimum and maximum values of leverage ratios together with the total number of observations for the financial years 2012 to 2016 used to describe the independent variables of the leverage ratios model.

Table 9: Descriptive Statistics of Leverage Ratios

Variable	Mean	Std Deviation	Minimum	Maximum	Observation (N)
DTAR	0.493677	0.315603	0.0453871	3.184231	180
DTER	1.264046	3.260935	-31.29073	15.37511	180
FLR	2.386063	2.157209	-8.324211	16.35206	180
TDR	0.502153	0.2282838	0.0750355	1.41929	180
LTDR	0.255346	0.2423935	-0.4667423	1.420766	180

The results presented in Table 9 show that non financial firms listed at the NSE during the financial years 2012 to 2016 had a mean debt to assets ratio (DTAR) of 0.493677, standard deviation of 0.315603 and minimum and maximum value of 0.0453871 and 3.184231 respectively for the 180 observations made during the event periods. The mean debt to equity ratio (DTER) was 1.264046 with a standard deviation of 3.260935. The

minimum and maximum debt to equity ratio observed was -31.29073 and 15.37511 respectively for non financial firms listed at the NSE. Non- financial firms listed on the NSE had a mean financial leverage ratio (FLR) of 2.386063, a standard deviation of 2.157209 with the minimum and maximum values observed being -8.324211 and 16.35206 respectively. On the other hand, total debt ratio (TDR) and long term debt ratio (LTDR) had means of 0.5021534 and 0.2553459 and standard deviations of 0.2282838 and 0.2423935 respectively. While non financial firms quoted at the NSE had total debt ratio ranging from a minimum value of 0.0750355 to a maximum value of 1.41929, the long term debt ratio had the minimum and maximum value of-0.4667423 and 1.420766 respectively for the 180 observations made during the financial years 2012 to 2016.

The mean debt to asset ratio (DTAR) of 0.493677 shows that non financial firms listed at the NSE on average had 49.3677 percent of their total assets financed using debt. According to Edmonds et al., (2016), the non financial firms that make up the Dow Jones Industrial Average reported that approximately 38 percent of their total assets were financed through debt. Generally, a low DTAR implies existence of low financial risk and a strong solvency level as a result (Robinson et al., 2009). The minimum DTAR of 0.045387 shows that some of the non financial firms listed at the NSE had 4.53871 percent of their total assets financed by debt while the maximum DTAR of 3.184231shows that some of the non financial firms listed at the NSE had 318.4231 percent of their total assets financed using debt. These results are partially in agreement with the assertions of Edmonds et al., (2016) that the non financial firms that constitute the Dow Jones Industrial Average had DTAR that ranged from a minimum of 5 percent upto a maximum of 85 percent. According to Robinson et al., (2009), a very high DTAR, similar to the maximum DTAR of 3.184231 observed for non financial firms listed at the

NSE, is an indication of existence of high financial risk. This therefore implies weak solvency level for the firms concerned.

According to Edmonds et al., (2016), equity in relation to DTER refers to stockholders' equity. Further, debt to equity ratio (DTER) provides a comparison of the proportion of debt financing in relation to financing by the owners thereby measuring the amount of debt per shilling of stockholders' equity. From the results of this study, the mean debt to equity ratio (DTER) of 1.264046 implies that on average non financial firms quoted at the NSE during the period 2012 to 2016 had Kshs 1.264046 of debt for every Ksh 1 of stockholders' equity. It implies that on average the amount of debt was 1.264 times the amount of shareholders equity for the non financial firms quoted at the NSE during the period 2012 to 2016. Edmonds et al., (2016) indicated that such a lower level of debt in comparison to shareholders equity provides greater financial security for the firm because it reduces the likelihood of bankruptcy. It also implies that non financial firms quoted at the NSE on average were financially strong enough to incur more debt financing and were therefore able to benefit from financial leverage.

The negative minimum debt to equity ratio observed was due to the negative value of total shareholders' equity brought about by existence of negative retained earnings component of shareholders equity that was encountered by some of the non financial firms listed at the NSE. On the other hand, the maximum DTER of 15.37511 shows that some of the non financial firms listed at the NSE encountered very high DTER equivalent to Kshs 15.37511 of debt for every Ksh of stockholders' equity. The results therefore are in agreement with the assertions of Robinson et al., (2009) that a higher DTER is an indication of weaker solvency level of the firm. Such a situation implies

lower level of financial security for the firm a result which can lead to increased likelihood of bankruptcy.

Financial leverage ratio (FLR) is described as average total assets divided by average total equity (Robinson et al., 2009). The mean FLR of 2.386063 is an indication that for every Kshs 1 of equity there is an investment of Kshs 2.386063 in average total assets by non financial firms listed at the NSE. This finding is in agreement with the assertions of Robinson et al., (2009) that a higher financial leverage ratio is an indication that a company is more leveraged in the sense of using debt and other liabilities to finance its total assets. The presence of a negative minimum FLR of -8.324211 is an indication that some non financial firms listed on the NSE had their average total assets being supported by losses incurred by some of the non financial firms. The negative minimum FLR obtained was as a result of the negative value of total shareholders' equity that was brought about by the presence of negative retained earnings component of shareholders equity encountered by some of the non financial firms listed at the NSE. On the other hand, the maximum FLR of 16.35206 is an indication that some of the non financial firms listed at the NSE encountered high FLR equivalent to Kshs 16.35206 of average total assets for every Ksh 1 of stockholders' equity.

The equity multiplier often expressed as 1 plus the debt to equity ratio or total assets divided by total equity has slight variations with FLR which is often expressed as average total assets divided by average total equity (Robinson et al., 2009). The finding that FLR for non financial firms listed at the NSE is 2.386063 or approximately 1 plus debt to equity ratio (i.e. 1 plus 1.264046 = 2.264046) is not a coincidence rather, it is in line with the assertions of Rose et al., (2010) that the equity multiplier is often equivalent to 1 plus the debt to equity ratio.

Total debt ratio takes into account all debts to all the creditors and is expressed as total assets minus total equity all divided by total assets (Rose et al., 2010). The mean total debt ratio of 0.5021534 implied that on average non financial firms listed at the NSE had Ksh 0.5021534 of debt for every Ksh 1 of total assets. These findings can also be taken to mean that for every Ksh 0.497847 of equity there is Ksh 1 of total assets. The minimum TDR of 0.0750355 indicates that some of the non financial firms listed at the NSE had as low as 7.50355 percent of total debts to total assets. The maximum TDR of 141.929 indicates that some non financial firms listed at the NSE had as high as 141.929 percent of total debts to total assets. These findings therefore imply that total debts to total assets for non financial firms listed at the NSE ranges from 7.50355 percent to 141.929 percent.

Long term debt ratio (LTDR), often expressed as long term debt divided by the sum of long term debt and total equity, measures the proportion of long term debt as a percentage of total capitalization (long term debt plus total equity) (Rose et al., 2010). The mean LTDR of 0.2553459 shows that non financial firms listed on the NSE have a mean of Ksh 0.2553459 of long term debt for every Ksh 1 of total capitalization. Therefore, long term debt constitutes 25.53459 percent of the total long term capital of non financial firms listed at the NSE.

The negative minimum LTDR of -0.4667423 shows that some non financial firms listed on the NSE had long term debts that were covered by losses that had been incurred in the current and or previous financial years. The negative minimum LTDR obtained was due to the negative value of total shareholders' equity that was due to negative retained earnings component of shareholders equity. Further, the maximum LTDR of 1.420766

implies that some of the non financial firms listed at the NSE had an average of Ksh 1.420766 of long term debt for every Ksh 1 of total capitalization.

4.3.5 Descriptive Statistics of Market Performance Ratios

Market performance ratios provide a measure of market value of a stock in terms of some company fundamental metrics such as earnings per share and dividends (Arkan, 2016). Market performance ratios therefore provide investors with insight on potential risks and returns associated with a particular firm listed at the NSE (Khotimah & Mortagi, 2015).

In this study, market performance ratios were used to assess the appropriateness of market performance ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange. This section therefore endeavours to provide statistical description of the independent variables price earnings ratio (PER), price to sales ratio (PSR), market price to book value ratio (MPTBVR), earnings per share (EPS), dividend pay-out ratio (DPOR), dividend per share (DPS) and dividend yield (DY) used in development of the market performance ratios model. Table 10 shows the mean, standard deviation, minimum and maximum values of market performance ratios for non financial firms listed on NSE.

Table 10: Descriptive Statistics of Market Performance Ratios for Non Financial Firms Listed at the NSE

Variable	Mean	Std Deviation	Minimum	Maximum	Observation (N)
PER	-156.315	2830.089	-37451.73	5731.003	180
DPOR	-0.437239	368.9494	-4857.553	528.203	180
PTSR	4057.68	16713.3	0	142556.2	180
MPTBVR	2.198115	5.987568	-4.49771	55.56247	180
EPS	16.7653	127.1308	-28.06	1697.23	180
DPS	3.153833	7.781975	0	49.5	180
DY	2.424473	2.820245	0	13.93728	180

Price earnings ratio (PER) is expressed as price per share divided by earnings per share and shows how much investors in common equity are willing to pay per Ksh of current earnings derived from their investments (Robinson et al., 2009). The mean PER of -156.315 indicates that on average common equity stocks for non financial firms listed at the NSE are selling at 156.315 times the value of current earnings. The negative mean PER was brought about by the fact that some non financial firms listed at the NSE had negative earnings figures that were significant causing the mean PER to be negative. It is also important to note that market share prices of firms cannot acquire negative figures in the ordinary sense. Therefore, the contributing factor towards realization of negative mean value for PER was the high amount of average net loss figure per share computed from information obtained from the financial statements of firms quoted at the Nairobi Securities Exchange. This is also supported by the fact that the minimum PER value obtained from the 180 observations was significantly negative. According to Edmonds et al., (2016), the low PER ratio obtained by non financial firms listed at the NSE is an indication of a market that is less optimistic about the growth potential of firms involved. The results obtained also indicate that non financial firms listed at the NSE had PER values that ranged from a minimum of -37,451.73 to a maximum of 5,731.003. The

maximum PER of 5,731.003 implies that for such firms investors in common equity were willing to pay as high as Ksh 5,731.003 for every Ksh 1 of current earnings derived from their investment. This implies that such investors were very optimistic about the growth potential of firms involved. These findings are in line with the assertions of Rose, Westerfield and Jordan (2010) that a high PER is often taken by investors to mean that a firm has significant prospects for future growth. Also, in a situation where a firm has no or almost no earnings the PER would also be quite large.

Dividend payout ratio (DPOR) is usually expressed as ordinary share dividends divided by net income attributable to ordinary shareholders and is a measure of percentage of earnings attributable to ordinary shareholders that a firm pays out in form of dividends to its ordinary shareholders (Robinson et al., 2009). The mean DPOR of -0.4372385 implies that on average financial firms listed at the NSE distribute approximately -43.72385 percent of their total earnings to shareholders. Since firms listed at the NSE cannot pay negative dividends in the ordinary sense, the negative mean figure observed for DPOR was due to the net income component of DPOR. It was observed from financial statements that of some of the non financial firms listed at the NSE had gone ahead to declare dividends to their members even after encountering net losses in their current year operation. This indicates that non financial firms listed at the NSE consider dividend payment an important aspect of trying to maintain shareholder value at the securities market. Also, negative mean DPOR can be attributed to the fact that some non financial firms listed at the NSE had negative earnings figures that were significantly huge leading to a mean DPOR that was negative. This observation is also supported by the observation that the minimum DPOR value of -4857.553 realized from the 180 observations was negative and significantly huge in comparison to the maximum DPOR value of 528.203. Also in support of the fact that negative mean DPOR is due to the

desire by non financial firms listed at the NSE to declare dividends to their members even after encountering net losses in their current year of operation so as to maintain shareholder value at the security market and the significantly huge negative earnings component of DPOR was Robinson et al., (2009), who asserted that, the amount of dividends per share tends to be relatively fixed because any reduction in dividends has been shown to result in a disproportionately large reduction in share price. Consequently, with the relatively fixed dividend amounts the dividend payout ratio tends to fluctuate with earnings. To further support this finding, Nwaobia, Alu and Olurin (2017) observed that shareholders of public listed firms usually have different expectations when it comes to dividend payment. While some shareholders prefer low dividend payout ratio (so as to enjoy future earnings in form of capital gain) others prefer high dividend payout ratio (in order to enjoy increased earnings now). As a result, it is quite a difficult task for listed firms to determine an optimum dividend payout ratio that meets the expectations of all the shareholders.

Price to sales ratio (PTSR) is expressed as price per share divided by sales per share (Robinson et al., 2009). PTSR is therefore a measure of how much common equity shareholders are willing to pay per Ksh of sales. According to Lai and Cho (2016), PTSR has in the recent years gained usage among investors for selecting stocks to invest in. It is considered by investors to be a very good indicator of a stock's popularity since it measures how much an investor is willing to pay for each dollar of sales. The results presented in Table 10 show that all non financial firms listed at the NSE involved in this study had a mean PTSR of 4057.68 with a standard deviation of 16713.3. The results further indicate that non financial firms listed at the NSE had PTSR values that ranged from a minimum of 0 to a maximum of 142,556.2 for all the 180 observations that were made.

The mean PTSR of 4057.68 indicates that on average common equity shareholders for non financial firms listed at the NSE are willing to pay Kshs 4,057.68 for every Ksh 1 realized in form of sales. Further, the results can also be interpreted to mean that common equity stocks for non financial firms listed at the NSE are selling at 4057.57 times the value of current sales per share. These findings are in agreement with the assertion of Lai and Cho (2016) that firms with high PTSR are very popular among investors despite the fact that they are unlikely to earn long-term above-average returns because of their high stock price in relation to sales. It was also observed that greater variability in PTSR existed among the non financial firms listed at the NSE. The high standard deviation for PTSR values is an indication of a low degree of uniformity of PTSR among non financial firms listed at the NSE. The high standard deviation value for PTSR reduces its reliability as a predictor of stock returns. This research finding was in agreement with the findings of Lai and Cho (2016) who asserted that in their research they were not able to categorically reveal in their research which of the financial ratios under investigation was most effective in influencing stock returns and as such most useful to prospective investors.

Market price to book value ratio (MPTBVR) is expressed as price per share divided by book value (net asset value) per share. The net asset value is identified as noncurrent assets plus current assets minus current liabilities (Robinson et al., 2009; Nairobi Securities Exchange 2017, December 20th). MPTBVR is an indicator of investor judgment about the relationship between a firm's required rate of return and its actual rate of return. A MPTBVR of one is an indication that the firms' future returns (profitability) are expected to be exactly equal to the returns required by investors in common equity. A MPTBVR greater than one would indicate that the future profitability of the company is expected to exceed the required rate of return by investors in common

equity, while a value of less than one indicates that future profitability of the firm is not expected to exceed the required rate of return by investors in common equity (Robinson et al., 2009). The results presented in Table 10 show that all non financial firms listed at the NSE had a mean MPTBVR of 2.198115 with an associated standard deviation of 5.987568. The results further indicate that non financial firms listed at the NSE had MPTBVR values that ranged from a minimum of -4.49771 to a maximum of 55.56247 for all the 180 observations made. A MPTBVR of 2.198115 observed implies that all non financial firms listed at the NSE had future returns (profitability) that were expected to be 2.198115 times the value of returns required by investors in common equity. This represents a margin of safety of more than a 100% between future returns and required rate of return among the shareholders of non financial firms listed at the NSE.

Since book value per share is an accounting number that reflects historical costs, MPTBVR compares the market value of the firms' investments to the cost of the investments. A MPTBVR of 2.198115 was considered to be high since the market value of non financial firms listed at the Nairobi Securities Exchange exceeded the required rate of return by investors in common equity by more than double. This is an indication of a high level of optimism among investors in non financial firms listed at the NSE over the period 2012 to 2016. These findings are in agreement with the assertions of Gitman and Zutter (2012) that a high MPTBVR is an indication that investors are optimistic about the firm's, future performance since the market value is higher than actual value of the firm.

Further, MPTBVR of 2.198115 meant that overall non financial firms listed at the NSE over the period 2012 to 2016 had been successful in creating value for their stockholders. However, the minimum MPTBVR of -4.49771 implies that some non financial firms

listed at the NSE had future profitability values that were not expected to exceed the required rate of return by investors in common equity. These results were in agreement with assertions of Rose, Westerfield and Jordan (2010) that MTBVR in recent years had appeared to be high relative to past values. For the 30 blue-chip companies that constituted the widely followed Dow-Jones Industrial Average, the historical norm had been a MPTBVR of about 1.7. However, in the recent times it has risen to about twice that size.

Earnings per share (EPS), ratio was expressed as net income minus preferred dividends everything divided by total number of ordinary shares outstanding (Robinson et al., 2009; Fama & French, 2001). According to Gitman and Zutter (2012), EPS is a measure of net income earned for each share of common stock. The results presented in Table 10 show that all non financial firms listed at the NSE had a mean EPS of 16.7653 with an associated standard deviation of 127.1308. Further, the results also indicate that non financial firms listed at the NSE had EPS values that ranged from a minimum of -28.06 to a maximum of 1697.23 for all the 180 observations made. It was therefore evident from the results that non financial firms listed at the NSE were able to generate on average Ksh 16.7653 in earnings for every share held by common equity shareholders. Islam, Khan, Choudhury, and Adnan, (2014) in their study on how EPS affect share price and firm value established that firms with strong EPS are likely to see the market price of their stocks rise. This higher stock price creates a positive impression of the firm's products in the minds of its customers resulting in greater demand, increased sales volume, higher earnings and ultimately higher EPS. On the other hand, low EPS might depress stock prices resulting in lower consumer confidence, low sales volume, and lower earnings and ultimately lower EPS. Therefore, the effect of EPS on share price and firm value is more of circular and not direct effect.

The high standard deviation of 127.1308 shows that there were wide variations in the amount of EPS realized by non financial firms listed at the NSE. The negative minimum EPS value of -28.06 was brought about by the fact that some non financial firms listed at the NSE had negative earnings figure brought about by the net losses realized. It is this net loss figure that resulted in a negative minimum EPS being computed from information obtained from the financial statements of non financial firms listed at the Nairobi Securities Exchange. The wide variations in EPS and negative minimum EPS realized by non financial firms listed at the NSE is in agreement with the assertions of Edmonds et al., (2016) that numerous opportunities exist among firms to manipulate EPS figures and therefore prudent investors should consider variables underlying net income computation when deciding how much weight to attach to earnings per share in the selection of investment opportunities. Also in agreement with this findings is Islam et al., (2014), who asserted that though EPS is widely considered to be the most popular metric for quantifying a firm's profitability the earnings component of EPS is often susceptible to manipulation, accounting changes and restatements. For that reason, free cash flow is considered by some analysts to be a more reliable indicator than EPS.

Dividend per share was defined as total dividends declared divided by the number of ordinary shares issued (Chepsakat, 2015). The results presented in Table 10 show that non financial firms listed at the NSE had a mean DPS of 3.153833 with an associated standard deviation of 7.781975. The results also indicate that non financial firms listed at the NSE had DPS values that ranged from a minimum of zero to a maximum of 49.5 for all the 180 observations made. The findings that some non financial firms listed at the NSE had zero DPS while others had as high as 49.5 DPS are in agreement with the assertions of Kiboi (2015) that firms with investment opportunities and growth prospects were very likely to shun from paying dividends to their shareholders leading to DPS ratio

of zero. Instead of paying dividends, such firms use the funds at their disposal to acquire new assets, start new projects or even go in to buy out other firms as part of their expansion strategies. Therefore, non financial firms listed at the NSE that registered low DPS ratio or DPS ratio of zero were likely to be part of the category that utilised their retained earnings as an internal source of investment funds.

Dividend yield is a market valuation ratio expressed as dividend per share divided by market price per share (Balakrishnan, 2016). Table 10 shows that all non financial firms listed at the NSE had a mean DY of 2.424473 with a standard deviation of 2.820245. Further, it is also apparent from the results that non financial firms listed on the NSE had DY values that ranged from a minimum of zero to a maximum of 13.93728 for all the 180 observations made. The results obtained indicate that non financial firms listed at the NSE had a return of Kshs 2.424473 on every shilling invested in securities. Further, there was low variability in returns on every shilling invested in securities among non financial firms listed at the NSE as reflected by the standard deviation of 2.820245. It is apparent from the results that some of the non financial firms listed at the NSE registered zero returns on every shilling invested in securities by shareholders.

4.3.6 Descriptive Statistics of Rate of Change in Market Price of Shares

The researcher sought to describe the characteristics of the dependent variable average rate of change in market price of shares of non financial firms listed at the NSE over the period 2012 to 2016 in terms of central tendency and variability measures. The mean, standard deviation, number of observations, minimum and maximum average rate of change in market price of shares of non financial firms listed at the Nairobi Securities Exchange are presented in Table 11 below.

Table 11: Descriptive Statistics of Average Rate of Change in Market Price of Shares

Variable	Mean	Std Deviation	Minimum	Maximum	Observation (N)
AROC	0.002869	0.0321816	-0.062869	0.414214	180

The results presented in Table 11 indicate that the mean average rate of change in market price of shares of non financial firms listed at the Nairobi Securities Exchange during the event period was 0.0028692 (0.28692 %). There was a standard deviation of 0.0321816 over the study period of five years from 2012 to 2016 financial years. The minimum average rate of change in market price of shares of firms listed at the Nairobi Securities Exchange was -0.062869 (-6.2869%) while the maximum was 0.414214 (41.4214 %). The positive mean average rate of change in market price of shares is an indication of general increase in the shareholder wealth upon announcement of financial statements results for non-financial firms listed at the Nairobi Securities Exchange and considered in this study during the event periods for the financial years 2012 to 2016. However, the observed minimum average rate of change in market price of shares of -0.062869 (-6.2869%) shows that the lowest rate of change in market price exhibited by non financial firms listed at the Nairobi Securities Exchange was a general decline in shareholder wealth. On the other hand, the maximum average rate of change in market price of shares was 0.414214 (41.4214%) indicating that some non financial firms listed at the Nairobi Securities Exchange exhibited a general increase in shareholder wealth of approximately 41.42% during the period 2012 to 2016.

These research findings were therefore in agreement with the results of a study conducted by Onyango (2018) that sought to establish the effect of exchange rate volatility on stock prices of companies listed at Nairobi Securities Exchange. It established that during the period 2007/2008, 2009/2010 and 2013/2014 stock prices at

the NSE generally exhibited an increasing trend that was caused by a gain in the market capitalization that impacted positively on the wealth of shareholders.

Further, the results of this study were also found to be in agreement with the research findings by Chui (2016) published by Dyer and Blair investment Bank, which established that Nairobi Securities Exchange All Share Index (NASI) often used to measure performance of security prices at the NSE portrayed positive total returns during the period 2008 to 2015. Further, the findings by Chui (2016) showed that the market value of shares traded had increased steadily during the period 2011 to 2015 signifying a rapid growth of the Kenyan securities market. More specifically the report established that during the period 2011 to 2015 the volumes of shares traded and the related number of transactions rose through 2011 to 2014 but declined in 2015. Therefore, shareholder wealth as indicated by market capitalization increased steadily from 2011 through 2014 but dropped in 2015. The overall total positive returns of the period 2008 to 2015 along with the general upward trend of most of the shareholder wealth metrics signified that the securities market in Kenya remained safe for investors who had taken a long term view with regard to their investments.

4.4 Inferential Statistics and Diagnostic Tests of Appropriateness of Financial Statement Analysis Models in Influencing Shareholder Wealth

The approaches to panel data analysis used for this study were the fixed effects model and random effects model. The Hausman test was conducted in order to decide which model between fixed effects model and random effects model was most suitable for evaluating the appropriateness of financial statement analysis models in influencing shareholder wealth of non financial firms listed at the NSE.

4.4.1 Appropriateness of Profitability Ratios Model in Influencing Shareholder Wealth

In order to establish the appropriateness of profitability ratios model in influencing shareholder wealth panel estimates of the model were determined first based on fixed effects regression then based on random-effects regression. A Hausman test was conducted to establish which model between fixed effects and random effects model was suitable for evaluating the appropriateness of profitability ratios models in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Profitability Ratios Model for Influencing Shareholder Wealth Based Fixed-Effects Regression

Based on fixed-effects regression model, the panel estimates for assessing appropriateness of profitability ratios model in influencing shareholder wealth were established and Table 12 below shows a presentation of the results obtained.

Table 12: Panel Estimates of Profitability Ratios Model Based on Fixed Effects Regression

AROC1	Coefficients	Std. Err.	T	P>|t|	[95% Conf. Interval]	
PTM	-0.000932	0.010602	-0.09	0.930	-0.021894	0.020030
NPM	0.004249	0.014735	0.29	0.773	-0.024883	0.033381
ROA	-0.012280	0.043599	-0.28	0.779	-0.098477	0.073918
ROE	-0.000517	0.006061	-0.09	0.932	-0.012499	0.011465
Constant	0.003209	0.002743	1.17	0.244	-0.002214	0.008632
Sigma u	0.01430279					
Sigma e	0.03273235					
rho	0.1603241	(fraction of variance due to u_i)				

Based on the results presented in Table 14 on Hausman test, the fixed effects model was found to be unsuitable for evaluating appropriateness of profitability ratios model in

influencing shareholder wealth of non financial firms listed at the NSE because the p value = 0.9195 obtained was greater than 0.05 set for this study resulting in the decision not to reject the null test hypothesis that random effects model was the suitable estimation method. Instead, alternative test hypothesis that fixed effects model was the suitable estimation method was rejected. The fixed effects model was therefore not subjected to further interpretation and evaluation in relation to its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Profitability Ratios Model for Influencing Shareholder Wealth Based On Random-Effects Regression

The panel estimates for profitability ratios model used in influencing shareholder wealth were also determined based on random-effects regression model and the results presented in Table 13 below.

Table 13: Panel Estimates of Profitability Ratios Model Based on Random Effects Regression

AROC1	Coefficients	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
PTM	0.004079	0.007908	0.52	0.606	-0.011422	0.0195796
NPM	-0.000334	0.011178	-0.03	0.976	-0.0222423	0.0215755
ROA	0.000651	0.030821	0.02	0.983	-0.059757	0.0610584
ROE	-0.000865	0.005475	-0.16	0.875	-0.011596	0.009867
Constant	0.002672	0.002588	1.03	0.302	-0.002401	0.007745
Sigma u	0.002112					
Sigma e	0.032732					
Rho	0.004149	(fraction of variance due to u_i)				

Based on the Hausman test results in Table 14 where p = 0.9195 realized was more than 0.05 set for this study, implying that there was enough statistical evidence not to reject the null test hypothesis. The random effects model was considered to be the most suitable model for assessing appropriateness of profitability ratios. The random effects

model presented in Table 13 was therefore chosen and subjected to further interpretation and evaluation regarding appropriateness of profitability ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The random effects regression model showed an interclass correlation of 0.41% (rho = 0.004149) which implied that 0.41 % of the total variance (between unit variance and within unit's variance) of AROC in the market price of shares (dependent variable) was due to differences across panels (between unit variance). Being a measure of how strongly units (AROC) in the same group (firm) resemble each other, the intraclass correlation coefficient of 0.41 % was an indication of low level of serial dependence.

The panel estimates in Table 13 show the relationship between profitability ratios PTM, NPM, ROA, ROE and AROC in market price of shares of non financial firms listed at the NSE. It was established that all the profitability ratios PTM, NPM, ROA and ROE did not have statistically significant influence on AROC in market price of shares as reflected by their respective p values 0.606, 0.976, 0.983 and 0.875 that were greater than 0.05 level of significance set for this study. The profitability ratios PTM and ROA had statistically insignificant positive influence on AROC in market price of shares of non financial firms listed at the NSE as indicated by their respective coefficient values 0.004079 and 0.000651. On the other hand, the profitability ratios NPM and ROE had statistically insignificant negative effect on AROC in market price of shares of the same non financial firms as indicated by their respective coefficients -0.000334 and -0.000865. These coefficients provide an indication of individual average effect of PTM, NPM, ROA and ROE over AROC in the market price of shares of non financial firms listed at the NSE when PTM, NPM, ROA and ROE change across time and between firms by one unit assuming the other ratios involved were held constant.

The results in Table 13 can also be interpreted to mean that for each additional unit of AROC the estimated average effect of PTM on AROC increased by 0.002672 +0.004079 units when the other profitability ratios NPM, ROA, and ROE were held constant in the profitability ratios model. Also, for each additional unit of AROC the estimated average effect of ROA on AROC increased by 0.002672 + 0.000651 units when the other profitability ratios PTM, NPM and ROE were held constant in the profitability ratios model. For the case of NPM that had negative coefficient of -0.000334, it was established that for each additional unit of AROC the estimated average effect of NPM on AROC in market price increased by 0.002672-0.000334 units when the other profitability ratios PTM, ROA and ROE were held constant in the profitability ratios model. Further, for the case of ROE that also had negative coefficient -0.000865 it was established that for each additional unit of AROC the estimated average effect of ROE on AROC in market price increased by 0.002672-0.000865 units respectively when the other profitability ratios PTM, NPM and ROA were held constant in the profitability ratios model.

The results in Table 13 on panel estimates of profitability ratios model based on random effects model indicate that none of the profitability ratios had statistically significant influence on AROC in market price of shares of non financial firms listed at the NSE. This was based on the observation that the corresponding p-values for all profitability ratios were greater than the significance level of 0.05 set for this study. Therefore, it was established that information provided by profitability ratios PTM, NPM, ROA and ROE was not statistically significant in influencing the choice of investment opportunities among shareholders of non financial firms listed at the NSE.

A study by Anwaar (2016) on firms listed at the London Stock Exchange during the period 2005 to 2014 established that ROA and NPM ratios had statistically significant positive impact on stock returns. This was partly in agreement with the findings of this study that ROA and NPM had statistically insignificant positive effect on AROC in market price of shares listed at the NSE. Also a study by Arkan (2016) established that ROA, ROE and NPM ratios had strong positive and significant relationship on stock price for investment and service sector of firms listed at the Kuwaiti financial markets over the years 2005–2014. Dita and Murtaqi (2014) in their study established that NPM had positive statistically significant impact on stocks return of consumer goods sector firms listed at the Indonesia Stock Exchange.

Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Profitability Ratios Model

The Hausman test was conducted to determine the suitable model between fixed effects model and random effects model. The null test hypothesis was that random effects model was the suitable estimation method and alternative test hypothesis was that fixed effects model was the suitable estimation method. A significant Hausman statistic (i.e. p-value $\leq$ 0.05) implied that the null test hypothesis that random effects model was the suitable estimation method be rejected in favour of alternative test hypothesis that fixed effects model was the suitable estimation method. Table 14 below shows the results obtained from the Hausman test.

Table 14: Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Profitability Ratios Model

Test Summary	Chi-Sq. Statistic	Chi-Square d.f.	Probability
Cross-section random	0.93	4	0.9195

The results in Table 14 indicate that Chi-square test statistic was 0.93 while p = 0.9195 implying no statistical significance at 5 percent significance level. The results implied that null test hypothesis was not to be rejected in favour of alternative test hypothesis. The random effects model was therefore taken to be the most suitable estimation model for establishing the appropriateness of profitability ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The Hausman test revealed that random effects were significant in the study as indicated by P = 0.9195 that was more than 0.05 significance level.

The choice of random effects model was an indication that there were unique time constant (invariant) attributes among non financial firms listed at the NSE that were as results of random variation and which did not correlate with the individual regressors. The selection of random effects model for evaluation of appropriateness of profitability ratios model in influencing shareholder wealth was in agreement with Abdulkadir (2016) who asserted that random effects model was adequate for drawing inferences about the whole population and not only the examined sample. The findings were also in agreement with assertions of Oscar (2007) that the rationale behind random effects model was that unlike the fixed effects model the variations across entities were assumed to be random and uncorrelated with the predictor or independent variables included in the model and as a result allowed for generalization of inferences beyond the sample.

Panel Estimates of Appropriateness of Profitability Ratios Model in Influencing Shareholder Wealth

The overall appropriateness of the profitability ratios model in influencing shareholder wealth of non financial firms listed at the NSE was established and the results obtained presented in Table 15 shown below.

Table 15: Overall Appropriateness of Profitability Ratios Model in Influencing Shareholder Wealth

R-sq:		corr(u_i, X) =	0 (assumed)	Wald chi2(4) =	0.38
Within =	0.0001	Number of observations =	180	Prob > chi2 =	0.9844
between =	0.0267	Number of groups =	36	theta =	0.010255
overall =	0.0022				

An assessment of the overall appropriateness of the profitability ratios model yielded a p-value of 0.9844 which was greater than the significance level of 0.05. These results indicate that all the profitability ratios used in this study had no combined effect on AROC in market price of shares listed at the NSE. Further, it was interpreted to mean that overall all the profitability ratios used in this study did not provide statistically significant information on changes that occurred in AROC in market price of shares listed at the NSE. Consequently, profitability ratios model was not appropriate in influencing shareholder wealth of non financial firms listed at the NSE.

Diagnostic Test for Evaluating Random Effects in the Profitability Ratios Model

The Breusch and Pagan Lagrangian multiplier (LM) test for random effects helped decide between random effects regression and simple OLS regression. The LM test yielded a p-value of 0.3788 which signified that there was no significant difference across the non financial firms listed at the NSE (it means that variances across the non financial firms listed at the NSE was zero or these firms had similar variances in their profitability ratios). As a result, there was no panel effect. Since there was no evidence of significant differences across non financial firms listed at the NSE, it was possible to run a simple ordinary least square (OLS) regression. These findings are in line with the assertions of Oscar (2007) that whenever no evidence of significant difference across entities exist the random effects regression is considered not to be appropriate and as a result one can run a simple OLS regression.

4.4.2 Appropriateness of Liquidity Ratios Model in Influencing Shareholder Wealth

Under this section, the researcher sought to establish the appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The panel estimates of the liquidity ratios model were determined first based on fixed effects regression model and then based on random-effects regression. The Hausman test was conducted to select between fixed effects regression and random effects regression model in relation to suitability in evaluating appropriateness of liquidity ratios models in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Liquidity Ratios Model for Influencing Shareholder Wealth Based on Fixed Effects Regression

The panel estimates for assessing the appropriateness of liquidity ratios model in influencing shareholder wealth based on fixed effects model were determined and the results obtained presented in Table 16 below.

Table 16: Panel Estimates of Liquidity Ratios Model Based on Fixed Effects Regression

AROC	Coefficients	Std. Err.	t	P>|t|	[95% Conf. Interval]	
CR	-0.0008905	0.0012024	-0.74	0.460	-0.0032673	0.0014864
NWCTTA	0.0060523	0.0115886	0.52	0.602	-0.0168563	0.0289608
Constant	0.0044715	0.003552	1.26	0.210	-0.0168563	0.0289608
Sigma u	0.01506562 (variance between units)					
Sigma e	0.03244441 (Variance within units)					
Rho	0.17737621 (fraction of variance due to u_i)					

Table 18 on Hausman test conducted to determine the most suitable model between fixed effects and random effects shows p =0.0184. The value p = 0.0184 was lower than 0.05 set for this study leading to a decision to reject the null test hypothesis that random effects model was the suitable estimation method. Instead, alternative test hypothesis that

fixed effects model was the suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE was accepted and subjected to interpretation and further evaluation. In addition, the fixed effects regression model shows that the intraclass correlation coefficient (rho) was 17.74% (rho = 0.17737621) which implied that 17.74 % of the total variance (between unit variance and within units variance) of AROC in the market price of shares (dependent variable) was due to differences across panels (between unit variance). Intraclass correlation coefficient was an indication of how strongly units in the same group (firm) resembled each other. On that basis, the intraclass correlation coefficient of 17.74 % was an indication of low level of serial dependence.

The t-values in Table 16 were used to test the hypothesis that each coefficient was not different from zero. This hypothesis was to be rejected in case the t-values turned out to be higher than 1.96 (for 95% confidence level). Since all the t-values turned out to be less than 1.96 (i.e. CR; t = -0.74 and NWCTTA; t = 0.52) null hypothesis was not rejected and all liquidity ratios were found not to have significant influence on AROC in market price of shares listed at the NSE. This was also supported by the fact that p-values for all the profitability ratios were greater than 0.05 (i.e. CR; p = 0.460 and NWCTTA; p = 0.602) set for this study. Oscar (2007) indicated that the higher the t-value the higher the relevance of an independent variable in influencing the dependent variable.

The liquidity ratio CR had a statistically insignificant negative effect on AROC in market price of shares of non financial firms listed at the NSE as indicated by its coefficient value of -0.0008905 and p= 0.460. On the other hand, NWCTTA ratio had statistically insignificant positive effect on AROC in market price of shares of non financial firms

listed at the NSE as reflected by the coefficient value of 0.0060523 and p=0.602. The coefficient of the liquidity ratio CR implied that for every additional unit of AROC in market price of shares of non financial firms listed at the NSE, the estimated average effect of CR on AROC increased by 0.0044715-0.0008905 units when NWCTTA was held constant in the liquidity ratios model. Also, for every additional unit of AROC in market price of shares of non financial firms the estimated average effect of NWCTTA was 0.0044715+0.0060523 units when CR was held constant in the liquidity ratios model. Based on the corresponding p values for liquidity ratios (ie CR; p= 0.460 and NWCTTA; p=0.602) that were greater than the significant level of 0.05 set for this study, it was established that none of these liquidity ratios had statistically significant influence on AROC in market price of shares of non financial firms listed at the NSE. Information provided by liquidity ratios CR and NWCTTA was not statistically significant in influencing investment decisions of shareholders of non financial firms listed at the NSE.

Although the results obtained revealed that CR had a statistically insignificant negative effect on AROC in market price of shares of non financial firms listed at the NSE, a study conducted by Khotimah and Murtagi (2015) established that current ratio had a statistically significant negative effect to stock return. The assertions of Khotimah and Murtagi (2015) were therefore partly in agreement with the findings of this study.

Panel Estimates of Liquidity Ratios Model for Influencing Shareholder Wealth Based on Random-Effects Regression

The panel estimates of liquidity ratios model for influencing shareholder wealth based on random effects regression were determined and the results presented in Table 17 below.

Table 17: Panel Estimates of the Liquidity Ratios Model Based on Random Effects Regression

AROC	Coefficients	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
CR	0.001367	0.0008654	1.58	0.114	-0.000329	0 .003063
NWCTTA	0.0044482	0.0088617	0.50	0.616	-0.012920	0.021817
Constant	-0.0007684	0.0030001	-0.26	0.798	-0.006649	0 .005112
Sigma u	0					
Sigma e	0.03244441					
rho	0 (fraction of variance due to u_i)					

Results in Table 18 on Hausman test conducted to determine the most suitable model between fixed effects model and random effects model gave rise to p =0.0184. Since p = 0.0184 was lower than 0.05 set for this study, a decision was made to reject the null test hypothesis that random effects model was the suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The random effects model was therefore not subjected to interpretation and evaluation concerning its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Liquidity Ratios Model

The Hausman test was conducted to determine which one among the two models random effects model or fixed effects model was most suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non-financial firms listed at NSE. The null test hypothesis for the Hausman test was that random effects model was the suitable estimation method while alternative hypothesis was that fixed effects model was the suitable estimation method. Table 18 below shows the results obtained from Hausman test to select between random effects model and fixed effects model in relation to suitability in evaluating the liquidity ratios model.

Table 18: Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Liquidity Ratios Model

Test Summary	Chi-Sq. Statistic	Chi-Square d.f.	Probability
Cross-section random	7.99	2	0.0184

The results in Table 18 show that the Chi-square test statistic was 7.99 with a p-value of 0.0184 which was significant at 5 percent level of significance by virtue of being less than 5% significance level. A significant Hausman statistic with a significant $p \leq 0.05$ meant that null test hypothesis that random effects model was a suitable estimation method be rejected in favour of alternative test hypothesis that fixed effects model was the suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange. Based on the outcome of the Hausman test as shown by p=0.0184 that was less than 0.05 significance level set for this study, the fixed effects model was considered to be suitable for evaluating the liquidity ratios model instead of random effects model. The fixed effects model was therefore considered to be the suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The fixed effects model was therefore utilized for further empirical evaluation and interpretation.

The findings are in agreement with the assertions of Oscar (2007) and Abdulkadir (2016). According to Oscar (2007), the fixed effects model controls for all time invariant differences between individuals and as a result the estimated coefficients of the fixed effects model cannot be biased because of omitted time invariant characteristics. Fixed effects model removes the effect of time invariant characteristics such as business practice of the firm, and as a result the net effect of the predictors on the outcome variable is assessed. Further, Abdulkadir (2016) indicated that fixed effects model takes

care of the unique attributes of individuals that are not the result of random variations and do not vary across time.

Panel Estimation of Overall Appropriateness of Liquidity Ratios Model in Influencing Shareholder Wealth

The overall appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE was determined and the results obtained presented in Table 19 below.

Table 19: Overall Appropriateness of liquidity Ratios Model in Influencing Shareholder Wealth

R-sq:	corr(u_i, Xb) =	-0.3690	F(2,142) =	0.30
within = 0.0042	Number of observations =	180	Prob > F=	0.7410
between = 0.2226	Number of groups =	36		
overall = 0.0086				

Table 19 above provides information on the overall appropriateness of liquidity ratios model in influencing shareholder wealth. The p-value of 0.7410 was used to evaluate the null hypothesis that all the coefficients of the liquidity ratios model were zero against the alternative hypothesis that at least one of the coefficients was not zero. The result obtained resulted in the decision of not rejecting null hypothesis in favour of alternative hypothesis. Consequently, it led to the decision that all the coefficients of the liquidity ratios model were zero. This decision meant that investors of non financial firms listed at the NSE did not utilize information provided by liquidity ratios CR and NWCTTA to influence changes in AROC in market price of shares of non financial firms listed at the NSE. Consequently, both CR and NWCTTA did not provide statistically significant information for influencing shareholder wealth. Therefore, it was evident that the liquidity ratios model was not statistically significant appropriate for influencing

shareholder wealth of non-financial firms listed at Nairobi Securities Exchange. To further support the outcome of inappropriateness of liquidity ratios model in influencing shareholder wealth of non-financial firms listed at NSE, was the value corr (u_i, Xb) = -0.3690 that meant that the errors u were correlated with the regressors in the fixed effects model of liquidity ratios. Also, since Prob > F = 0.7410 was found to be greater than 0.05 the liquidity ratios model was found not to be appropriate in influencing shareholder wealth of non-financial firms listed at NSE. This findings are in agreement with Oscar (2007) who asserted that Prob > F< 0.05 was an indication that a model was appropriate since it was a test for establishing whether all the coefficients in a model were different than zero.

Diagnostic Test for Liquidity Ratios Model

1. Testing for Cross-Sectional Dependence

According to Oscar (2007) cross-sectional dependence is more of an issue in macro panels with long time series of over 20 to 30 years than in micro panels with few years and large number of cases. Pasaran cross-sectional dependence test was used to test whether the residuals are correlated across entities. The null test hypothesis was that residuals across non financial firms listed at the NSE were not correlated or there was no cross sectional dependence. The results obtained indicated that Pasaran's test of cross sectional independence = 1.677 and P = 0.0935 that was more than the critical value of 0.05 set for this study. The null hypothesis was therefore not rejected leading to the decision that there was no cross sectional dependence or residuals were not correlated among non financial firms listed at the NSE.

2. Testing for Heteroskedasticity

The test for heteroskedasticity is available for the fixed effects model (Oscar, 2007). The null hypothesis was that there was homoskedasticity or variances of the error term were constant. The test resulted in p= 0.001 which was less than the critical value of 0.05 set for this study. The null test hypothesis was therefore not accepted leading to the decision that there was presence of heteroskedasticity or variances of the error term were not constant.

4.4.3 Appropriateness of Operational Efficiency Ratios Model in Influencing Shareholder Wealth

For the purpose of establishing the appropriateness of operational efficiency ratios model in influencing shareholder wealth, panel estimates of the operational efficiency ratios model were determined first based on fixed effects regression and then based on random-effects regression. Hausman test to establish which model between fixed effects and random effects regression was suitable for evaluating appropriateness of operational efficiency ratios models in influencing shareholder wealth of non financial firms listed at the NSE was performed.

Panel Estimates of Operational Efficiency Ratios Model for Influencing Shareholder Wealth Based Fixed-Effects Regression

The panel estimates for evaluating the appropriateness of operational efficiency ratios model in influencing shareholder wealth based on fixed-effects regression model were determined and the results presented in Table 20 below.

Table 20: Panel Estimates of Operational Efficiency Ratios Model Based on Fixed Effects Regression

AROC	Coefficient	Std. Err.	t	P>|t|	[95% Conf. Interval]	
WCT	1.75e-06	0.000056	0.03	0.975	-0.0001092	0.000113
FAT	0.000744	0.004246	0.18	0.861	-0.0076502	0.009138
TAT	-0.001470	0.025033	-0.06	0.953	-0.0509619	0.048021
CAT	-0.000500	0.007377	-0.07	0.946	-0.0150841	0.014084
Constant	0.003644	0.007377	0.36	0.720	-0.0164435	0.023732
Sigma u	0.014132					
Sigma e	0.032736					
Rho	0.157086 (fraction of variance due to u i)					

Results in Table 22 show the outcome of Hausman test conducted to establish suitability of either fixed effects model or random effects model in evaluating appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the NSE. Since $p = 0.9804$ obtained was higher than 0.05 set for this study, a decision was made not to reject the null test hypothesis that random effects model was suitable estimation method. Instead, the alternative test hypothesis that fixed effects model was suitable for assessing appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the NSE was rejected. The fixed effects model was therefore not subjected to further interpretation and evaluation in relation to its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Operational Efficiency Ratios Model for Influencing Shareholder Wealth Based on Random Effects Regression

The panel estimates for operational efficiency ratios model used in influencing shareholder wealth of non financial firms listed at the NSE based on random effects regression model were determined and the results presented in Table 21 below.

Table 21: Panel Estimates of the Operational Efficiency Ratios Model Based on Random Effects regression

AROC1	Coefficients	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
WCT	-0.00000288	0.0000488	-0.06	0.953	-0.0000984	0.0000927
FAT	-0.0009468	0.0029468	-0.32	0.953	-0.0067224	0.0048287
TAT	0.0061162	0.0133196	0.46	0.646	-0.0199898	0.0322222
CAT	-0.0031182	0.0031997	-0.97	0.330	-0.0093895	0 .003153
Constant	0.0066123	0.0041572	1.59	0.112	-0.0015358	0.0147603
sigma u	0.000984					
sigma e	0.032736					
Rho	0.000902	(fraction of variance due to u_i)				

The Hausman test in Table 22 of p = 0.9804 revealed that there was enough statistical evidence that random effects model was the suitable estimation method for evaluating the appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange. Further, Table 21 shows that the interclass correlation coefficient was 0.1% (rho =0.000902) which implied that 0.1% of the total variance (between units variance and within units variance) of AROC (dependent variable) in the market price of shares was due to differences across panels (between unit variance). As a measure of how strongly units (AROC) in the same group (firm) resemble each other, the intraclass correlation coefficient of 0.1 % was an indication of a very low level of serial dependence. The random effects model was therefore subjected to further interpretation and evaluation in relation to its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

The results in Table 21 on panel estimates of operational efficiency ratios model based on random effects model indicated that none of the four operational efficiency ratios WCT, FAT, TAT and CAT had statistically significant influence on AROC in market

price of shares of non financial firms listed at the NSE since their corresponding p-values of 0.953, 0.953, 0.646, and 0.330 respectively were greater than the significance level of 0.05 set for this study. Therefore, the study established that each of the operational efficiency ratios WCT, FAT, TAT and CAT had no significant influence on the changes that occurred in market price of shares and consequently shareholder wealth of non financial firms listed at the NSE.

The operational efficiency ratios WCT, FAT and CAT had statistically insignificant negative influence on AROC in market price of shares as observed from their coefficient values -0.00000288, -0.0009468 and -0.0031182 respectively. The operational efficiency ratio TAT had statistically insignificant positive effect on AROC in market price of shares as indicated by its coefficient value of 0.0061162.

For each additional unit of AROC in market price of shares, the estimated effect of WCT on AROC increased by 0.0066123-0.0000028 units when the other operational efficiency ratios FAT, TAT and CAT were held constant in the operational efficiency ratio model. Also, for each additional unit of AROC in market price of shares the estimated effect of TAT on AROC increased by 0.0066123 + 0.0061162 units when the other operational efficiency ratios WCT, FAT and CAT were held constant in the operational efficiency ratios model. It was also evident from the panel estimates of random effects operational efficiency ratios model that none of the operational efficiency ratios WCT, FAT, TAT and CAT had statistically significant influence on AROC in market price of shares of non financial firms listed at the NSE since their respective p- values 0.953, 0.953, 0.646, and 0.330 were greater than 0.05 significant level allowed for this study. Therefore, information provided by operational efficiency ratios WCT, FAT, TAT and CAT was

not statistically significant in influencing the investment decisions of shareholders of non financial firms listed at the NSE.

The findings of this study were in line with assertions of Arkan (2016) that there was no significant relationship between TAT, CAT ratios and stock price among industrial sector companies listed at the Kuwait financial market. Further, the findings of this study were in disagreement with Arkan (2016) who established that there was a significant positive relationship between FAT ratio and stock price movement for industrial sector companies. Further, Arkan (2016) established that TAT, FAT and CAT ratios had no significant relationship with stock price trend among service sector companies listed at the Kuwait financial market making their ability to explain stock price trends to be poor.

Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Operational Efficiency Ratios Model

In order to select the most suitable model between random effects model and fixed effects model, the Hausman test was performed. The null test hypothesis was that random effects model was the suitable estimation method while the alternative test hypothesis was that fixed effects model was the suitable estimation method. A significant Hausman statistic with a significant probability < 0.05 implied that the null test hypothesis that random effects model was the suitable estimation method should not be accepted and instead the alternative test hypothesis that fixed effect model was the suitable estimation method be accepted instead. The results obtained from the Hausman test are presented in Table 22 below.

Table 22: Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Operational Efficiency Ratios Model

Test Summary	Chi-Sq. Statistic	Chi-Sq d.f.	Probability
Variation a cross entities is random	0.43	4	0.9804

The results in Table 22 above show that the Chi-square test statistic was 0.43 with a significant p = 0.9804 which was not significant at 5 percent level of significance. The results obtained therefore indicated that the null test hypothesis that random effects model was the suitable estimation method was not rejected and instead the alternative test hypothesis that the fixed effects model was the suitable estimation method for evaluating the liquidity ratios model was rejected. Based on the Hausman test results of P = 0.9804 which was more than 5% significance level, the random effects model was taken to be the suitable estimation model for evaluating the appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange. Selection of the random effects model allowed for drawing of inferences about the whole population and not just the examined sample only (Abdulkadir, 2016). The use of random effects model was also supported by Oscar (2007) who indicated that random effects model assumed that variations across entities were random and uncorrelated with independent variables included in the model, allowing for generalization of inferences beyond the sample.

Panel Estimates of Overall Appropriateness of Operational Efficiency Ratios Model in Influencing Shareholder Wealth

The overall appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the NSE was determined and the results obtained presented in table 23 below.

Table 23: The Appropriateness of Operational Efficiency Ratios Model in Influencing Shareholder Wealth

R-sq:	corr(u_i, X)= 0 (assumed)	Wald chi2(4) = 1.43
within = 0.0000	Number of observations = 180	Prob > chi2 = 0.8386
between = 0.0497	Number of groups = 36	theta = 0.00224882
overall = 0.0082		

Table 23 provides information on overall appropriateness of operational efficiency ratios model in influencing shareholder wealth. A significant p-value < 0.05 was used to assess the null hypothesis that all the coefficients in the operational efficiency ratios model were zero against the alternative hypothesis that at least one of the coefficients was not zero. The p-value of 0.8386 obtained led to the decision of not rejecting the null hypothesis in favour of the alternative. Consequently, the results obtained implied that investors of non financial firms listed at the NSE did not utilize information provided by operational efficiency ratios WCT, FAT, TAT and CAT in the selection of investment alternatives. Therefore, WCT, FAT, TAT and CAT ratios had no predictive power on AROC and consequently shareholder wealth. Therefore, it was established that the operational efficiency ratios model did not have statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at Nairobi Securities Exchange.

Diagnostic Test for Evaluating Operational Efficiency Ratios Random Effects Model

The Breusch and Pagan Lagrangian multiplier (LM) test was used to test the hypothesis that variance across non financial firms listed at the NSE was zero (no panel effect). The LM test resulted in $p = 0.3394$ hence failed to reject the null test hypothesis and led to the decision that random effects model was not appropriate in assessing appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial

firms listed at the NSE. The actual p = 0.3394 was greater than the critical p = 0.05 set for this study which implied that there was no significant difference across non financial firms listed at the NSE (variances across the non financial firms listed at the NSE was zero or these firms had similar variances in their operational efficiency ratios). Since there was no evidence of significant differences across non financial firms listed at the NSE, there was no panel effect and it was therefore possible to run a simple ordinary least squire (OLS) regression. The results obtained were in agreement with assertions of Oscar (2007) that lack of evidence of significant difference across entities is an indication that random effects regression was not appropriate and as a result an ordinary least squire (OLS) regression could be performed.

4.4.4 Appropriateness of Leverage Ratios Model in Influencing Shareholder Wealth of Non Financial Firms Listed at the NSE

In order to establish the appropriateness of leverage ratios model in influencing shareholder wealth, panel estimates of leverage ratios model were determined first based on fixed effects regression and then based on random-effects regression. A Hausman test was conducted to select the most suitable model between fixed effects and random effects regression model for evaluating the overall appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Leverage Ratios Model for Influencing Shareholder Wealth Based on Fixed Effects Regression

The panel estimates for assessing the appropriateness of leverage ratios model in influencing shareholder wealth based on fixed-effects regression were established and the results obtained presented in Table 24 below.

Table 24: Panel Estimates of Leverage Ratios Model Based on Fixed Effects Regression

AROC1	Coefficient	Std. Err.	t	P>|t|	[95% Conf. Interval]	
DTAR	-0.0002846	0.0109866	-0.03	0.979	-0.022007	0 .021438
DTER	-0.0000364	0.0009254	-0.04	0.969	-0.00187	0.001793
FLR	0.000224	0.0015308	0.15	0.884	-0.002803	0.003251
TDR	-0.000379	0.0252092	-0.02	0.988	-0.05022	0.049464
LTDR	-0.0054632	0.0259658	-0.21	0.834	-0.056802	0.045876
Constant	0.0041066	0.0127068	0.32	0.747	-0.021017	0.029230
Sigma u	0.014142					
sigma e	0.032853					
Rho	0.156322	(fraction of variance due to u_i)				

The Hausman test conducted to establish the most suitable model between fixed effects model and random effects model for evaluating appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE resulted in p = 0.9719 as presented in Table 26. The null test hypothesis that random effects model was the suitable estimation method was not rejected since the p = 0.9719 obtained was higher than 0.05 set for this study. As a result, the alternative test hypothesis that fixed effects model was suitable for assessing appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE was rejected. Decision was therefore made not to subject the fixed effects model to further interpretation and evaluation as regards its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Leverage Ratios Model in Influencing Shareholder Wealth Based on Random Effects Model

The panel estimates for assessing appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE were also established based on random effects model and the results presented in Table 25 below.

Table 25: Panel Estimates of Leverage Ratios Model Based on Random Effects Regression

AROC1	Coefficients	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
DTAR	-0.0015765	0.0095993	-0.16	0.870	-0.0203909	0.0172378
DTER	-0.0000523	0.0007633	-0.07	0.945	-0.0015483	0.0014438
FLR	-0.0002376	0.0012877	-0.18	0.854	-0.0027614	0.0022863
TDR	-0.0172487	0.0147547	-1.17	0.242	-0.0461674	0.0116699
LTDR	0.0052603	0.0130448	0.40	0.687	-0.0203071	0.0308276
Constant	0.0115987	0.0060726	1.91	0.056	-0.0003033	0.0235008
Sigma u	0					
Sigma e	0.03285295					
rho	0 (fraction of variance due to u_i)					

The Hausman test results in Table 26 showed p = 0.9719 that was significant at 5 percent level of significance. This implied that there was significant statistical evidence for selecting random effects model for use in evaluation of appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The random effects model was therefore subjected to further interpretation and evaluation as regards its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

From the results in Table 25 on panel estimates of leverage ratios model based on random effects regression, none of the five leverage ratios DTAR, DTER, FLR, TDR and LTDR had statistically significant influence on AROC in market price of shares of

non financial firms listed at the NSE since the corresponding p-values 0.870, 0.945, 0.854, 0.242 and 0.687 respectively were greater than the significance level of 0.05 set for this study. Therefore, individually each of the leverage ratios had no statistically significant influence on the changes that occurred in AROC market price of shares of non financial firms listed at the NSE.

More specifically, the results in Table 25 suggest that for each additional unit of AROC the estimated average effect of DTAR on AROC increased by 0.0115987-0.0015765 units when other leverage ratios DTER, FLR, TDR and LTDR were held constant in this model. The same interpretation applied to the leverage ratios DTER, FLR and LTDR whose estimated average effect on AROC in market price of shares increased by 0.0115987-0.0000523, 0.0115987-0.0002376 and 0.0115987+0.0052603 respectively when the other ratios were held constant. For the case of TDR that had negative coefficient of -0.0172487, it was established that for each additional unit of AROC the estimated average effect of TDR on AROC reduced by 0.0115987-0.0172487 units when the other market performance ratios DTAR, DTER, FLR and LTDR were held constant in the leverage ratios model.

It was established that there was statistically insignificant utilization of information on leverage ratios DTAR, DTER, FLR, TDR and LTDR among shareholders to make decisions on investment opportunities available to them in non financial firms listed at the NSE. Information obtained indicated that leverage ratios DTAR, DTER, FLR and TDR had direct negative statistically insignificant influence on demand for shares of non financial firms listed at the NSE as indicated by their respective negative coefficients. On the other hand, it was established that leverage ratio LTDR had direct positive statistically insignificant influence on demand for shares of non financial firms listed at

the NSE as indicated by its positive coefficient. The findings of this study were in agreement with Wijaya (2015) who asserted that DTER did not have a significant effect on stock returns of Indonesian manufacturing companies during the period 2008-2013.

Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Leverage Ratios Model

The Hausman test was used to select the most suitable model between fixed effects model and random effects model in establishing appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms quoted at the Nairobi Securities Exchange. The null test hypothesis was that random effects model was the suitable estimation method while alternative test hypothesis was that fixed effects model was the suitable estimation method for assessing appropriateness of leverage ratios model in influencing shareholder wealth. A significant Hausman statistic with a significant probability < 0.05 implied that the null test hypothesis that random effects model was the suitable estimation method be rejected in favour of alternative test hypothesis that fixed effects model was the suitable estimation method for assessing the appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange. Table 26 below shows the results obtained from the Hausman test.

Table 26: Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Appropriateness of Leverage Ratios Model

Test Summary	Chi-Sq. Statistic	Chi-Sq d.f.	Probability
Variation a cross entities is random	0.88	5	0.9719

The results presented in Table 26 show that the Chi-square test statistic was 0.88 with p = 0.9719 that was not significant at 5 percent level of significance. Based on the results

of the Hausman test, the null test hypothesis that random effect model was the suitable estimation method was not rejected. Instead, the alternative test hypothesis that the fixed effects model was the suitable estimation method for assessing the leverage ratios model was rejected. The Hausman test revealed that random effects in the leverage ratios model were significant since the p-value was 0.9719 which was more than 0.05 significance level set for this study. The random effects model was therefore taken to be the most suitable estimation model for establishing the appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange.

Panel Estimates of Overall Appropriateness of Leverage Ratios Model in Influencing Shareholder Wealth of Non Financial Firms Listed at the NSE

The overall appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE was established and the results obtained presented in Table 27 below.

Table 27: Overall Appropriateness of Leverage Ratios Model in Influencing Shareholder Wealth of Non Financial Firms Listed at the NSE

R-sq:	corr(u_i, X)= 0 (assumed)	Wald chi2(5) = 2.53
within = 0.0000	Number of observations = 180	Prob > chi2 = 0.7714
between = 0.0953	Number of groups = 36	theta = 0
overall = 0.0144		

Information in Table 27 on overall appropriateness of leverage ratios model in influencing shareholder wealth provided p-value of 0.7714 that was used to test the null hypothesis that all the coefficients in the leverage ratios random effects model were zero against the alternative test hypothesis that at least one of the coefficients was not zero. The p-value of 0.7714 led to the decision not to reject the null hypothesis and as a result

it was established that overall all the leverage ratios DTAR, DTER, FLR, TDR and LTDR did not have statistically significant predictive power on AROC in market price of shares and shareholder wealth of non financial firms listed at the NSE. It was therefore evident that investors in shares of non financial firms listed at the NSE had not utilized information provided by leverage ratios DTAR, DTER, FLR, TDR and LTDR in selection of securities of firms. It was therefore established from the data that leverage ratios model did not have statistically significant appropriateness in influencing shareholder wealth of non financial firms listed at Nairobi Securities Exchange.

Diagnostic Test for Evaluating Random Effects in Leverage Ratios Model

The Breusch and Pagan Lagrangian multiplier (LM) test was conducted to decide between random effects regression and simple OLS regression in relation to appropriateness in influencing shareholder wealth of non financial firms listed at Nairobi Securities Exchange. The null test hypothesis in the LM test was that variance across non financial firms listed at the NSE was zero (no panel effect). The LM test resulted in a p = 1.000 and as a result null test hypothesis was not rejected since actual p = 1.0000 was greater than the critical p = 0.05 set for this study. These results implied that there was no significant difference across the non financial firms listed at the NSE. Therefore, the variance across the non financial firms listed at the NSE was zero or these firms had similar variances in their operational efficiency ratios. Since there was no evidence of significant difference across non financial firms listed at the NSE, there was no panel effect and it was therefore possible to run a simple ordinary least squire (OLS) regression. The results obtained were in agreement with the findings of Oscar (2007) that lack of evidence of significant difference across entities was an indication that random effects regression was not appropriate hence an ordinary least squire (OLS) regression could be performed. Based on the results, the decision was that random effects model

was not appropriate in assessing appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the NSE.

4.4.5 Appropriateness of Market Performance Ratios Model in Influencing Shareholder Wealth

The appropriateness of market performance ratios model in influencing shareholder wealth was established by determining the panel estimates of market performance ratios model first based on fixed effects regression and then based on random effects regression. Finally, the Hausman test was conducted to select the most suitable model between fixed effects and random effects regression that was used to evaluate appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Market Performance Ratios Model for Influencing Shareholder Wealth Based Fixed Effects Regression

The panel estimates for the market performance ratios model used in influencing shareholder wealth based on fixed effects regression were established and the results obtained presented in Table 28 below.

Table 28: Panel Estimates of Market Performance Ratios Model Based on Fixed Effects Regression

AROC	Coefficient	Std. Err.	t	P>|t|	[95% Conf. Interval]	
PER	0.000021	4.22e-06	5.04	0.000	0.0000129	0.0000296
PTSR	2.73e-06	5.72e-07	4.77	0.000	1.60e-06	3.86e-06
MPTBVR	0.000607	0.001408	0.43	0.667	-0.0021777	0.0033906
EPS	-8.95e-07	0.00001	-0.09	0.929	-0.0000207	0.0000189
DPOR	-0.000098	0.000033	-2.94	0.004	-0.0001633	-0.0000319
DPS	-0.000204	0.000572	-0.36	0.722	-0.0013358	0.0009272
DY	0.001002	0.000696	1.44	0.152	-0.0003739	0.0023781
Constant	-0.008027	0.002757	-2.91	0.004	-0.0134793	-0.0025747
Sigma u	0.02335802					
Sigma e	0.01498688					
rho	0.70838027	(fraction of variance due to u_i)				

After the Hausman test was conducted to establish the most suitable model between fixed effects model and random effects model in evaluating appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at the NSE, the results obtained were presented in Table 30. The p-value of 0.0585 that was not significant at 5 percent level of significance was obtained and a decision was reached not to reject the null hypothesis that random effects model was the suitable estimation method. Since p = 0.0585 obtained was more than the threshold significance level of 0.05, there was lack of enough statistical evidence to suggest that fixed effects model was suitable for assessing appropriateness of market performance ratios. The fixed effects model was therefore not subjected to further interpretation and evaluation as regards its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

Panel Estimates of Market Performance Ratios Model in Influencing Shareholder Wealth Based on Random Effects Regression

The panel estimates for assessing the appropriateness of market performance ratios model in influencing shareholder wealth based on random effects model were established and the results presented in Table 29 below.

Table 29: Panel Estimates of Market Performance Ratios Model Based on Random Effects Regression

AROC1	Coefficients	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
PER	0.0000232	0.000004	6.60	0.000	0.000016	0 .000030
PTSR	0.000001	0.0000004	2.72	0.007	0.000000	0.000002
MPTBVR	0.001758	0.0009497	1.85	0.064	-0.000104	0.003619
EPS	0.00000001	0.000010	0.01	0.993	-0.000019	0.000020
DPOR	-0.0001217	0.0000282	-4.32	0.000	-0.000180	-0.000066
DPS	-0.0002322	0.0002158	-1.08	0.282	-0.000655	0 .000191
DY	0.0015405	0.0005387	2.86	0.004	0.000485	0.002596
Constant	-0.0044848	0.0018071	-2.48	0.013	-0.008027	-0.00094
sigma u	0					
sigma e	0.01498688					
Rho	0 (fraction of variance due to u i)					

The Hausman test resulted in $p = 0.0585$ that was more than 0.05 set for this study implying that there was enough statistical evidence not to reject the null test hypothesis that random effects model was suitable for assessing appropriateness of market performance ratios. The random effects model was therefore subjected to further interpretation and evaluation as regards its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

The panel estimates of random effects model in Table 29 show the marginal effects of market performance ratios on AROC in market price of share of non financial firms

listed at the NSE. From the results, it was established that only PER (p-value < 0.001), PTSR (p-value = 0.007), DPOR (p-value < 0.001) and DY (p-value was 0.004) market performance ratios had statistically significant influence on AROC since their corresponding p-values were less than 0.05 level of significance set for this study.

It was also established that the market performance ratios model PER, PTSR and DY had a statistically significant positive effect on AROC in market price of shares while DPOR had a statistically significant negative effect on AROC market price of shares of non financial firms listed at the NSE as indicated by their respective coefficient values. These coefficients represent the individual average effect of PER, PTSR, DY and DPOR over AROC in the market price of shares of non financial firms listed at the NSE when PER, PTSR, DY and DPOR change across time and between firms by one unit assuming the other ratios involved were held constant. The results obtained by this study were in agreement with the findings of Lai and Cho (2016) who established that DY ratio was effective in influencing stock returns in over 36 international securities markets. More studies that sought to test DY in more developed markets such as the USA, China and Canada had revealed that DY was a strong predictor of stock returns. On the other hand, it was also established that the market performance ratios MPTBVR, EPS and DPS had no statistically significant effect on AROC in market price of shares of non financial firms listed at the NSE since their corresponding p-values of 0.064, 0.993 and 0.282 respectively were higher than 0.05 significance level set for this study.

More specifically, the results in Table 29 suggest that for each additional unit of AROC, the estimated average effect of PER on AROC increased by -0.0044848+0.0000232 units when the other market performance ratios (PTSR, DY and DPOR) were held constant in this model. This was also the case for all the other market performance ratios that

exhibited a positive effect (i.e. positive coefficient) on AROC. For the case of DPOR that had negative coefficient (-0.0001217), it was established that for each additional unit of AROC the estimated average effect of DPOR on AROC reduced by -0.0044848-0.0001217 units when the other market performance ratios (PTSR, DY and PER) were held constant in this model.

Further, it was established that shareholders of non financial firms listed at the NSE utilized information on market performance ratios PER, PTSR, DPOR and DY, to make investment decisions on investment opportunities available to them in non financial firms listed at the NSE. Information on market performance ratios PER, PTSR and DY had direct positive influence on demand for shares of non financial firms listed at the NSE as indicated by the respective positive coefficients.

The findings of this study are in agreement with assertions of a study conducted by Wijaya (2015) that indicated that DY had a statistically significant effect on stock returns. Also, in agreement with the findings of this study are Umar and Musa (2013) who upon examining the relationship between EPS and stock prices among firms listed in Nigerian Stock Exchange (NSE) over the period from 2005 to 2009 established that there was a statistically insignificant relationship between EPS and stock prices implying that EPS had no predictive power for the stock prices.

However, findings of this study were not in agreement with assertions of Anwaar (2016), Arkan (2016) and Menike and Prabath (2014). Anwaar (2016) conducted a study that established that EPS had a statistically significant negative impact on stock returns. Further, the results of a study by Arkan (2016) revealed existence of statistically significant positive relationship between MPTBVR and stock price. However, in the same study market performance ratios such as EPS and PER did not show statistically

significant relationship with stock price implying that their ability to explain stock price trends was poor. Lastly, Menike and Prabath (2014) conducted a study on the impact of accounting variables DPS, EPS and book value per share (BVPS)) on stock price of 100 companies listed in the Colombo Stock Exchange (CSE), Sri Lanka, from 2008 to 2012 and established that EPS, DPS, BVPS had a positive significant impact on the stock price.

Hausman Test on Suitability of Random Effects Model or Fixed Effects Model for Evaluating Appropriateness of Market Performance Ratios Model

The Hausman test was performed in order to establish the most suitable model between random effects model and fixed effects model for assessing appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange. The null test hypothesis was that random effects model was the suitable estimation method while alternative test hypothesis was that fixed effects model was the suitable estimation method for assessing the appropriateness of market performance ratios model. A significant $p \leq 0.05$ was used as the criteria for rejecting or accepting null test hypothesis. The test result of significant $p \leq 0.05$ implied that null test hypothesis be rejected and instead the alternative hypothesis that fixed effects model was the suitable estimation method in assessing appropriateness of market performance ratios model be accepted. The results obtained from the Hausman test were presented in Table 30 below.

Table 30: Hausman Test on Suitability of Fixed Effects or Random Effects Model for Evaluating Appropriateness of Market Performance Ratios Model

Test Summary	Chi-Sq. Statistic	Chi-Sq d.f.	Probability
Variation a cross entities is random	12.16	7	0.0585

The results presented in Table 30 show that Chi-square test statistic was 12.16 with p-value of 0.0585 that was not significant at 5 percent level of significance. The null test hypothesis that random effects model was the suitable estimation method was not rejected since the p-value of 0.0585 obtained was more than the threshold significance level of 0.05. There was lack of enough statistical evidence to suggest that fixed effects model was suitable estimation method for assessing appropriateness of market performance ratios model. The random effects model was taken to be the most suitable estimation model for evaluating the appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange.

Overall Appropriateness of Market Performance Ratios Model in Influencing Shareholder Wealth

The overall appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at the NSE was established and the results obtained presented in table 31 shown below.

Table 31: Overall Appropriateness of Market Performance Ratios Model in Influencing Shareholder Wealth

R-sq:	Corr (u_i, X) = 0 (assumed)	Wald chi2(7) = 482.19
within = 0.7261	Number of observations = 180	Prob > chi2 = 0.001
between = 0.9130	Number of groups = 36	Theta = 0
overall = 0.7371		

The results in Table 31 on overall appropriateness of market performance ratios model in influencing shareholder wealth indicate $p < 0.001$ used to assess the null hypothesis that all the coefficients in the market performance ratios model were zero against the alternative that at least one of the coefficients was not zero. Since the p value obtained

was less than the significance level of 0.05 set for this study, the null hypothesis was rejected in favour of the alternative hypothesis. Therefore, the results obtained indicated that all coefficients of the market performance ratios model were zero. Consequently, shareholders of non financial firms listed at the NSE utilized information provided by market performance ratios PER, PTSR, DY and DPOR to select investment alternatives at the NSE with a resultant effect on AROC in market price. Hence, PER, PTSR, DY and DPOR provided information necessary for influencing shareholder wealth of non financial firms listed at the NSE. Market performance ratios model had statistically significant appropriateness in influencing shareholder wealth of non financial firms listed at the NSE as indicated by $p < 0.001$ which was less than 0.05 level of significance set for this study.

Diagnostic Test for Random Effects in the Market Performance Ratios Model

1. Breusch and Pagan Lagrangian Multiplier Test

The Breusch and Pagan Lagrangian multiplier test for random effects was conducted to decide between random effects regression and simple OLS regression. The p-value of 1.000 was obtained signifying that the non financial firms listed at the NSE had similar variances in their market performance ratios or variance across the non financial firms listed at the NSE was zero. Since there was no significant difference across the non financial firms listed at the NSE, there was no panel effect and as a result it was possible to run a simple ordinary least squire (OLS) regression. These findings are in agreement with Oscar (2007) who established that the lack of significant difference across firms is an indication of non appropriateness of random effects regression model and as a result the simple OLS regression can be performed.

2. Unit Root Tests

The stability of time series data was tested using a combination of unit root test methods such as Harris-Tzavalis, Breitung, Augmented Dickey-Fuller (ADF) Fisher – type (inverse chi-squared, inverse normal, inverse logit and modified inverse chi-squared) and Hadri LM unit root test. The table 32 below relate to the test results obtained.

Table 32: Unit Root Test for PER

Test Hypothesis and Method		Statistic	P-value	Number of panels	Number of periods
Ho: Panels contain unit roots. Ha: Panels are stationary					
Harris-Tzavalis.	rho	-0.3996	0.0001	36	5
Breitung	lambda	-2.7048	0.0034	36	5
Ho: All panels contain unit roots. Ha: At least one panel is stationary ADF Fisher- type					
Inverse chi-squared	P*	234.1468	0.0001	36	5
Inverse normal	z	-4.2492	0.0001	36	5
Inverse logit	l	-8.1919	0.0001	36	5
Modified inv. chi-squared	Pm	13.5122	0.0001	36	5
Ho: All panels are stationary. Ha: Some panels contain unit roots					
Hadri LM test	z	-3.6988	0.9999	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore computed using P statistics chi-squared distribution.

Majority of unit root test methods resulted in rejection of null test hypothesis that panels contain unit root (i.e. non stationery) and instead alternative hypothesis that panels were

stationery (i.e. no unit root) or at least one panel was stationary was accepted. PER was found to be stationary at level since the p-values from majority of the tests were less than 0.05 percent significance level.

Table 33: Unit Root Test for PTSR

Test Hypothesis and Method		Statistic	P-value	Number of panels	Number of periods
Ho: Panels contain unit roots.					
Ha: Panels are stationary					
Harris-Tzavalis.	rho	0.1949	0.0001	36	5
Breitung	lambda	-0.5645	0.2862	36	5
Ho: All panels contain unit roots.					
Ha: At least one panel is stationary					
ADF Fisher –type					
Inverse chi-squared	P*	117.4356	0.0006	36	5
Inverse normal	z	-0.7494	0.2268	36	5
Inverse logit	l	-1.3374	0.0914	36	5
Modified inv. chi-squared	Pm	3.7863	0.0001	36	5
Ho: All panels are stationary.					
Ha: Some panels contain unit roots					
Hadri LM test	z	2.2670	0.0117	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore computed using P statistics chi-squared distribution.

The null test hypothesis that panels contain unit root (i.e. non stationery) was rejection and instead alternative hypothesis that panels were stationery (i.e. no unit root) or at least one panel was stationary was accepted based on results obtained from majority of unit root test methods. PTSR was found to be stationary at level since majority of the tests resulted in p-values that were less than 0.05 percent significance level set for this study.

Table 34: Unit Root Test for MPTBVR

Test Hypothesis and Method		Statistic	P- value	Number of panels	Number of periods
Ho: Panels contain unit roots. Ha: Panels are stationary					
Harris-Tzavalis.	rho	0.2496	0.0010	36	5
Breitung	lambda	-2.2478	0.0123	36	5
Ho: All panels contain unit roots. Ha: At least one panel is stationary ADF Fisher-type					
Inverse chi-squared	p	153.737	0.0000	36	5
Inverse normal	z	-2.5049	0.0061	36	5
Inverse logit	l	-3.9365	0.0001	36	5
Modified inv. chi-squared	Pm	6.8116	0.0001	36	5
Ho: All panels are stationary. Ha: Some panels contain unit roots					
Hadri LM test	z	4.3628	0.0001	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore interpreted using P statistics chi-squared distribution.

Based on the outcome of majority of unit root test methods, the null test hypothesis that panels contain unit root was rejection. MPTBVR was found to be stationary at level since majority of unit root tests resulted in p-values that were less than 0.05 percent significance level.

Table 35: Unit Root Test for EPS

Test Hypothesis and Method		Statistic	P-value	Number of panels	Number of periods
Ho: Panels contain unit roots.					
Ha: Panels are stationary					
Harris-Tzavalis.	rho	-0.2762	0.0001	36	5
Breitung	lambda	-0.4123	0.3400	36	5
Ho: All panels contain unit roots.					
Ha: At least one panel is stationary					
ADF Fisher –type					
Inverse chi-squared	P*	176.375	0.0001	36	5
Inverse normal	z	-1.1054	0.0001	36	5
Inverse logit	l	-3.9997	0.0001	36	5
Modified inv. chi-squared	Pm	8.6979	0.0001	36	5
Ho: All panels are stationary.					
Ha: Some panels contain unit roots					
Hadri LM test	z	-1.3093	0.9048	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore interpreted using P statistics chi-squared distribution.

Based on the outcome of majority of unit root test methods, the null test hypothesis that panels contain unit root (i.e. non stationary) was rejection and alternative hypothesis that panels were stationary (i.e. no unit root) or at least one panel was stationary was accepted. EPS was found to be stationary at level since majority of unit root tests resulted in p-values that were less than 0.05 percent.

Table 36: Unit Root Test for DPOR

Test Hypothesis and Method		Statistic	P-value	Number of panels	Number of periods
Ho: Panels contain unit roots. Ha: Panels are stationary					
Harris-Tzavalis.	rho	-0.3828	0.0001	36	5
Breitung	lambda	-1.7580	0.0394	36	5
Ho: All panels contain unit roots. Ha: At least one panel is stationary ADF Fisher-type					
Inverse chi-squared	P*	114.1642	0.0011	36	5
Inverse normal	z	-1.8606	0.0314	36	5
Inverse logit	l	-3.2317	0.0008	36	5
Modified inv. chi-squared	Pm	3.5137	0.0002	36	5
Ho: All panels are stationary. Ha: Some panels contain unit roots					
Hadri LM test	z	-3.6382	0.9999	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore interpreted using P statistics chi-squared distribution.

The null test hypothesis that panels contain unit root (i.e. non stationary) was rejection and alternative test hypothesis that panels were stationary (i.e. no unit root) or at least one panel was stationary was accepted by majority of unit root test methods. DPOR was found to be stationary at level since majority of unit root tests resulted in p-values that were less than 0.05 percent significance level.

Table 37: Unit Root Test for DPS

Test Hypothesis and Method		Statistic	P value	Number of panels	Number of periods
Ho: Panels contain unit roots. Ha: Panels are stationary					
Harris-Tzavalis.	rho	0.1015	0.0001	36	5
Breitung	lambda	-0.8581	0.1954	36	5
Ho: All panels contain unit roots. Ha: At least one panel is stationary ADF Fisher –type					
Inverse chi-squared	P*	82.3294	0.1901	36	5
Inverse normal	z	0.6820	0.7524	36	5
Inverse logit	l	-0.3724	0.3551	36	5
Modified inv. chi-squared	Pm	0.8608	0.1947	36	5
Ho: All panels are stationary. Ha: Some panels contain unit roots					
Hadri LM test	z	3.0095	0.0013	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore interpreted using P statistics chi-squared distribution.

The null test hypothesis that panels contain unit root (i.e. non stationary) was accepted and alternative test hypothesis that panels were stationary (i.e. no unit root) or at least one panel was stationary was rejected in majority of unit root test methods. DPS was found to be non stationary at level since majority of unit root tests resulted in p-values that were greater than 0.05 percent significance level.

Table 38: Unit Root Test for DY

Test Hypothesis and Method		Statistic	P-value	Number of panels	Number of periods
Ho: Panels contain unit roots.					
Ha: Panels are stationary					
Harris-Tzavalis.	rho	0.1917	0.0001	36	5
Breitung	lambda	-0.2030	0.4196		
Ho: All panels contain unit roots.					
Ha: At least one panel is stationary					
ADF Fisher –type:					
Inverse chi-squared	P*	141.962	0.0001	36	5
Inverse normal	z	-1.609	0.0538	36	5
Inverse logit	l	-4.350	0.0001	36	5
Modified inv. chi-squared	Pm	5.830	0.0001	36	5
Ho: All panels are stationary.					
Ha: Some panels contain unit roots					
Hadri LM test	z	3.9698	0.0001	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore interpreted using P statistics chi-squared distribution.

The null test hypothesis that panels contain unit root (i.e. non stationary) was rejected and alternative test hypothesis that panels were stationary (i.e. no unit root) or at least one panel was stationary was accepted in majority of unit root test methods. DY was found to be stationary at level in majority of the unit root tests methods since the associated p-values were less than 0.05 percent significance level.

Table 39: Unit Root Test for AROC

Test Method		Statistic	P-value	Number of panels	Number of periods
Ho: Panels contain unit roots.					
Ha: Panels are stationary					
Harris-Tzavalis.	rho	-0.4960	0.0001	36	5
Breitung	lambda	-3.1354	0.0009	36	5
Ho: All panels contain unit roots.					
Ha: At least one panel is stationary					
ADF Fisher–type					
Inverse chi-squared	P*	260.865	0.0001	36	5
Inverse normal	z	-7.2951	0.0001	36	5
Inverse logit	l	-10.3144	0.0001	36	5
Modified inv. chi-squared	Pm	15.7387	0.0001	36	5
Ho: All panels are stationary.					
Ha: Some panels contain unit roots					
Hadri LM test	z	-2.8685	0.9979	36	5

* P statistic for Fisher test requires the number of panels to be finite while the other statistics are suitable for finite or infinite number of panels. The probabilities for the Fisher test were therefore interpreted using P statistics chi-squared distribution.

The null test hypothesis that panels contain unit root (i.e. non stationary) was rejected and alternative test hypothesis that panels were stationary (i.e. no unit root) or at least one panel was stationary was accepted under Harris-Tzavalis, Breitung, ADF Fisher Inverse chi-squared and Hadri LM unit root test methods. AROC in market price of shares was found to be stationary at level for all the unit root tests methods since the associated p-values were less than 0.05 percent significance level.

Diagnostic Test of Normality of Distribution

In order to establish whether data obtained for the dependent and independent variables was normally distributed, the Shapiro-Wilk W test was conducted and the results obtained presented in table 40 below.

Table 40: Shapiro Wilk Test of Normality of Distribution

Variable	Observations	W	V	Z	Prob>z
AROC1	180	0.20805	107.819	10.711	0.0001
PTM	180	0.77162	31.093	7.866	0.0001
NPM	180	0.51391	66.178	9.594	0.0001
ROA	180	0.72024	38.087	8.330	0.0001
ROE	180	0.63025	50.340	8.968	0.0001
CR	180	0.58228	56.871	9.248	0.0001
NWCTTA	180	0.78984	28.612	7.675	0.0001
WCT	180	0.45891	73.667	9.840	0.0001
FAT	180	0.59568	55.045	9.173	0.0001
TAT	180	0.69017	42.182	8.564	0.0001
CAT	180	0.83754	22.119	7.086	0.0001
DTAR	180	0.71956	38.181	8.336	0.0001
DTER	180	0.44489	75.575	9.898	0.0001
FLR	180	0.61534	52.369	9.059	0.0001
TDR	180	0.97018	4.060	3.207	0.0007
DR	180	0.88637	15.470	6.268	0.0001
PER	180	0.07029	126.575	11.078	0.0001
PTSR	180	0.20686	107.982	10.715	0.0001
MPTBVR	180	0.34260	89.502	10.285	0.0001
EPS	180	0.10370	122.026	10.995	0.0001
DPOR	180	0.12737	118.804	10.933	0.0001
DPS	180	0.48075	70.692	9.745	0.0001
DY	180	0.89787	13.904	6.024	0.0001

The results in table 40 above show that the dependent variable and all the independent variables used in various financial statement analysis models were not normally distributed since their p values were less than 0.05.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the findings of the study and presents conclusions upon which recommendations are drawn. Recommendations for further research and policy recommendations were also captured as a way of addressing the gaps identified by the study.

The study endeavoured to empirically examine the appropriateness of profitability ratios, liquidity ratios, operational efficiency ratios, leverage ratios and market performance ratios models in influencing shareholder wealth of non financial firms listed at the NSE in Kenya. The financial statement analysis models were described using various financial statement ratios as independent variables. Shareholder wealth indicator used for this study was change in market price of shares upon announcement of annual financial statements which was measured as AROC in market price of shares of non financial firms listed at the NSE.

The study pursued five objectives on the basis of which five hypotheses were developed and upon which conclusions were aligned. The objectives of the study were: to evaluate the appropriateness of profitability ratios model; to analyse the appropriateness of liquidity ratios model; to assess appropriateness of operational efficiency ratios model; to examine the appropriateness of leverage ratios model and to investigate the appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at Nairobi Securities Exchange.

Correlational research design was used in this study because it enabled quantitative measures of variables to be studied without any attempt to influence them. The study fell under the research area of capital markets research in accounting and was therefore located at Nairobi Securities Exchange (NSE) and covered non financial firms listed at the NSE during the period January 2011 to December 2017. Secondary data was used to carry out this study. Data collection instruments in the form of data collection matrix were used to extract information from published financial statements and also from daily market price of shares records for non financial firms listed at the NSE. Average rate of change in market price of shares was then determined during the window period of -20 trading days to +20 trading days around the announcement date. Data processing involved validation, editing and classification. Descriptive statistical analysis, inferential statistical analysis and diagnostic tests were used to derive meaning from the data collected.

5.2 Summary

General and Demographic Characteristics

There was a steady increase in listing of firms at the NSE from a total 58 firms in 2012 to a total of 65 firms in 2016 signifying a 12.1 % increase in the number of firms listed at the NSE. Also, the total number of industry sectors at the NSE increased from 10 sectors in 2012 to 11 sectors in 2016 signifying a 10 % growth in the number of industry sectors listed at the NSE. The most recently introduced industry sector was the Real Estate Investment Trust Sector which was introduced in the year 2016. Industry sectors such as Agriculture, Banking, Construction and Allied, Automobile and accessories, Real Estate Investment Trust Sector and insurance showed no growth during the years 2012 to 2016. Telecommunication and Technology industry sector showed a decline in the number of firms listed at the NSE. Commercial and Services, Energy and Petroleum, Investment

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services and Manufacturing and Allied industry sectors encountered an increase in number of firms listed at the NSE over the period 2012 to 2016.

It was also established that non financial firms announced their annual financial statement results within a period of 6 months after the end of financial year. Majority of these firms made announcement within a period of 3 months as stipulated by guidelines that govern listing of firms at the NSE. Announcement of annual financial statement results led to a positive mean average rate of change (AROC) in market price of shares of non financial firms listed at the NSE.

Appropriateness of Profitability Ratios Model in Influencing Shareholder Wealth of Non-Financial Firms Listed at Nairobi Securities Exchange.

It was established that all the profitability ratios had mean values that were positive and less than unit. On average, non financial firms listed at the NSE during the period 2012 to 2016 had a pre-tax return (earnings before Tax) of Kenya shillings 0.0675 in every Kenya shilling of sales, a net profit of Kenya shillings 0.0841 in every Kenya shilling of sales, a net income (return) of Kenya shillings 0.04755 in every Kenya shilling of average total assets invested and a net income (return) of Kenya shillings 0.0958499 in every Kenya shilling of average total equity invested by shareholders. Although non financial firms listed at the NSE had mean profitability ratios that were positive and less than unit indicating positive returns on sales, assets and equity, some of the firms encountered negative returns on sales, assets and equity as indicated by the negative minimum values for all the profitability ratios.

The fixed effects model was found to be unsuitable for evaluating appropriateness of profitability ratios model in influencing shareholder wealth of non financial firms listed at the NSE since it had a p value of 0.9195 that was greater than 0.05 set for this study.

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The random effects model was therefore considered to be the most suitable model for assessing appropriateness of market performance ratios. The random effects model was therefore subjected to further interpretation and evaluation regarding its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

It was established that all the profitability ratios PTM, NPM, ROA and ROE did not have statistically significant influence on AROC in market price of shares since their respective p values 0.606, 0.976, 0.983 and 0.875, were greater than 0.05 level of significance. The profitability ratios PTM and ROA had statistically insignificant positive influence on AROC in market price of shares of non financial firms listed at the NSE as indicated by their respective coefficient values 0.004079 and 0.000651 while NPM and ROE had statistically insignificant negative effect on AROC in market price of shares of the same non financial firms as indicated by their respective coefficients -0.000334 and -0.000865. Therefore, it was established that information provided by profitability ratios PTM, NPM, ROA and ROE was not statistically significant in influencing the choice of investment opportunities among shareholders of non financial firms listed at the NSE.

Lastly, it was established that all the profitability ratios used in this study had no combined effect on AROC in market price of shares listed at the NSE. This was interpreted to mean that profitability ratios used in this study did not provide statistically significant information on changes that occurred in AROC. Consequently, profitability ratios model was not appropriate in influencing shareholder wealth of non financial firms listed at the NSE. Further, since there was no evidence of significant difference across entities the random effects regression model was considered not to be appropriate for

influencing shareholder wealth of non financial firms listed at the NSE and as a result it was possible to run a simple OLS regression model.

Appropriateness of Liquidity Ratios Model in Influencing Shareholder Wealth of Non-Financial Firms Listed at Nairobi Securities Exchange.

It was established that all liquidity ratios CR and NWCTTA had means that were positive with the mean of the CR being greater than unit (i.e. 2.382025) while the mean of the NWCTTA ratio was less than unit (i.e. 0.0857385). This implied that non financial firms listed at the NSE had current asset values that were more than two times the value of current liabilities. Therefore, current liabilities were fully covered by the respective current assets implying that non financial firms listed at the NSE had a greater ability of meeting their short term obligations as they fell due. It was therefore apparent that non-financial firms listed at the NSE on average followed a conservative working capital financing policy that entailed maintaining a higher level of current assets in relation to current liabilities leading to high level of working capital that was majorly financed by the long-term sources of funds such as equity and debentures. It was also established that some of the firms listed on the NSE had current ratios that were less than unit as shown by the minimum current ratio of 0.1765206 which was an indication that these firms were drifting towards inability to meet their short term obligations as they fall due through utilization of current assets.

Based on results obtained from the Hausman test, it was established that random effects model was not the suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The liquidity ratios random effects model was therefore not subjected to further interpretation and evaluation concerning its appropriateness in influencing shareholder

wealth of non financial firms listed at the NSE. The fixed effects model was found to be the suitable estimation method for evaluating appropriateness of liquidity ratios model in influencing shareholder wealth of non financial firms listed at the NSE and was therefore subjected to further interpretation evaluation.

The panel estimates of fixed effects liquidity ratios regression model showed that none of the two liquidity ratios CR and NWCTTA were statistically significant in influencing the AROC in market price of shares of non financial firms listed at the NSE. Therefore, the liquidity ratios did not provide significant information for influencing changes that occurred in AROC in market price of shares among shareholders of non financial firms listed at the NSE. The CR had statistically insignificant negative effect while NWCTTA ratio had statistically insignificant positive effect on AROC in market price of shares of non financial firms listed at the NSE. It was evident from the results that the fixed effects liquidity ratios model was not statistically significant in appropriate for influencing shareholder wealth of non financial firms listed at Nairobi Securities Exchange.

Appropriateness of Operational Efficiency Ratios Model in Influencing Shareholder Wealth of Non Financial Firms Listed at Nairobi Securities Exchange.

A WCT ratio of 6.495462 was an indication that on average non financial firms listed at the NSE generated Kshs. 6.495462 of revenue for every Ksh. 1 of working capital invested. This implied that non financial firms listed at the NSE had a high level of efficiency in utilization of working capital to generate revenue. A mean FAT ratio of 2.286013 indicated that non financial firms listed at the NSE were able to generate Kshs 2.286013 in revenue for every Kshs 1 invested in fixed assets. A high FAT ratio was an indication that non financial firms listed at the NSE were efficient in the utilization of fixed assets to generate revenue for the firm. The mean total asset turnover (TAT) ratio

of 0.9125226 implied that non financial firms listed at the NSE were able to generate on average Kshs 0.9125226 for every Ksh 1 invested in both noncurrent assets and current assets during the financial years 2012 to 2016. The annual sales revenue for these firms was approximately 91 percent of total assets which was considered to be a high level of efficiency in utilization of total assets to generate sales revenue. The results obtained also established that on average current assets were turned over 2.29 times by non financial firms listed at the NSE. A high CAT ratio was an indication of a high intensity of the current asset usage by firms. It was therefore apparent that firms listed at the NSE on average had good policies for inventory, accounts receivable, cash and other current assets management.

Hausman test results revealed that the fixed effects regression model was not a suitable estimation model for assessing appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The fixed effects model was therefore not subjected to further interpretation and evaluation in relation to its appropriateness in influencing shareholder wealth. However, it was established from the same Hausman test results that random effects model was suitable for assessing appropriateness of operational efficiency ratios model in influencing shareholder wealth of non financial firms listed at the NSE and was subjected to further interpretation and evaluation.

The study established that each of the operational efficiency ratios WCT, FAT, TAT, and CAT had no significant influence on the changes that occurred in AROC in market price of shares and consequently shareholder wealth of non financial firms listed at the NSE. Although the operational efficiency ratios WCT, FAT and CAT had statistically insignificant negative influence on AROC in market price of shares, TAT had

statistically insignificant positive effect on AROC in market price of shares. It was therefore established that information provided by operational efficiency ratios WCT, FAT, TAT and CAT was not statistically significant in influencing the investment decisions of shareholders of non financial firms listed at the NSE. The results of this study established that the random effect operational efficiency ratios model did not have statistically significant appropriateness in influencing shareholder wealth of non financial firms listed at Nairobi Securities Exchange. Lastly, since there was no evidence of significant differences across non financial firms listed at the NSE there was no panel effect as a result it was therefore possible to run a simple ordinary least square (OLS) regression.

Appropriateness of Leverage Ratios Model in Influencing Shareholder Wealth of Non Financial Firms Listed at Nairobi Securities Exchange.

The mean debt to asset ratio (DTAR) of 0.493677 shows that non financial firms listed at the NSE on average had 49.3677 percent of their total assets financed using debt. Also, the mean debt to equity ratio (DTER) of 1.264046 implied that on average non financial firms had Kshs 1.264046 of debt for every Ksh 1 of stockholders' equity. This means that on average the amount of debt was 1.264 times the amount of shareholders equity for non financial firms quoted at the NSE. The mean FLR of 2.386063 is an indication that for every Kshs 1 of equity there was an investment of Kshs 2.386063 in average total assets by non financial firms listed at the NSE. The mean total debt ratio of 0.5021534 implied that on average non financial firms listed at the NSE had Ksh 0.5021534 of debt for every Ksh 1 of total assets. The mean LTDR of 0.2553459 was an indication that non financial firms listed at NSE had a mean of Ksh 0.2553459 of long term debt for every Ksh 1 of total capitalization which also meant that long term debt

constituted 25.53459 percent of the total long term capital of non financial firms listed at the NSE.

Results derived from Hausman test indicated that there was significant statistical evidence that random effects model was the suitable method for evaluating appropriateness of leverage ratios model in influencing shareholder wealth of non financial firms listed at the NSE and as a result was subjected to further interpretation and evaluation regarding its appropriateness in influencing shareholder wealth. On the other hand, the fixed effects model was found to be unsuitable and as a result was not subjected to further interpretation and evaluation regarding its appropriateness in influencing shareholder wealth of non financial firms listed at the NSE.

It was established that none of the leverage ratios DTAR, DTER, FLR, TDR and LTDR had statistically significant influence on AROC in market price of shares of non financial firms listed at the NSE. The leverage ratios DTAR, DTER, FLR and TDR had direct negative statistically insignificant influence on demand for shares of non-financial firms as indicated by their respective negative coefficients while LTDR had direct positive statistically insignificant influence on demand for shares of non financial firms listed at the NSE as indicated by its positive coefficient.

Lastly, it was established that overall all leverage ratios DTAR, DTER, FLR, TDR and LTDR did not have statistically significant influence on AROC in market price of shares and consequently shareholder wealth of non financial firms listed at the NSE. Investors in shares of non financial firms did not utilize information provided by leverage ratios DTAR, DTER, FLR, TDR and LTDR in selection of securities. Since there was no evidence of significant difference across non financial firms listed at the NSE, there was no panel effect and as a result it was possible to run a simple ordinary least squire (OLS)

regression. It was therefore established that leverage ratios model did not have statistically significant appropriateness in influencing shareholder wealth of non financial firms listed at Nairobi Securities Exchange.

Appropriateness of Market Performance Ratios Model in Influencing Shareholder Wealth of Non Financial Firms Listed at Nairobi Securities Exchange.

The mean PER of -156.315 obtained was an indication that on average common equity stocks for non financial firms listed at the NSE were selling at -156.315 times the value of current earnings. The negative mean PER was as a result of some non financial firms recording negative earnings that were significantly large. The mean DPOR of -0.4372385 implied that on average non financial firms listed at the NSE distributed approximately -43.72385 percent of their total earnings to shareholders. Since firms cannot pay negative dividends, the negative mean observed was due to the net income component of DPOR that was significantly large and negative. These results were an indication that some non financial firms listed at the NSE declared dividends to their members even after encountering net loss in their current year operations. This was taken to mean that non financial firms listed at the NSE considered dividend payment an important aspect for maintaining shareholder value in the financial market.

Also, it was apparent that all non financial firms listed at the NSE realized a mean PTSR of 4,057.68 indicating that on average common equity shareholders for non financial firms listed at the NSE were willing to pay Kshs 4,057.68 for every Ksh 1 realized in form of sales. The study further established that all non financial firms had a mean MPTBVR of 2.198115 which meant that their future returns were expected to be 2.198115 times the value of returns required by investors in common equity. This was an indication of a margin of safety of more than 100% between future returns and required

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rate of returns among the shareholders. A high MPTBVR was an indication that investors were optimistic about future performance of non financial firms listed at the NSE.

It was also established that all non financial firms listed at the NSE had mean EPS of 16.7653 with an associated standard deviation of 127.1308. This was interpreted to mean that non financial firms listed at the NSE were able to generate on average Ksh 16.7653 in earnings for every share held by common equity shareholders. Further, the standard deviation of 127.1308 was an indication of high variability in EPS among non financial firms listed at the NSE.

The results obtained also indicated that non financial firms listed at the NSE had a mean DPS of 3.153833 and standard deviation of 7.781975 implying that on average they paid Kshs 3.153833 per share in form of dividends to shareholders and also they had registered greater variability in dividend payment. The research findings also established that non financial firms listed at the NSE had a mean DY of 2.424473 and a standard deviation of 2.820245 which implied that shareholders of these firms had realized a return of Kshs 2.424473 on every shilling invested in securities and also there was low variability in returns on every shilling invested in securities as shown by the standard deviation of 2.820245.

The outcome of Hausman test indicated that there was significant statistical evidence that fixed effects model was not the suitable estimation method for assessing appropriateness of market performance ratios model in influencing shareholder wealth of non financial firms listed at the NSE. As a result, it was not considered for further interpretation and evaluation. On the other hand, random effects model was found to be a suitable estimation model for evaluating appropriateness of market performance ratios model in

influencing shareholder wealth of non financial firms listed at the Nairobi Securities Exchange and as a result it was subjected to further interpretation and evaluation.

The results of this study indicated that only PER, PTSR, DPOR and DY market performance ratios had statistically significant influence on AROC in market price of shares of non financial firms listed at the NSE since their corresponding p-values were less than 0.05 significance level set for this study. Further, market performance ratios PER, PTSR and DY had statistically significant positive effect on AROC in market price of shares while DPOR had a statistically significant negative effect on AROC market price of shares of non financial firms listed at the NSE. Therefore, information on market performance ratios PER, PTSR and DY had direct positive influence on demand for shares of non financial firms listed at the NSE as indicated by the respective positive coefficients, while DPOR had direct negative influence. On the other hand, it was also established that the market performance ratios MPTBVR, EPS and DPS did not have statistically significant effect on AROC in market price of shares of non financial firms listed at the NSE.

Lastly, it was observed that shareholders of non financial firms listed at the NSE utilized information provided by market performance ratios PER, PTSR, DY and DPOR to select investment alternatives with a resultant effect on AROC in market price of shares. Therefore, these four ratios provided information necessary for influencing shareholder wealth of non financial firms listed at the NSE. Also, since there was no significant difference across the non financial firms listed at the NSE there was no panel effect and as a result it was possible to run a simple ordinary least squire (OLS) regression. It was therefore established from the research findings that market performance ratios model had statistically significant appropriateness in influencing shareholder wealth of non

financial firms listed at the NSE. PER, PTSR, MPTBVR, EPS, DPOR, DY and AROC in market price of shares were found to be stationary at level since majority of the unit root test methods resulted in p-values that were less than 0.05 percent significance level. However, DPS was found to be non stationary at level since majority of unit root tests resulted in p-values that were greater than 0.05 percent significance level.

5.3 Conclusions

During the period 2012 to 2016, NSE realized a steady increase in the number of industry sectors as well as listing of firms. Non financial firms listed at the NSE announced their annual financial statements within a period of 6 months with majority of firms making announcements within a period of 3 months after the end of the financial year. Announcement of annual financial statements led to a positive mean average rate of change (AROC) in market price of shares. Non financial firms listed at the NSE had a high level of efficiency in utilization of working capital, fixed assets and total assets to generate sales revenue. These firms on average followed a conservative working capital financing policy that entailed maintaining a higher level of current assets in relation to current liabilities. It was also established that some non financial firms listed at the NSE declared dividends to members even after encountering net loss in their current year operations meaning that they considered dividend payment an important aspect for maintaining shareholder value. The fixed effects model was found to be unsuitable for evaluating appropriateness of profitability ratios, operational efficiency, leverage ratios and market performance ratios model in influencing shareholder wealth of non financial firms listed at the NSE. The fixed effects model was only found to be suitable for evaluating appropriateness of liquidity ratios model. The random effects model was considered suitable for assessing appropriateness profitability ratios, operational efficiency, leverage ratios and market performance ratios model. All the profitability

ratios, liquidity ratios, operational efficiency and leverage ratios models did not have statistically significant influence on AROC in market price of shares. Therefore, information provided by these models had no statistically significant influence on choice of investment opportunities among shareholders of non financial firms. Profitability ratios, liquidity ratios, operational efficiency ratios and leverage ratios model were found not to be statistically significant appropriate in influencing shareholder wealth of non financial firms listed at the NSE. Further, it was established that profitability ratios, operational efficiency ratios, leverage ratios and market performance ratios models had no evidence of panel effects and therefore could be evaluated by development of simple ordinary least square (OLS) regression models. The market performance ratios PER, PTSR, DPOR and DY had statistically significant influence on AROC in market price of shares and as a result shareholders utilized information provided by these ratios to select investment alternatives in securities of non financial firms listed at the NSE. However, market performance ratios MPTBVR, EPS and DPS were found not to have statistically significant effect on AROC in market price of shares. Lastly, it was established that market performance ratios model had statistically significant appropriateness in influencing shareholder wealth of non-financial firms listed at the NSE.

5.4 Recommendations

5.4.1 Policy Recommendations.

Since investors do not make use of all the categories of financial statement analysis ratios, a policy on provision of investor education by all firms listed at the NSE to their current and potential shareholders in form of seminars and bulletins should be enacted. Such investor education should cover the basics of financial statement analysis concepts. This will ensure utilization of information obtainable from analysis of financial

statements in making investment decisions among shareholders of firms listed at the NSE.

5.4.2 Recommendations for further research.

Research on effect of financial statement analysis model on market price of shares for each of the industry sectors of firms listed at the Nairobi Securities Exchange can be conducted. Such a study will avoid the variability associated with different industry sectors.

A study on effect of each individual financial statement analysis ratio on market price of shares of firms listed at the Nairobi Securities Exchange using pooled panel data ordinary least square (OLS) regression method with regression analysis run using E-views 7 data analysis software can be done.

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Appendix I: Research Instruments

Data Matrix for Non Financial Firms Listed at Nairobi Securities Exchange

The information in this data matrix will be treated confidentially and will not be used for any other purpose other than academic.

Date………………………………… Data Matrix number……………………………

Part A: General Information about Listed Company

Name of listed company……………………………………………………………………

Year	2012	2013	2014	2015	2016
Date of financial year end					
Date of publication of financial statements (Event date)					

Part B: Financial Statement Items and Amounts for Each Year

Financial Statement Items	2012 (ksh '000)	2013 (ksh '000)	2014 (ksh '000)	2015 (Kshs'000)	2016 (Kshs'000)
Earnings before tax (EBT)					
Sales					
Net profit /Net income					
Opening Total Assets					
Closing Total Assets/Total Assets					
Opening Total Equity					
Closing Total Equity/Total Equity					
Net Fixed assets					
Current Assets					
Non Current Liabilities					
Current Liability					
Current Ratio					
Net Working Capital					
Opening working capital					
Closing working capital					
Average working capital					
Market Price per share					

Earnings per share					
Number of Shares in Issue					
Book value per share					
Dividend pay-out ratio					
Dividends per share					
Dividend yield					

Part C: Financial Statement Analysis Ratios for each year

Financial Statement Ratios	Financial Year End				
	2012	**2013**	**2014**	**2015**	**2016**
Pre-tax margin					
Net profit margin					
Returns on Assets					
Return on Equity					
Current ratio					
Net working capital to total asset					
Working capital turnover					
Fixed Assets Turnover					
Total Assets Turnover					
Current Assets Turnover					
Debt to Assets ratio					
Debt to Equity ratio					
Financial Leverage ratio					
Total Debt Ratio					
Long Term Debt Ratio					
Price Earnings Ratio					
Price to Sales Ratio					
Market Price to Book Value Ratio					
Earnings Per Share					
Dividend Pay Out Ratio					
Dividend Per Share					
Dividend Yield					

Part D: Share Price Determination

Yr end	Daily Market Price of Shares for Firms listed at the NSE during the Event Window Period (i.e. Period of -20 days to +20 days)																																										
	Pre-event days(i.e. event day to-20 days)																			Event day		Post-event days (i.e. event day to +20 days)																						
2012																																											
2013																																											
2014																																											
2015																																											

Appendix II: Definition and Measurement of Dependent and Independent Variables

Variable Type	Name of Variable	Operationalisation	Measurement	Reference
Dependent variable	Shareholder wealth	Market price of shares	Average rate of change (ROC) in share price	(Dita & Murtagi, 2014)
Independent variable	Profitability ratios	Pre-tax margin	EBT/sales	(Robinson et al., 2009)
		Net profit margin	Net profit/sales	(Robinson et al., 2009)
		Return on assets	Net income/ average total assets	(Robinson et al., 2009)
		Return on equity	Net income/ Average total equity	(Robinson et al., 2009)
	Liquidity ratios	Current ratio	Current assets/ current liabilities	(Robinson et al., 2009)
		Net working capital to total assets	Net working capital/Total assets	(Robinson et al., 2009; Rose,2010)
	Operational efficiency ratios	Working capital turnover	Sales/ Average working capital	(Robinson et al., 2009; Rose,2010)
		Fixed assets turnover	Sales/Net fixed assets	(Robinson et al., 2009; Rose, 2010)
		Total Assets Turnover	Sales/Total assets	(Robinson et al., 2009; Rose, 2010)
		Current Assets Turnover	Sales/Current assets	(Arkan, 2016)
	Leverage ratios	Debt to assets ratio	Total debt/Total assets	(Robinson et al., 2009)
		Debt to Equity ratio	Total debt/total equity	(Robinson et al., 2009)
		Financial leverage ratio	Average total assets/Average total equity	(Robinson et al., 2009)
		Total debt ratio	(total assets-total equity)/ Total assets	(Rose et al, 2010)
		Long term debt ratio	Long term debt/(Long term debt+Total equity)	(Robinson et al., 2009)
	Market performance ratios	Price earnings ratio	Price per share/ Earnings per share	(Robinson et al., 2009)
		Price to sales ratio	Price per share/ sales per share	(Robinson et al., 2009)
		Market price to book value ratio	Price per share/Book value (Net asset value) per share	(Robinson et al., 2009; Nairobi Securities Exchange, 2017, December 20th)
		Earnings per share	(Net income-	(Robinson et al.,

			preferred dividends)/ Number of ordinary shares outstanding	2009; Fama and French, 2001)
		Dividend pay-out ratio	Common share dividends/ Net income attributable to common shares	(Robinson et al., 2009)
		Dividends per share	Total dividends declared/ Number of ordinary shares	(Chepsakat, 2015)
		Dividend yield	Dividend per share/Market price per share	(Balakrishn-an, 2016)

1. **Empirical Examination of Appropriateness of Profitability Ratios Model in Predicting Shareholder Wealth of Nairobi Securities Exchange Listed Non-Financial Firms, Kenya.** 1st Obulemire Alex Tom, 2nd Dr. Paul Muoki Nzioki, 3rd Dr. Koima Kibiwott Joel. Published in International Journal of Economics, Commerce and Management (IJECM) United Kingdom

2. **Appropriateness of Liquidity Ratios Model in Predicting Shareholder Wealth of Non-Financial Firms Listed At Nairobi Securities Exchange, Kenya.** Obulemire Alex Tom[1], Dr. Paul Muoki Nzioki[2], Dr. Koima Kibiwott Joel Published in the Research Journal of Finance and Accounting

Appendix IV: Listed Companies at the NSE as at 20th January 2018

	Agriculture Sector
1	Eaagad Limited
2	Kakuzi Limited
3	Kapchorua Tea company Limited
4	Limuru Tea company Limited
5	Rea Vipingo Plantation Limited
6	Sasini Tea and Coffee Limited
7	Williamson Tea Kenya Limited
	Automobiles and Accessories
8	Car and General(Kenya) Limited
9	Sameer Africa Limited
	Commercial and Services
10	Express Kenya Limited
11	Kenya Airways Limited
12	Longhorn Kenya Limited
13	Nation Media Group Limited
14	Scangroup Limited
15	Standard Group Limited
16	TPS Eastern Africa Limited (Serena hotels)
17	Uchumi Supermarkets Limited
18	Atlas Development Services
19	Decons Kenya Limited
20	Nairobi Business Ventures Limited
	Construction and Allied Sector
21	ARM Cement ltd (Athi River Mining ltd)
22	Bamburi Cement Company Limited
23	Grown Berger Limited
24	East African Cables Limited
25	East African Portland Cement company
	Energy and Petroleum
26	Kenol Kobil Limited
27	Kenya Electricity Generating Company (KENGEN)
28	Kenya Power & Lighting Company Limited
29	Total Kenya Limited
30	Umeme Limited
	Investment Services Sector
31	Centum Investment Company (ICDC) ltd
32	Olympia Capital Holdings Limited
33	Transcentuary Limited
34	Nairobi Securities Exchange
35	Home Africa
36	Kurwitu Ventures Limited
	Manufacturing and Allied
37	BOC Kenya Limited
38	British American Tobacco Kenya Limited
39	Carbacid Investments Limited

40	East African Breweries Limited
41	Mumias Sugar Company Limited
42	Unga Group Limited
43	Flame Tree Group Holdings Limited
44	Kenya Orchards Limited
45	Eveready East Africa Limited
	Telecommunication and Technology
46	Safaricom
	Banking
47	Barclays Bank of Kenya Limited
48	CFC Stanbic Bank
49	Co-operative Bank of Kenya
50	Diamond Trust Bank (Kenya) Limited
51	Equity Group Holdings Limited
52	Housing Finance Group Limited
53	Kenya Commercial Group Limited
54	National Bank of Kenya Limited
55	NIC Group PLC
56	Standard Chartered Bank Kenya Limited
57	I & M Holding Limited
	Insurance
58	Britam Holding Limited
59	CIC Insurance Group Limited
60	Jubilee Holdings Limited
61	Kenya Reinsurance Corporation Limited
62	Liberty Kenya Holdings Limited
63	Sanlam Kenya PLC
	Real Estate Investment Trust
64	Stanlib Fahari I-REIT

Source: Nairobi Securities Exchange (2018, January 20th)

Appendix V: Listed Non Financial Firms at NSE for the Financial Year Ending 2016

	Agriculture Sector
1	Eaagad Limited
2	Kakuzi Limited
3	Kapchorua Tea company Limited
4	Limuru Tea company Limited
5	Rea Vipingo Plantation Limited
6	Sasini Tea and Coffee Limited
7	Williamson Tea Kenya Limited
	Automobiles and Accessories
8	Car and General(Kenya) Limited
9	Marshall (EA) Limited
10	Sameer Africa Limited
	Commercial and Services
11	Express Kenya Limited
12	Kenya Airways Limited
13	Longhorn Kenya Limited
14	Nation Media Group Limited
15	Scangroup Limited
16	Standard Group Limited
17	TPS Eastern Africa Limited (Serena hotels)
18	Uchumi Supermarkets Limited
19	Atlas Development Services
20	Decons Kenya Limited
21	Nairobi Business Ventures Limited
	Construction and Allied Sector
22	ARM Cement ltd (Athi River Mining ltd)
23	Bamburi Cement Company ltd
24	Grown Berger Limited
25	East African Cables Limited
26	East African Portland Cement company
	Energy and Petroleum
27	Kenol Kobil Limited
28	Kenya Electricity Generating Company (KENGEN)
29	Kenya Power &Lighting Company ltd
30	Total Kenya Limited
31	Umeme Limited
	Investment Services Sector
32	Centum Investment Company (ICDC) ltd
33	Olympia Capital Holdings Limited
34	Transcentuary Limited
35	Nairobi Securities Exchange
36	Home Africa
37	Kurwitu Ventures Limited
	Manufacturing and Allied

38	BOC Kenya Limited	
39	British American Tobacco Kenya Limited	
40	Carbacid Investments Limited	
41	East African Breweries Limited	
42	Mumias Sugar Company Limited	
43	Unga Group Limited	
44	Flame Tree Group Holdings Limited	
45	Kenya Orchards Limited	
46	Eveready East Africa Limited	
	Telecommunication and Technology	
47	Safaricom	
	Real Estate Investment Trust	
48	Stanlib Fahari I-REIT	

Source: Nairobi Securities Exchange (2017, June 20th)

Appendix VI: Listed Non Financial Firms with Complete Records for the Financial Years 2012 to 2016

	Non Financial Firms With Complete Records
1	Eaagad Ltd (EGAD)
2	Kakuzi Ltd (KUKZ)
3	Kapchorua (KAPC)
4	Limuru Tea (LIMT)
5	Sasini Tea Ltd (SASN)
6	Williamson Tea (WTK)
7	Car And General (C&G)
8	Marshalls (EA) Ltd (MASH)
9	Sameer Africa Ltd (FIRE)
10	Express Kenya Ltd (XPRS)
11	Kenya Airways Ltd (KQ)
12	Nation Media Grp (NMG)
13	Scangroup Ltd (SCAN)
14	Standard Group Ltd (SGL)
15	TPS Eastern Africa (TPSE)
16	Uchumi Supermarket Ltd (UCHM)
17	ARM Cement Ltd (ARM)
18	Bamburi Cement Ltd (BAMB)
19	Crown Paints Kenya Ltd (BERG)
20	E.A.Cables Ltd (CABL)
21	E.A.Portland Cement Co. Ltd (PORT)
22	Kenolkobil Ltd (KENO)
23	Kengen Co. Ltd (KEGN)
24	KPLC LTD (KPLC)
25	Total Kenya Ltd (TOTL)
26	Centum Investment Co Ltd (ICDC)
27	Olympia Capital Holdings Ltd (OCH)
28	Trans-Century Ltd (TLC)
29	B.O.C Kenya Ltd (BOC)
30	BAT
31	Carbacid Investments Ltd (CARB)
32	East African Breweries Ltd (EABL)
33	Eveready East Africa Ltd (EVRD)
34	Mumias Sugar Co. Ltd (MSC)
35	Unga Group Ltd (UNGA)
36	Safaricom Ltd (SCOM)

Appendix VII: NACOSTI Research Authorization Letter

**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/18/55092/23654**

Date: **13th July, 2018**

Alex Tom Obulemire
Kabarak University
Private Bag - 20157
KABARAK.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Empirical examination of appropriateness of financial statement analysis models in predicting shareholder wealth of listed non-financial firms in Kenya"* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **11th July, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
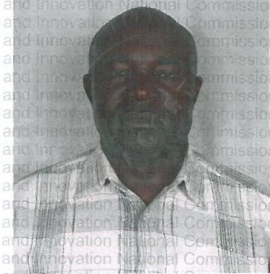Nairobi County.

Appendix VIII: NACOSTI Research Permit

THIS IS TO CERTIFY THAT:
MR. ALEX TOM OBULEMIRE
of KABARAK UNIVERSITY, 2030-20200
Kericho,has been permitted to conduct
research in Nairobi County

Permit No : NACOSTI/P/18/55092/23654
Date Of Issue : 13th July,2018
Fee Recieved :Ksh 2000

on the topic: *EMPIRICAL EXAMINATION*
OF APPROPRIATENESS OF FINANCIAL
STATEMENT ANALYSIS MODELS IN
PREDICTING SHAREHOLDER WEALTH OF
LISTED NON FINANCIAL FIRMS IN KENYA

for the period ending:
11th July,2019

....
Applicant's
Signature

....
Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.
8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.

REPUBLIC OF KENYA

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National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No.A 19374

CONDITIONS: see back page

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