

**THE EFFECT OF SELECTED ACCOUNTING VARIABLES ON  
STOCK LIQUIDITY FOR FIRMS LISTED AT THE NAIROBI  
SECURITIES EXCHANGE**

**BY**

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**DECLARATION**

This research project report is my original work and to the best of my knowledge has not been submitted for the award of a degree in any other university.

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Date 12/11/2013.....

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## **DEDICATION**

To my parents Mr. Daniel Onkoba & Mrs. Hellen Kemuma Onkoba, whose love for education is inspirational for many as exhibited through their passion of educating their family and others in society. To my wife Gladys Moraa, my daughters Gift, Beryl and Purity together with my siblings who constantly encouraged me to finish this research project

## ABSTRACT

This study sought to investigate the effect of selected accounting variables on stock liquidity for firm's listed at the Nairobi Securities Exchange. In particular the study examined the effect of debt to equity ration on stock liquidity, the effect of dividend yield on stock liquidity, the effect of asset turnover ratio on stock liquidity and the effect of earnings per share on stock liquidity for firms listed at the Nairobi Securities Exchange. The study was addressing the gap of whether the selected accounting variables had an effect on the stock liquidity and whether one can use them to predict the stock liquidity at the bourse. The study used a descriptive design model. The population of this study comprised of all the listed firms at the Nairobi Securities Exchange from January 2008 to December 2012. The sample constituted all the firms that comprise the NSE 20 Share Index. Analysis was conducted through the use of regression analysis and ANOVA. The results indicated that accounting variables, as represented by the predictor variables only influenced ten percent of variations in stock liquidity as indicated by the adjusted R square statistic. The model thus only explained a small proportion of the variations in stock liquidity. The study also found debt to equity ratio to have a positive and sizeable effect on stock liquidity. Thus a shift in debt to equity ratio influences a same direction shift of the stock liquidity; dividend yield to have a positive but lesser effect on stock liquidity. It was further inferred that the effect of dividend yield on stock liquidity was found to be half that of debt to equity ratio. Asset turnover ratio was found to have a negative and but slightly larger relationship with stock liquidity. This means that stocks shade off their liquidity with increase in the asset turnover and earnings per share were also found to have a negative relationship with stock liquidity. The ANOVA test of significance on the four predictor variables only found earnings per share to be of significance in predicating stock liquidity in the model. On the basis of the findings, the study recommends that of the selected accounting variables of firms in the Nairobi Securities Exchange only earnings per share can be reliably used as a basis for projecting stock liquidity variations of listed firms. It is therefore suggested that factors and accounting variables be studied to determine those that can be reliably used to predict stock liquidity variations at the Nairobi Securities Exchange.

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## **ABBREVIATIONS**

- ATS - Automated Trading System
- EAC - East Africa Community
- NSE - Nairobi Stock Exchange
- MPT - Modern Portfolio Theory
- GSE - Ghana Stock Exchange
- CAPM - Capital Asset Pricing Model
- CSD - Central Securities Depositories
- EMH - Efficient Market Hypothesis
- P/E - Price Earning Ratio
- D/E - Debt-to- Equity Ratio
- NASI - NSE All Share Index
- SPSS - Statistical Package for Social Sciences

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

The securities market is the place where investors (providers of funds) and public companies (seekers of funds) meet and transact in exchanging moneys for securities and vice versa. Investors must contend with the issue of how to value their investment when making the buy, sell or hold decisions. Recent years have seen a secular increase in both stock liquidity and asset liquidity as measured by the level of cash on the firm's balance sheet. Furthermore, during the recent financial crisis, there was a decline in the liquidity of the assets of financial firms (for example, mortgage backed securities) and in the liquidity of their stock. An asset is liquid if it can be converted into cash quickly at short notice without loss. The models most-frequently applied for prediction of the stock liquidity include the Capital Assets Pricing Model (CAPM), Arbitrage Pricing Model, and the Factor Model. The empirical studies carried out on the factors and variables affecting the stock liquidity demonstrate that there exist numerous variables capable of predicting the stock liquidity with greater precision. Included among such variables are Price Earning (P/E) ratios, Size of the Company, Debt-to-Equity (D/E) ratio, dividend yield and Asset turnover ratio.

According to the information asymmetry theory, the quality of information, such as accounting information provided to the public, is very paramount for the market liquidity. The disclosure reduces information asymmetry through the securities' trading, which increases the liquidity of securities and also cuts the cost of the business capital (Chung et al., 2007). In financial accounting and reporting, it is generally agreed that there are certain relationships between items shown in the profit and loss account and those in the statement of

financial position as well as between items in these statements (Okwuosa, 2005). While there is little debate that the liquidity of a security affects its price (Chordia et al., 2000) the debate has shifted toward determining whether the level of liquidity, the change in liquidity or both, have an impact on security prices. The existence of an information asymmetry between the business organization and the investors urges the market makers to widen the spread of the company to hedge themselves against losses when they undertake any transaction (Heflin et al., 2005). Results from the market microstructure literature indicate that the liquidity of a stock is inversely related to the degree of information asymmetries between investors and market makers (Glosten and Milgrom, 1985; Kyle, 1985). Other theoretical studies show that the variable quality of financial information as contained in accounting variables can be measured either by the level of disclosure (Botason1997) ,or by the level of earnings' management (Bhattachary et al., 2010).

In light of the increasing focus on the Nairobi Securities Exchange as an important avenue for attracting foreign investments and to encourage local residents to invest in shares, Kenyan companies may engage in voluntary disclosures as a means to enhance the value of their stocks hence investor confidence (Barako, 2007). Ensuring investor confidence enhances investors' participation in the market activities and encourages saving and channeling of savings into productive real investment, therefore fostering capital accumulation and efficiency in investment and real sector development. It is however debatable whether protection of investors promotes market efficiency. To enhance the customers' confidence, a market needs to be fair in which customers have complete confidence, a market in which the public interest and the interest of investors rather than immediate profits is the primary aim of those concerned (Shiller, 2000).

### **1.1.1 Accounting Variables**

Ali et al (2000) asserts that preparing financial statements mainly aims at providing users with the required information in order to help them make economic decisions. Current and potential investors are regarded as information users which are composed of diverse aspects. Investors seek to predict the future stock yields and this can be done through investigating the future stock prices. Hence, predicting future stock price is an essential aspect considered by potential investors. They further emphasize that the fundamental accounting variables include assets, liabilities, and owner's equity, operating income, net income, operating cash flow and investment cash flow – related. Different accounting variable reflect different analysis. According to CAPM, Beta ( $\beta$ ) is the only variable capable of predicting the return. The recent studies demonstrate that there exist other variables which outperform stock return predictability potential of the Beta. Included among such variables are debt-to-equity, dividend yield, earnings-to-price, and asset turnover ratios.

### **1.1.2 Stock Liquidity**

Amihud (2002) posits that liquidity is the daily ratio of absolute stock return to its shilling volume, averaged over some period. It can be interpreted as the daily price response associated with one shilling of trading volume, thus serving as a rough measure of price impact. Accounting variables include short-term and long-term debt ratios and payable dividends. Short term debt ratio is the current liabilities to equity and represents the relationship between current debts and equity. Long-term debt ratio is another investment

ratio that is the long-term liabilities to equity. Since the amount of debts ratios depend on interest rate and credit policies of governments, therefore, increasing in the amount of short-term and long-term debt ratios will lead to increase in debt to equity ratio. Thus, it would be related to a positive relationship between debts ratios and capital structure (Miguel & Peinado, 2004).

Daily price movements in the NSE are significantly related to investor sentiment. Consequently, investors' psychology is a potential explanation for stock price movements (Rono et al., 2011). They further concluded that the indicators of stock market development show that there is a general increase in the total shares traded, turnover, and market capitalization at the last day of trading from 2001 to 2007 and a slight fall in 2008. Levitt (2000) suggests that the quality of information is the vital blood of a powerful and efficient market. Without it liquidity is crippled and the market efficiency fades out. This confirms the fundamental role that can be played by disclosure information in the capital market especially with respect to liquidity.

### **1.1.3 The Effect of Accounting Variables on Stock Liquidity**

Lewllen (2004) studied the dividend yield, asset turnover as well as P/E ratio in the companies listed in New York Stock Exchange. He obtained some reliable evidences as for the prediction power of the dividend yield in the period of 1946-2000. However, the evidences he collected with respect to asset turnover as well as the P/E ratio were not reliable to some extent demonstrating that they generally had a limited prediction power. Stocks with high liquidity have better performance as measured by the firm market-to-book ratio. Vivian

et al, (2008) established that more liquid stocks have higher operating returns on their assets and more equity in their capital structure. In contrast, their price-to-operating earnings ratios are similar to less liquid stocks. Furthermore, they document that the increase in liquidity, caused by an exogenous shock due to decimalization, improved firm performance.

#### **1.1.4 Nairobi Securities Exchange**

In 1954 the Nairobi securities exchange was constituted as a voluntary association of stockbrokers registered under the Societies Act. The NSE is a stock market that has been characterized by humble beginnings and it has grown considerably over time. The NSE successfully instituted the central securities depositories (CSD) in November 2004 and installed an automated trading system (ATS) in November 2007. The exchange is also undergoing restructuring of its governance system through demutualization, which was completed by the end of the second quarter of 2012. Characterized by its liquidity, market capitalization and turnover, the NSE may be classified as both emerging market and frontier market. NSE is therefore a model market in view of its high returns, vibrancy and well developed market structure. It therefore, raises interest and sets a precedent for comparison with other emerging markets in Eastern Africa and the world at large (Nyambura, 2005).

There are 60 listed companies which are grouped into Agriculture, Commercial, Manufacturing, Construction and Energy sector (NSE, 2013). The NSE is open for trading from Monday to Friday, and closed on Saturday and during public holidays (Mokua, 2003). Given the important role that a capital market plays in the economy, it is crucial to understand the drivers of stock returns in a particular market. It is of great significance to

identify the variables affecting stock liquidity in emerging markets such as the Nairobi Securities Exchange. Based on this background, this study makes an attempt to examine the effect of accounting variables on stock liquidity for firms listed on the NSE.

## **1.2 Research Problem**

Investment in securities of companies listed at the Nairobi Securities Exchange by the local investors has steadily gained momentum over the last few years. The quality of financial information is a controversial issue that has been widely discussed in the accounting and financial literature. Quality of financial information can be measured either by the level of disclosure (Botason, 1997) or by the level of earnings' management (Bhattachary et al., 2010). As liquidity is a key concept for operating in the financial markets around the world, it is the fundamental quality that any investor seeks for in the selection and management of his portfolio. Enhancing the quantity and quality of the information disseminated by firms can reduce the expectations' heterogeneity of external investors and minimizes the risk of adverse selection perceived by the investor and upgrades the liquidity of the issuer at the securities' market.

Liquidity of a financial asset has been identified as an important factor in the smooth functioning of financial markets as it helps market participants to overcome unexpected financial needs without undergoing major losses. The liquidity of a security and how it changes over time is of major concern to any market participant. It is generally defined in the market microstructure literature as the ease with which investors can buy and sell securities



without having much impact on the prices and it has various dimensions. The NSE, like many other emerging markets, suffers from the lack of liquidity in the market. Foreign investment on the Nairobi Securities Exchange and foreign ownership of companies is by application. Foreign investment in the local subsidiaries of foreign-controlled companies is banned so as to encourage input into Kenyan companies. The Kenyan government has made several reforms aimed at attracting foreign investment via the Nairobi Securities Exchange. Heflin et al. (2005) did a study on disclosure policy and market liquidity looking at the impact of depth quotes and order sizes. The results suggested that high -quality disclosure fosters the market liquidity by reducing information asymmetry. The quality of information, such as accounting information provided to the public, is very important for the market liquidity.

Odhiambo (2005) finds a general association between firm's accounting variables and risk, but finds the same to be structurally unstable and the variables making up this relationship varying over time. Institutional investors avoid the companies that have high fluctuating results and perceived as risky. The institutional investors therefore would rather invest in companies with steady earnings. Kithii (2008) did a study on the relationship between working capital management and profitability of listed companies in the Nairobi stock exchange and found out that there is a statistical significant negative relationship between variables of working capital management and the profitability of firms except for the average payment period which showed a positive relationship. Rono et al (2011) on the other hand studied the determinants of investor confidence for firms listed at the Nairobi stock exchange and found out that political/economic stability, economic growth, and stock market liquidity

play a key role in stock market development. The study further concluded that daily price movements in the NSE are significantly related to investor sentiment.

The existing literature does not therefore give an analysis of whether accounting variables disclosed would signal investors and affect the movement of stock prices. In view of this the study established to what extent the liquidity of accounting variables affected the liquidity of the securities. This research undertook to enrich the debate on this issue by focusing on the research question: does debt to equity ratio, dividend yield, asset turn over and earnings per share affect stock liquidity of firms listed at the NSE?

### **1.3 The Objectives of the Study**

The overall objective of the study was to determine the effect of selected accounting variables on stock liquidity for firms listed at the NSE. This was accomplished through the following specific objectives:

1. Establishing the effect of debt to equity ratio on stock liquidity of firms listed at the NSE
2. Determining the effect of dividend yield on stock liquidity of firms listed at the NSE
3. Establishing the effect of asset turnover ratio on stock liquidity of firms listed at the NSE
4. Determining the effect of earnings per share on stock liquidity of firms listed at the NSE

### **1.4 Value of the Study**

The study will offer valuable contribution to theory and practice. The study will add value to the discipline of corporate financial management especially in the area of stock market

efficiency and will form the basis of further research by identifying the knowledge gap that arises from this study. The study will also stimulate interest in this area and create forum for further discussions on efficient market hypotheses among financial consultants and financiers thus making significant contribution by adding to the body of knowledge that already exist.

To the academicians and researchers, extending the stock liquidity– accounting variables literature to the Nairobi Securities Exchange (NSE), an emerging market, is a step forward for academicians and researchers in this region. The findings will guide researchers who may wish to replicate the study in the other East Africa Community Member (EAC) Countries' stock markets due to shared similarities.

To Investment practitioners, this study will be of use to investors, money managers, stockbrokers and security analysts since they will get better insights in the selection of the accounting variables and financial ratios to use in investment analysis. Individuals, Institutional investors and the General Public will find this study useful in guiding them in making sound investment decisions.

While for Practicing Accountants/ and Auditors, the findings of this study will underscore the useful role that the financial statements play in the financial system. It will sensitize the professional accounting community in the country to the immense fiduciary duty and ethical responsibility that lies on their shoulders to ensure that the statements are prepared in accordance with international financial reporting standards and international auditing standards. Finally, the Government as regulator will be in a position to formulate suitable policies that will regulate disclosure of financial information and monitor the performance of the stock market which is a signal of the economic stability in a country.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter presents the literatures on the various theories and models that provide explanations regarding the concept of efficient market hypothesis and related analysis of liquidity of stocks, studies that have been done that are relevant to this study and a critical review of the theories and models used. In this section we begin with a discussion of the relevant theories and models followed by the empirical review, and finally a summary of the theories and studies analyzed relevant to stock liquidity and accounting variables.

### **2.2 Theoretical Review**

Several theories have been advanced to help explain the concept of information asymmetry arising from the financial disclosures. The theories explain details regarding efficient market analysis with regard to existing information as well as how this information will influence investment decision making. In particular the stock's liquidity if it has to be in an investor's investment portfolio.

#### **2.2.1 Asymmetric Information Theory**

The concept of asymmetric information was first introduced in George A. Akerlof's 1970 paper *The Market for "Lemons": Quality Uncertainty and the Market Mechanism* (Akerlof, 1970). In the paper, he develops asymmetric information with the example case of automobile market. His basic argument is that in many markets the buyer uses some market statistic to measure the value of a class of goods. Thus the buyer sees the average of the

whole market while the seller has more intimate knowledge of a specific item. He further argues that this information asymmetry gives the seller an incentive to sell goods of less than the average market quality. The average quality of goods in the market will then reduce as will the market size. Such differences in social and private returns can be mitigated by a number of different market institutions.

The relevance of the theory is that accounting information as revealed in the financial statements would give information on specific facts to aid in investment decision making. Investors however possess different information which affects their behavior in many situations. Because the investors do not have the same depth of information about the quality of the item as its seller, there is clearly an information asymmetry between and among the market players. This can be reduced through disclosure of accounting information.

### **2.2.2 Efficient Market Hypothesis**

Fama (1970) defined the efficient market as a market in which prices always fully reflect available information. Information in Efficient Market Hypothesis shall be recognized as anything that may lead to changes in share prices but is unknown at the present, and thus appears randomly in the future. Consequently market is being efficient when it reacts to the introduction of new, relevant for stock shares, information by adjusting quickly and precisely. From that perspective it is impossible for an investor to outperform the market using investment strategy based on available information, except through luck.

Based on this study, when the new information enters to the efficient market, it causes some corrections to be applied in the evaluated economic value of securities and its cost in accordance with the offered information to be defined. This implies that the cost of securities will be defined efficiently. Stock market efficiency has the important concepts for investors. It affects the method of persons' attitude on the process of investment and investment decisions. One of the information resources is the financial statements and information provided by the companies. If the information provided by companies is dependable, creditable, timely, reliable, honest and totally qualified, it can be an effective tool in investment decision making (Jamei, Navid & Farshadfar, 2012).

### **2.2.3 Prospect Theory**

Tversky & Kahneman (1979) by way of developing the Prospect Theory showed how people manage risk and uncertainty. In essence, the theory explains the apparent regularity in human behaviours when assessing risk under uncertainty. That is, human beings are not consistently risk-averse; rather they are risk-averse in gains but risk-takers in losses. According to Tversky & Kahneman (1979) people place much more weight on the outcomes that are perceived more certain than that are considered mere probable, a feature known as the “certainty effect”. People’s choices are also affected by ‘framing effect’. Framing refers to the way a problem is posed to the decision maker and their ‘mental accounting’ of that problem. The value maximization function of the Prospect Theory is different from that of the value maximization function of MPT. Wealth maximization is between gains and losses, rather than over the final wealth position as in MPT (Markowitz, 1952). As such, people may

make different choices in situations with identical final wealth levels. Critical to the value maximization is the reference point from which gains and losses are measured. Usually, the status quo is taken as the reference point and changes are measured against it in relative terms, rather than in absolute terms.

#### **2.2.4 Flight to Quality Theory**

Liquidity is the lifeblood of financial markets. Its adequate provision is critical for the smooth operation of an economy. Its sudden erosion in even a single market segment or in an individual instrument can stimulate disruptions that are transmitted through increasingly interdependent and interconnected financial markets worldwide. Keynes (1936) asserts that people demand liquidity or prefer liquidity because they have three different motives for holding cash rather than bonds, which are, Transaction Motive, Precaution Motive and Speculative Motive. Thus the liquidity of a stock is affected by these three motives to a large extent.

### **2.3 Determinants of Stock Market Liquidity**

Liquidity is a key element for well-functioning stock markets as it has important repercussions for traders, trading venues (stock exchanges or alternative trading systems) and listed firms. Moreover, also the stability of the financial system as whole benefits from liquidity. A number of elements affect liquidity of stock markets; first is Transparency – it is the ability of market participants to observe information about the trading process including the need to know prices and order flow. Rindi (2004) also found out that for a given proportion of informed traders, liquidity improves if markets become more transparent.

However, if information acquisition becomes endogenous whereby agents can choose to become informed at a cost, the effect may be reversed. The intuition is that uninformed agents might be reluctant to supply liquidity for large orders, as these might be information driven. Informed traders do not face this problem.

Secondly; the degree to which the identity of market participants is revealed also affects market liquidity. Informed traders will prefer anonymous trading, while liquidity traders do not. A distinction can be made between demand and supply side anonymity. Concealing information about the identity of liquidity demanders in general increases the bid-ask spread, since suppliers can less easily make a distinction between informed and uninformed traders (Benviste et al., 1992). Finally; floor versus screen-based trading systems also matters. Theissen (2002) provides more direct evidence by comparing the floor and the screen-based trading system of the Frankfurt Stock Exchange, which operated in parallel. He finds that an electronic (screen-based) trading system offers low spreads for liquid stocks, while the floor is more competitive for less liquid stocks.

## **2.4 Empirical Review**

Mukherji, Dhatt & Kim (1997) conducted a study of the relation between annual stock returns and fundamental accounting variables for non-financial companies for the period 1982 to 1993. Their results suggested that for Korean Stocks, book to market and sales to share price are more consistent indicators of fundamental value than E/P. Their findings also indicated that greater leverage and smaller size generally result in higher returns for both value and growth stocks.



Jindricovska (2001) investigated the nature of the relationship between accounting earnings and returns on the Czech market. The study was conducted using a data sample covering the years 1993-1998. The results of firm-specific and pooled regression models suggested that for a short estimation window of up to three-quarters, there is a statistically significant relationship between earnings-to-price ratios and price relatives.

Locally, Oliech (2002) studied the relationship between size, book to market and return at the Nairobi Securities Exchange of common stock for all listed companies from 1996 – 2000. The result could not confirm the earlier findings of Fama and French (1993) i.e. the size of the companies quoted on the NSE have no relationship with the return of those companies and the ratio of book-to-market values has no relationship to return of the company. Low levels of significance were achieved in his study and this shows that return for companies quoted at the NSE are determined by factors other than size and ratio of book –to – market value.

Abekah (2005) set out to determine whether the fundamental accounting information in disclosures required of listed companies on the Ghana Stock Exchange (GSE) are significantly related to stock returns as had been found in other emerging markets. He found that there were no significant year to year relationship between individual variables and adjusted annual returns. There were significant positive stable relationship between returns and net profit margin, sales per share to share price ratio while a negative stable relationship was found between returns and beta. A combination of variables also significantly explained return variations.

In emerging markets; Bundoo (2006) analyzed whether the size and book to market equity effects are present on the Stock Exchange of Mauritius using the Fama and French (1993) model. The study showed that both size and book to market effect were present in the Stock Market of Mauritius. Verrecchia, Leuz , Richard & Lambert (2007) in their research entitled dealing with accounting information, disclosure and the cost of the financial security, found that in CAPM model , the higher information quality can reduce the capital cost of a company via the risk of the market without a variability. Regarding the evaluation of accounting information quality and also review of the relation of financial variables with the liquidation risk, the following studies have been done in emerging markets. Jeffrey (2008) found out in a study on the effect of information quality on liquidity risk that there is a reverse relation between the information quality and liquidation risk such that the higher information quality is along with the less liquidation quality. Verdi, Hilary & Biddle (2009) in their research found that, there is a positive relation between the quality of financial information and investment efficiency and companies can have an efficient investment by increase of their financial reporting.

## **2.5 Summary of Literature Review**

The theories dealt here are based on the concept of efficient market phenomenon. The semi-strong form EMH implies that the market is efficient, reflecting all publicly available information. This hypothesis assumes that stocks adjust quickly to absorb new information. Accounting information is made public by being published in the financial statements and this forms the basis of the proposed study. The empirical studies further gives a breakdown on some studies that have been done especially in the areas of accounting variables and it is

relationship with the basic investment decision based variables such as stock returns and liquidity in various markets. The different studies cited tend to explain the concept of information disclosure and its effect on investor decision making. The study by Bhattachary et al (2010) explains the effect of disclosing quality accounting information.

Studies based in Kenya tend to concentrate on the analysis of the effect of working capital on the performance of listed companies. The studies find a general association between firms' accounting variables and risk as well as the fact that there is a statistical significant negative relationship between variables of working capital management and the profitability of firms except for the average payment period which showed a positive relationship. The studies further found out that daily price movements in the NSE are significantly related to investor sentiment. The existing literature does not therefore give an analysis of whether accounting variables disclosed would signal investors and affect the movement of stock liquidity. The study in addressing the issue assessed whether debt to equity ratio, dividend yield, asset turn over and earnings per share affected stock liquidity of firms listed at the NSE.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter outlines the research design that was used, the population that was studied, the sample size and the type of data that was used. This chapter also explains how the data was to be analyzed.

### **3.2 Research Design**

The study took a Descriptive design model using co relational methods. Kothari (2004) asserts that descriptive research method includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. This method is justified on the basis that the methods of research utilized in descriptive research are survey methods of all kinds, including comparative and correlational methods. The researcher equally has no control over the variables; he can only report what has happened or what is happening.

### **3.3 Population of the Study**

The population of study was all the 61 firms listed at the NSE (Appendix 1) as at December 31, 2012.

### **3.4 Sample and Sampling Technique**

The sampling technique was purposive or judgmental and sample size consisted of companies consistently making up the NSE – 20 share index between January 1<sup>st</sup> 2008 and December 31<sup>st</sup>, 2012. This period falls immediately after the automation process of the securities

exchange trading system. On Monday 11 September 2006 live trading on the automated trading systems of the Nairobi Stock Exchange was implemented and in February 2007 NSE upgraded its website to enhance easy and faster access of accurate, factual and timely trading information. The trading activities therefore normalized after the changeover making the period appropriate.

### **3.5 Data Collection**

The study used secondary data on annual stock prices and number of shares outstanding and data on dividends. Data on required accounting figures was extracted from financial statements of sample firms and from the Nairobi Securities Exchange handbook for the five years period of study, from January 1<sup>st</sup> 2008 to December 31<sup>st</sup> 2012.

### **3.6 Data Analysis**

The types of accounting variables as disclosed or computed by investors can affect the liquidity of stocks of listed companies as measured by the daily ratio of absolute stock return to its shilling volume, averaged over some period. Accounting variables are therefore the independent variables while liquidity of stocks is the dependent variable. The correlation between the variables under study, and between these variables and Stock liquidity was computed. A regression analysis was then done to facilitate the comparison of more than two factors at a time and was thus used to test possibility of multi-factor liquidity generating models. The analysis then began with the computation of the correlation coefficients between

the fundamental variables, and between these variables and annual stock liquidity. The correlation coefficients were also calculated for the 5-year aggregate cross-sectional data. The significance of these correlations was measured by t-test at 5% of significance and ANOVA. SPSS package was used to analyze the data.

### **3.6.1 Analytical Model**

The following model will be applicable.

$$Y = \alpha + \beta_1 D/E + \beta_2 DY + \beta_3 T + \beta_4 EPS + \varepsilon$$

Where Y = Stock Liquidity

D/E = Debt to equity ratio

DY = Dividend yield

T = Asset turnover ratio

EPS = Earnings per share

$\varepsilon$  = Error term

The operationalization of the variables is based on the understanding of the regression model above. In measuring liquidity, the volume-related liquidity measures will be used, calculated as a quantity of shares, per time unit. Average values of the annual changes in volume of shares traded will be considered and compared against the independent variables debt to equity ratio, dividend yield, asset turnover ratio and earnings per share. For a given year, stocks will be ranked based on their debt to equity values computed by dividing the book value of debt reported at the end of the fiscal year by the market value of equity reported, again, at the end of fiscal year. Dividend yield values will be computed by dividing the

dividends reported at the end of fiscal year by the stock price at the end of fiscal year. The Dividend Yield used will be extracted from the Nairobi Securities Exchange Hand Books while assets turnover ratio will be calculated by dividing sales in shillings by assets of the business.

Correlation coefficient was used to establish the nature and strength of the relationship of the variables individual and jointly. The test of significance was carried out to analyze the magnitude of the relationship.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

### 4.1 Introduction

This chapter presents the results of the data analysis. Secondary data in the form of published financial statements of companies of the NSE 20 share index was obtained from the NSE. The data was then converted to desired form and input into the SPSS package. Data analysis was conducted to generate descriptive and regression output. The analysis results and findings were found to be as discussed below.

### 4.1 Descriptive Statistics

Table 4.1 Summary of the descriptive statistics of regression data

**Table 4.1: Descriptive Statistics of Model Variables**

	<b>Liquidity (Ln)</b>	<b>D/E</b>	<b>Dividend Yield</b>	<b>Asset turnover</b>	<b>EPS</b>
Mean	13.042598	0.4635512	3.7576389	2.1099146	7.9875
Standard Error	0.177234	0.0983351	0.3116693	0.3651805	1.174541
Median	12.941093	0.2949044	3.6200000	1.2002395	4.61
Mode	-	-	0.0000000	-	2.34
Standard Dev.	1.503882	0.8344008	2.6446015	3.0986591	9.966314
Sample Var.	2.261660	0.6962248	6.9939169	9.6016881	99.32742
Kurtosis	-0.849196	18.4213269	1.9041142	9.8042794	4.321888
Skewness	0.447980	-2.4111979	0.9762328	3.1007142	1.834508
Range	5.700362	7.3549872	12.9800000	16.8769781	55.82
Minimum	10.450626	-4.5435552	0.0000000	0.0000000	-8.85
Maximum	16.150987	2.8114320	12.9800000	16.8769781	46.97
Sum	939.067056	33.3756897	270.5500000	151.9138537	575.1
Count	72.000000	72.0000000	72.0000000	72.0000000	72
Largest(1)	16.150987	2.8114320	12.9800000	16.8769781	46.97
Smallest(1)	10.450626	-4.5435552	0.0000000	0.0000000	-8.85
Conf. L. (95.0%)	0.353395	0.1960746	0.6214509	0.7281492	2.341969

Source: Computation from raw data obtained from NSE



The descriptive statistics of Table 4.1 above provides a window into the data set that was used for the regression analysis. It indicates that EPS has the highest range of the four variables at 55.82, the result also indicate that the EPS has the highest standard deviation of the four variables at 9.966 based on the data used. These two figures are indicative of high variability in earnings per share of firms listed at the NSE and may have a greater effect on the stock liquidity over debt/equity ratio, dividend yield and asset turnover ratio.

### **4.3 Regression Analysis**

A regression analysis was conducted on stock liquidity against selected accounting variables, namely; debt/equity ratio, dividend yield, asset turnover ratio, and EPS. The regression equation fitted to the data was of the form:

$$Y = \alpha + \beta_1 D/E + \beta_2 DY + \beta_3 T + \beta_4 EPS + \varepsilon$$

Where Y = Stock Liquidity

D/E = Debt to equity ratio

DY = Dividend yield

T = Asset turnover ratio

EPS = Earnings per share

$\varepsilon$  = Error term

Data for the above variables was generated for 38 companies listed in the NSE that spanned the years 2008 to 2012. The data was subjected to descriptive statistics; regression analysis; and test of significance; the findings of which were as discussed below:

**Table 4.2: Summary of Accounting Variables on Stock Liquidity**

Regression Statistics	
Multiple R	0.390904
R Square	0.152806
Adjusted R Square	0.102227
Standard Error	1.424941
Observations	72

Source: Computation from raw data obtained from the NSE

Table 4.2 indicates that accounting variables, as represented by the predictor variables (D/E; DY; T; EPS), only influenced 10.2 % of variations in stock liquidity as indicated by the adjusted R square statistic. The model thus only explained 10.2 % of the variations in stock liquidity.

**Table 4.3: Anova for Accounting Variables on Stock Liquidity**

ANOVA					
	df	Sum of squares	Mean square	F	P-Value (Significance F)
Regression	4	24.53723248	6.13430812	3.021146663	0.023665141
Residual	67	136.040613	2.030456911		
Total	71	160.5778455			

Source: Computation from raw data obtained from the NSE

Significance F on table 4.3 demonstrates the usefulness of the overall regression model at a 5% level of significance. Since the p-value of the F test is smaller than alpha ( $0.023665141 < .05$ ) it was concluded that the regression model was fit to explain changes in stock liquidity for the firms under study at 5% level of significance. Table 4.3 also clearly indicates that the regression only accounted for a less than dominant number of variations in stock liquidity; 24.53723248 (15.3 %) out of 160.5778455; the rest of the variations being accounted for by other factors external to the model (Residual) as indicated by the sum of the squares (SS). Residual (or error) represents unexplained (or residual) variation after fitting a regression model. It is the difference (or left over) between the observed value of the variable and the value suggested by the regression model.

**Table 4.4: Coefficients of the model**

	Coefficients	Standard Error	t Stat	P-value
Intercept	13.11158137	0.365942128	35.82965822	1.98194E-45
D/E	0.216733917	0.235118159	0.921808498	0.359935991
Dividend Yield (%)	0.104599608	0.066907056	1.563356892	0.122680039
Asset turnover	-0.117355047	0.062510915	-1.877352875	0.064823874
Earnings Per Share	-0.039422732	0.017919858	-2.199946646	0.031263919

Source: Computation from raw data obtained from the NSE

Table 4.4 depicts the numerical relationship between the independent variable and the predictor variables in the following resultant equation:

$$\text{Stock liquidity (Y)} = 13.1116 + 0.21673\text{D/E} + 0.1046\text{DY} - 0.1174\text{T} - 0.03942\text{EPS}$$

The coefficients and their signs are indicative of the effect of each predictor on the stock liquidity. The analysis for each of the objectives gave the following results:

#### **4.3.1 Effect of Debt/Equity Ratio on Stock Liquidity**

As shown by the coefficients in table 4.4, D/E had a positive and sizeable effect on stock liquidity at 21.7 %. This means that an increase in D/E leads to a sizeable increase in stock liquidity. Thus a shift in debt to equity ratio influences a same direction shift of the stock liquidity by a 21.7% margin. Thus investors view firms favorably if they are employing more debt than equity in their capital structure.

#### **4.3.2 Effect of Dividend Yield on Stock Liquidity**

As shown by the coefficients in table 4.4, an increase in dividend yield had a positive relationship with stock liquidity at 10.5 %. Thus a given increase in dividend yield leads to a marginal increase in stock liquidity in the same direction. It was further inferred that the effect of dividend yield on stock liquidity is half that of debt to equity ratio. Investors therefore react positively to and increase in dividends although less than they do regarding debt to equity ratio.

#### **4.3.3 Effect of Asset Turnover Ratio on Stock Liquidity**

As shown by the coefficients in table 4.4, asset turnover ratio had a negative relationship with stock liquidity at -11.7 %. The sign of the coefficient means that asset turnover ratio and stock liquidity move in opposite directions. Thus an increase in asset turnover ratio leads to a marginal decrease in stock liquidity. This means that stocks shade off their liquidity with

increase in the asset turnover. Thus we can infer that investor hold their stocks as they wait for more information on the firm.

#### **4.3.4 Effect of EPS on Stock Liquidity**

As shown by the coefficients in table 4.4, EPS had a negative relationship with stock liquidity at -3.9 %. An increase in EPS would therefore result in a slight decrease in stock liquidity. The results indicate that stock liquidity and earnings per share move in opposite directions and that a unit increase in earnings per share results in a 4 % decrease in stock liquidity of firms listed at the NSE.

A t-test was additionally conducted to ascertain whether one or more of the predictor variables significantly predict the dependent variable at the 5% significance level. Testing whether the coefficient of debt/equity ratio is equal to zero at 5% level of significance yields a p-value of  $(0.359936 > 0.05)$ , which is insignificant. Similarly, dividend yield yielded a p-value of  $(0.12268 > 0.05)$ , which was not significant either. Asset turnover ratio yielded a p-value of  $(0.0648239 > 0.05)$ , which was not significant as well. Ultimately and on the contrary, EPS yielded a p-value of  $(0.0312639 < 0.05)$ , which was significant. Therefore, of the four predictor variables in the model, EPS was the only useful predictor of variations in stock liquidity.

#### **4.4 Interpretation of Results**

The results indicated that investors view positively those firms that show an increase in debt to equity ratio and therefore results in the stock having activity as investors buy and sell.

Thus investors may use the movement of debt to equity ratio to make the buy-sell or hold decisions for a given stock at the NSE. The effect of dividend yield on stock liquidity is about half of that made by debt to equity ratio. On the other hand, asset turnover ratio and earnings per share had a negative effect on the stock liquidity. The results indicated that a unit increase in asset turnover reduces the liquidity of a stock by a bout 12% while a unit increase in earnings per share reduces the liquidity of a stock by a bout 4% for firms listed at the NSE.

## **CHAPTER FIVE: SUMMARY CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter summarizes the analysis in chapter four and highlights the key findings in regard to the data analysis done. It draws conclusions and implications from the findings and gives recommendations. Limitations of the study and suggestions of areas for further studies are also presented.

### **5.2 Summary of Findings**

This study was conducted with the main objective of establishing the effect of four selected accounting variables on stock liquidity for listed 20 Share index companies at the Nairobi Securities Exchange. The study also sought to establish the effects of debt/equity ratio; dividend yield; asset turnover ratio and EPS respectively on stock liquidity of NSE 20 Share index companies at the NSE. To achieve the above objectives, a regression analysis was conducted whereby stock liquidity, surrogated by the log of average trade volumes was regressed against the four predictor accounting variables; debt/equity ratio; dividend yield; asset turnover ratio; and EPS for a period spanning 2008-2012. Data for both the dependent and predictor variables were obtained from the NSE. The two sets of data were then subjected to a regression analysis.

### **5.2.1 The Effect of Selected Accounting Variables on Stock Liquidity**

The study found that the accounting variables (D/E; DY; T; EPS) influenced only 10.2 % of variations in firms' stock liquidity as depicted by the adjusted R square statistic of 0.102227 (refer to table 4.2). Table 4.3 further indicated that the regression model was also found to account for only 24.53723248 (15.3 %) out of 160.5778455 variations in leverage; with the bulk of the variation (in leverage) being accounted for by residuals/ other exogenous factors (84.7 %).

### **5.3 Conclusion**

The results indicate that the selected accounting variables do not significantly influence stock liquidity variability. The study consequently concludes that other factors other than the selected accounting variables were primarily responsible for variability in stock liquidity levels of firms' listed in the NSE.

The study also concludes that with respect to the nature of the relationship in terms of both magnitude and direction as exhibited by the coefficients in table 4.4; an increase in D/E led to a sizeable increase in stock liquidity; an increase in dividend yield led to a marginal increase in stock liquidity; an increase in asset turnover ratio led to a marginal decrease in stock liquidity; and an increase in EPS resulted in a slight decrease in stock liquidity.

### **5.4 Recommendation**

The study recommends that the selected accounting variables of firms in the NSE should not be reliably used as a basis for projecting stock liquidity variations of listed firms. The study also found that debt/equity ratio; dividend yield; and asset turnover ratio were insignificant in



predicting stock liquidity variation in the model, with EPS registering modest significance. The study consequently recommends that on the basis of the findings, though negligibly so, EPS may give a modest indication as to what direction stock liquidity variability may take in a given listed firm at the NSE.

### **5.5 Limitations of the Study**

The study was unable to obtain data for all the NSE 20 Share index firms in the sample, managing to obtain complete data from 15 firms; firms in banking and insurance could not be used in the study because the nature of their business meant that some of the study variables could not be operationalised. This study also only used four proxies for accounting variables whereas many other possible accounting surrogates that the study may not have used exist. Finally, this study is based on 2008-2012 stock liquidity; debt/equity ratio; dividend yield; asset turnover ratio; and EPS data for the respective 15 NSE 20 Share Index firms and thus interpretations deviating from the findings of this research may occur if period is outside the study period or if regression variables are not study variables.

### **5.6 Suggestions for Further Studies**

Further investigation may be done to establish the effect of other accounting variable surrogates. In addition, further inquiry may be done into why the accounting variables exhibited the specified relationships and coefficient magnitude against stock liquidity. Finally, an investigation may be done to establish the key factors that constitute the residuals in this study.

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## APPENDIX I

### LIST OF NSE 20-SHARE INDEX COMPANIES

1. Rea Vipingo Plantations Ltd
2. Sasini Ltd
3. Express Ltd
4. Kenya Airways Ltd
5. Nation Media Group
6. Barclays Bank Ltd
7. Kenya Commercial Bank Ltd
8. Standard Chartered Bank Ltd
9. British American Tobacco Kenya Ltd
10. East African Breweries Ltd
11. Mumias Sugar Co.Ltd
12. Bamburi Cement Ltd
13. Ken Gen Ltd
14. Kenya Power & Lightning Co.Ltd
15. Uchumi supermarket **D**
16. Safaricom Ltd **D**
17. Equity bank **D**
18. Co-operative Bank **D**
19. Kenol Kobil **D**
20. Athi River mining **D**

**Source: NSE, 2012**

## **Appendix II: Companies Listed in Nairobi Stock Exchange**

### **MAIN INVESTMENTS MARKET SEGMENT (MIMS)**

#### **AGRICULTURAL**

Kenya Orchards Ltd

Rea Vipingo Ltd.

Sasini Tea & Coffee Ltd.

Kakuzi Ltd.

#### **COMMERCIAL & SERVICES**

Car & General Ltd.

CMC Holdings (Suspended)

Hutchings Biemer Ltd (suspended)

I & M Holdings

Kenya Airways

Marshalls E.A. Ltd.

Nation Media Group

TPS (Serena) Ltd.

Scan Group Ltd.

Standard Group Ltd.

Safaricom Ltd.

Uchumi Supermarket Ltd

Longhorn Kenya Ltd.

## **FINANCE AND INVESTMENT**

Barclays Bank of Kenya Ltd.  
CFC Stanbic Bank Ltd.  
Centum Investment Ltd.  
Diamond Trust Bank of Kenya Ltd  
Housing Finance Ltd.  
ICDC Investment Company Ltd.  
Jubilee Insurance Co. Ltd.  
Kenya Commercial Bank Ltd.  
National Bank Of Kenya Ltd.  
National Industrial Credit (NIC) Bank Ltd.  
Pan African Insurance Holdings Co. Ltd.  
Standard Chartered Bank Ltd.  
Equity Bank Ltd.  
The Co-operative Bank of Kenya Ltd.  
Kenya Re-Insurance Ltd.  
CIC Insurance Group Ltd.  
Liberty Kenya Holdings Ltd.

## **INDUSTRIAL AND ALLIED**

Athi River Mining  
Bamburi Cement Ltd.  
BOC Kenya Ltd.  
British American Tobacco Kenya Ltd.  
Carbacid Investments Ltd.  
Crown Berger (K) Ltd.  
Olympia Capital Holdings Ltd.  
E.A. Cables

E.A. Portland Cement Co. Ltd.

E.A. Breweries Ltd.

Sameer Africa Ltd.

Kenya Power & Lighting Co. Ltd.

Kenya Oil Ltd.

Mumias Sugar Company Ltd.

Unga Group Ltd.

Total Kenya Ltd.

Eveready East Africa Ltd.

Kengen Ltd.

Umeme Ltd.

#### **ALTERNATIVE INVESTMENT MARKETS (AIMS)**

A.Baumann & Co. Ltd. (Suspended)

Eaagads Ltd.

Express Kenya Ltd.

Williamson Tea Kenya Ltd.

Kapchorua Tea Co. Ltd.

City Trust Ltd.(Suspended)

Limuru Tea Co.Ltd

Trans-century

#### **FIXED INCOME SECURITY MARKET SEGMENT (FISMS)**

Preference shares

Government of Kenya Treasury Bonds

Government Infrastructure Bond EADB Bond

Faulu Kenya Ltd. Floating rate Notes

PTA Bank Ltd Floating Rate Bond

Athi River Mining Medium Term Floating Rate Notes



Barclays Bank Medium Term Floating Rate Notes

Sasini Ltd

Centum investment company

Mabati Rolling Mills

CFC Stanbic Senior and Subordinate Bonds

Shelter Afrique Medium Term Unsecured Notes

Kengen Public Infrastructure Bond

Consolidated Bank Ltd.

Source: NSE Website-[www.nse.ke](http://www.nse.ke)

**APPENDIX III**  
**DATA COLLECTION FORM**

COMPANY NAME	Statistic				
	Mean	Std Dev.	Min	Max	Std error
Predictor/statistic					
Stock Liquidity (annual average)					
Debt to Equity Ratio (D/E)					
Dividend Yield (DY)					
Asset turnover Ratio (T)					
Earning per Share (EPS)					

## APPENDIX IV: RESIDUAL OUTPUTS

<b>Observation</b>	<b>Predicted Liquidity (Ln)</b>	<b>Residuals</b>	<b>Standard Residuals</b>
1	13.52579623	-0.75374	-0.54451987
2	13.44325983	-1.37136	-0.990707726
3	13.3962011	-1.67293	-1.208569153
4	13.02185604	-1.62484	-1.173827423
5	13.33685986	-2.43397	-1.758371375
6	13.74397133	-1.62065	-1.170801207
7	13.37138778	0.054375	0.039281823
8	13.75260042	-0.54722	-0.395326223
9	13.01309157	-0.94006	-0.679129566
10	13.1223599	-1.49216	-1.07797764
11	13.35748751	0.234332	0.169288463
12	13.31066182	0.856036	0.618424616
13	14.30228769	-0.48654	-0.351493382
14	13.32869427	0.144418	0.10433134
15	13.25544637	-0.04326	-0.031252668
16	13.20273293	-0.61724	-0.445911593
17	13.02391144	-1.22963	-0.888321744
18	13.09360537	-1.36565	-0.986583912
19	12.58359793	-0.90498	-0.653783422
20	12.64294808	-1.18588	-0.856716585
21	13.54842796	2.602559	1.880163194
22	13.36074528	2.745582	1.983486963
23	13.32193256	2.619294	1.892252463
24	13.12949894	2.664699	1.925054237
25	12.55776364	-0.19232	-0.138936199
26	12.36356652	-0.55384	-0.400108517
27	10.52399751	0.593423	0.428705757
28	13.08814157	0.917156	0.66257941
29	13.10098116	-0.7819	-0.564863254
30	13.17157194	-0.9594	-0.69310003
31	13.17810299	-1.21037	-0.87440574
32	13.15950055	-1.43229	-1.034730545
33	13.21177739	0.769379	0.555821241

34	12.92975571	1.574373	1.137371618
35	13.03175092	0.091746	0.066279797
36	13.06649598	-1.42595	-1.030145325
37	12.90630717	-1.39104	-1.004930176
38	12.44244872	1.63664	1.182355086
39	12.78260614	-0.68879	-0.497602539
40	13.08286203	-1.12026	-0.809305483
41	13.49723555	-1.87002	-1.350952577
42	13.56885754	-2.04622	-1.478247256
43	12.91831294	1.498661	1.082675236
44	12.8909162	0.772581	0.558134268
45	12.95879831	0.615445	0.444615352
46	12.81922025	0.649683	0.469349591
47	12.89426575	0.502524	0.363037836
48	11.58918959	2.005918	1.449132622
49	12.57184825	0.785996	0.567825703
50	12.33286998	-1.88224	-1.359786865
51	11.98229755	-0.90701	-0.655249323
52	11.8188945	-0.43559	-0.314681259
53	12.69370676	1.099388	0.794229074
54	11.83086391	1.27926	0.924174032
55	12.08133399	0.671886	0.485389323
56	12.51915201	-0.86608	-0.625682388
57	12.37904551	-0.84305	-0.609042104
58	13.69958869	0.839068	0.606166426
59	13.5738086	0.906777	0.655081871
60	13.55484643	0.951644	0.687495102
61	13.47457289	1.09781	0.793088993
62	13.4778613	0.887751	0.641336486
63	13.78613913	2.125933	1.535834691
64	13.3531799	2.395988	1.730929993
65	13.74632779	1.763715	1.274157918
66	13.32036798	2.073556	1.497996018
67	13.52676009	1.482384	1.070916122
68	13.53869808	1.433107	1.035317013
69	13.37421146	-1.06868	-0.772046863
70	13.16891854	-1.44529	-1.044122075
71	13.23358247	-1.98163	-1.431587651
72	13.10439202	-1.951	-1.409460022