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RELATIONSHIP BETWEEN STOCK MARKET LIQUIDITY AND STOCK

RETURNS:

A KENYAN CONTEXT

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ABSTRACT

Liquidity risk is a significant factor influencing the performance of company stocks, as investors tended to favor stocks with high liquidity, leading to greater demand in the stock market. Market liquidity, defined as the ease with which assets could be bought or sold without substantially impacting their price, is a critical characteristic of financial markets. While the importance of liquidity in determining stock returns is well acknowledged, its impact in emerging markets, such as Kenya, remained underexplored. To address this gap, this research examined the relationship between stock market liquidity and stock returns within the Kenyan context, focusing on companies listed on the Nairobi Securities Exchange (NSE). The study evaluated two key dimensions of liquidity: the Amihud Illiquidity Ratio, which measures the relationship between absolute stock returns and trading volume, and monthly traded share volumes at the NSE. Using a panel regression model, the study assessed the influence of these liquidity measures on stock returns over the period 2017–2023. The findings contribute to the ongoing debate on the liquidity–returns relationship, offering valuable insights for investment strategies and policy formulation in emerging markets. Furthermore, the analysis highlighted the pivotal role of liquidity in enhancing market efficiency and stability, particularly in the NSE, where liquidity has been identified as a major determinant of market performance.

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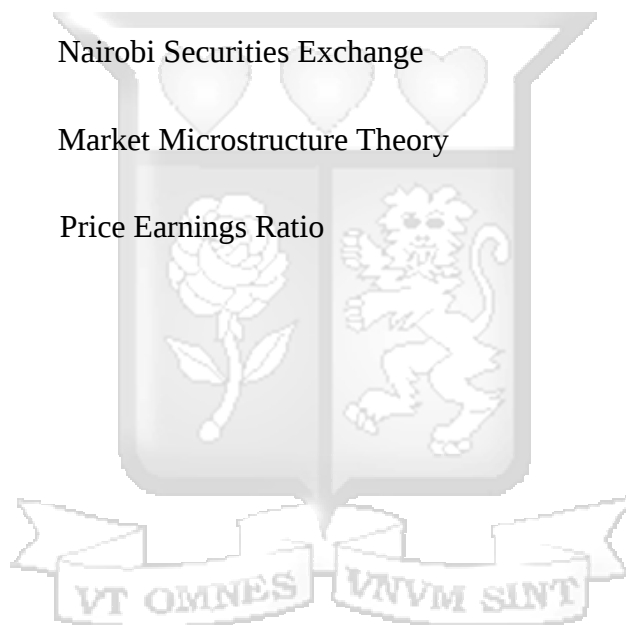
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List of Abbreviations

CAPM	Capital Asset Pricing Model
CBK	Central Bank of Kenya
CMA	Capital Market Authority
EMH	Efficient Markets Hypothesis
GDP	Gross Domestic Product
IMF	International Monetary Fund
NSE	Nairobi Securities Exchange
MMT	Market Microstructure Theory
P/E	Price Earnings Ratio



CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Among the studied world economic phenomena, the most prevalent is the stock market. Liquidity, which is extremely important due to its nature of reducing risks and increasing the attractiveness of an investment, is one of the major factors of the stock market (Nguyi, 2003). Investors will have the best opportunity to revise their portfolio, or in some instances do away with an investment, rapidly and easily due to the acquisition and disposition of assets conveniently (Demirguc-Kunt and Levine, 1996). Because liquidity in a stock allows for its trade, the potential returns on investments are also considered by investors. Thus, based on recent studies, the results indicated that the liquidity of the key global financial markets is susceptible to changes over time, and some risk is associated with such uncertainty (Theart, 2014; Marozva, 2018; Theart, 2016). Both individual and institutional investors are always in search of ways and strategies of investing that can have higher and more susceptible returns.

The ability to buy or sell significant stock at a low cost and quickly without impacting the price is what is referred to as being liquid. It is key in both stock markets and in general finance (Gibson and Mougeot, 2004). For instance, in foreign currency dealings, these markets, even questioning the availability of liquidity, offer different premiums based not only on the current currency but on the difference in the state of the foreign currency versus domestic investors. Idzorek, Xiong, and Ibbotson (2010) point out that investors are willing to pay as much money as needed for a liquid asset. This price is often referred to as the liquidity premium. In contrast, investors should be prepared to accept a lower price from an illiquid asset exhibiting the liquidity discount. This, in turn, creates different opportunities for investors to arbitrage—buying illiquid equities at a discount can sometimes be a strategy, depending on the deviation of investor demand for liquidity from the rest of the market.

1.1.1 Nairobi Stock Exchange

According to Ngugi & Njiru (2005), the NSE was formed in the 1920s while Kenya was still a British colony and since then the exchange has grown. It was first established in 1953 as an overseas stock, and in 1954 it was structured with stock dealers who had registered under the Societies Act which was in charge of regulating the financial market. Since trading in the stock market was restricted solely to European citizens, people from Asia and Africa could not participate in trading. It is only after Kenya gained independence in 1963 that the securities market opened trading for Asians and Africans. A trading floor was not established up until October 1991. As a result of the trading floor, index movements were upward and trade volume increased significantly.

The NSE has enabled both the public and private sectors in Kenya to raise funds for expansion and the venture of new enterprises. It has also provided a chance for foreign investment to flow into the country and widen the base of investors. In 2006, fifty-three companies were listed in the NSE website and held fifty-one registered brokers who represented the financial sector of Kenya. The exchange traded in fixed income instruments including treasury bonds and common shares. By global standards, the Nairobi Securities Exchange is smaller, has less liquidity, and exhibits high levels of return and price volatility. Liquidity has recently improved in the Kenyan market due to decreasing bid-ask spreads and increasing trading volumes over the last 10 years (CMA, 2015).

It is observed that among other factors stock market liquidity affects stock returns in the NSE. Despite the Kenyan securities market being considered more liquid and active in terms of trading volume compared to East African and Sub-Saharan African markets, the low level of market liquidity has been felt to be an immense drawback. Diminished liquidity exists, especially in the bond and stock secondary markets (CMA, 2015). A few shares listed in the NSE are also cross listed on the stock exchanges in Tanzania, Uganda, and South Africa.

1.1.2 Market Liquidity

Liquidity is how fast trade can be generated with little consequence on price. This is one of the most salient features in an investment plan and financial assets. However, it is a major feature in the financial market and is characterized by qualities such as resilience, tightness, and depth, which are directly influenced by components of the market microstructure. According to Brennan, Chordia, Subrahmanyam, and Tong, (2012), liquidity has been a matter of great interest to traders, policymakers, and academicians. The papers have elaborated on the importance of liquidity in forecasting estimated returns over time. Amihud and Mendelson (1986) found evidence that asset returns include a significant premium for the quoted bid-ask spread.

All three dimensions of liquidity, depth, width, which is the cost tightness dimension of liquidity, and resilience, which is how quickly the price bounces back from a liquidity shock can be examined analytically. The majority of research conducted looked at market depth as a single dimension of liquidity, but this study will consider the monthly traded share volumes at the NSE and Amihud Illiquidity Ratio as dimensions of liquidity. According to global market trends, there was a dry-up in market liquidity before the global economic disaster caused by the financial crisis of 2007–2008. At the same time, as markets and participants recovered there was little liquidity for securities in developed and emerging markets. That meant more liquidity-related shocks and hazards. Even though the giant deals may be fewer than there were before the crisis in several marketplaces, the price impact of the purchase and sale has increased.

In the last few years, the concerns, and transformations of policymakers about liquidity have created an enormous impact in the financial markets of developed and developing countries. There have been massive impacts in the financial sector, such as the institutionalization of stringent regulations, re-engineering of monetary policy, and the occasioning of restructures in most banks and other financial institutions concerning business and operating models on account of newly strictly imposed restrictions. These have influenced the liquidity of emerging and developing stock markets, negatively and positively (IMF, 2015).

1.1.3 Stock Returns

Stock return refers to the payment given to the investor for holding onto stocks over a certain period. The gains could be from capital gain or through the dividends paid out. There are numerous determinants of stock return. There are two ways to measure the return, namely: the expected rate of return and the historical rate of return. According to Reilly and Brown, (2012), the historical rate of return refers to the return on an investment over the holding period, while the expected return is the return that a security is expected to generate for an investor over the next period.

Basu (1977) showed that stocks with low P/E ratios, or high earnings/price ratios, had lower returns than equities with low P/E ratios. The findings showed that these differences in return and beta could not be accounted for. In a subsequent paper, Basu (1983) reported that this "E/P effect" was not restricted to small capitalization stocks. Subsequent research by Jaffe, Keim, and Westerfield, (1989) verified this conclusion and further showed that the E/P impact is not, as some analysts had said, confined to January. The E/P effect is a direct logical fallout from the CAPM; beta should be the sole factor taken into consideration.

Empirical evidence from previous research shows that Sharpe's (1964), and Litner, (1965) capital asset pricing model failed to explain stock returns. Afterward, several factors were found to have explanatory power on stock returns. For instance, Fama and French, (1996), added book-to-market and size as two extra risk indicators to the CAPM. It is typically assumed in the theory of asset pricing that all of the assets are liquid and can be easily exchanged. However, most of the asset classes normally traded are far from being perfectly liquid, and investors who need to liquidate their position as quickly as possible are usually subject to transaction costs and impaired resale value in the future. This affects asset values and returns considerably because liquidity affects future cash flows.

The ease of trading financial instruments, like stocks, is quite important for investors, financial markets, and listed firms. Liquidity has thus found its way into being used as a variable in explaining stock returns. Particularly important works on the liquidity-stock return relationship have been fronted by Amihud and Mendelson, (1986); Amihud, (2002); Pastor and Stambaugh, (2003); Liu, (2006); Brennan (2012); Sarr and Lybek (2012), among many other scholars. Such a relationship between liquidity and stock returns has long been established; however, the findings

have often been inconclusive. This can be attributed to the fact that researchers used different measures of liquidity and, more significantly, variations in the dynamics and conditions of different markets.

1.2 Problem Statement

The compound and vast nature of the relationship between stock market liquidity and stock returns is not fully understood. Even though thorough studies from the perspective of academic interest have been done, the relationship has not been well understood in the context of the latest market developments, technological breakthroughs, and changes in investor habits. Although it may seem intuitive that liquidity should affect asset returns, the dependence is not yet well understood. This aspect therefore left many unanswered questions regarding the factors open in the paper by Archarya (2005) and called for further research. While he was unable to reveal a deep relationship in the study, Barro (1991) assessed appropriately market liquidity to multiple variables—capital accumulation, productivity, or private saving rates—because the liquidity variables are measured against many other variables. Jun, Marathe, and Shawky (2003) found a positive relationship between stock market liquidity and the return of financial instruments in emerging markets. According to the Ayako (2005) study, no relationship was found between how liquidity affects NSE stock returns.

As important as liquidity is to the operation of the stock market, little research has been done to study the liquidity in Kenya and establish the relationship that exists between market liquidity and the return of stock in the Nairobi Securities Market. Most have been done revolving around the single dimension of liquidity, which is market depth. Further, no study has been done as to how the market participants perceive the liquidity of the market. This further necessitates the need for research on the relationship between these liquidity variables, bid-ask spreads, and turnover rate on stock returns in the Kenyan context, given the important role that market liquidity plays, the gap in knowledge regarding the various dimensions of liquidity and market-participants' perception of liquidity, conflicting results from various earlier researchers, and the changing regulatory and economic environment in the Kenyan market. This study seeks to answer the following question using the two dimensions of liquidity.

1.3 Research Questions

1. How does the traded share volumes affect stock returns in the Nairobi Securities Exchange (NSE)?
2. What is the impact of the Amihud Illiquidity Ratio on stock returns?

1.4 Objectives

1. To assess the effect of traded share volumes on stock returns of companies listed on NSE.
2. To assess the effect of Amihud Illiquidity Ratio on stock returns of companies listed on NSE.

1.5 Significance of the study

This paper will explore the liquidity of the Kenyan financial market in relation to stock returns. In so doing, this research finding is going to be helpful to investment managers as they will be in a position to make well-informed decisions on whether and how to integrate market liquidity into their trading decisions. The managers will be able to simulate the effect of liquidity, hence exploiting diversification opportunities available in the market. Institutional investors are usually limited to liquid stocks of large market capitalization and with a history of regular dividend payments. This will benefit investors in that they will be aware of their risk tolerance, and their current and future spending needs, and that will determine their liquidity requirements. Based on the historical analysis performed, which company is more liquid will determine how traders can take positions since the study is assessing the liquidity conditions in the Kenyan financial market.

The research will also be important to the policymakers because it will help them understand the market liquidity and its impact on the stock returns of companies listed on the NSE. The liquidity in emerging markets of stock drops disruptively. This research will lower the possibility of a decline in liquidity or reduce the impact in case it happens. It will be of importance in making regulations for controlling the liquidity of the stock markets and promoting investment in the stock markets. This can also help in guiding studies in other developing economies whenever there is a need to formulate policies on liquidity and stock return relationships.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The chapter presents a theoretical basis for the study, it identifies and analyzes the primary theories relevant to the model and gives an empirical review of previously done studies. It summarizes research done in the field previously, including journals, finance research papers, and textbooks. It also compares various ways to compute return, studies done on the topic, and various measures of liquidity.

2.2 Theoretical Review

This section reviews different theories of market liquidity that have been developed and influence this study. Trading Quantity Theory, Trading Cost Theory, Efficient Market Hypothesis, and Market Microstructure Theory are the theories the study will focus on. The Trading Quantity Theory states that the trading activity in a market significantly influences liquidity, which affects stock returns. Oxman-Alper (1996) also supports a Trading Volume Theory with higher trading activity in a market contributing to the liquidity but also having an impact on stock returns with a variable rate. The trading cost theory helps understand the aspects of liquidity and how it could affect stock returns and market microstructure is applied to show frictions in the market and how liquidity as a friction affects stock returns.

2.2.1 Trading Quantity Theory

Trading quantity theory implies that trade volume is higher in more liquid markets and can therefore serve as an indication of market liquidity. There will be more transactions which make purchasing and selling securities quicker and easier, therefore the price must be increased. Alternatively, low trade volumes suggest lower liquidity, which can lead to price impacts from trade and high costs.

The theory was developed by Easley & O'Hara (1987) and analyses the size of a deal at a specific price. Easley & O'Hara (1987) argued that informed investors favored trading large quantities of

equities at a specific price. However, the size of the deal determines the pricing tactics used by market makers; large trades are transacted at prices that are less advantageous to investors. Hu (1997) examined the trading quantity theory, and his results provide compelling proof in favor of the trading frequency hypothesis and the transaction cost model proposed by Amihud and Mendelson (1986). according to the trading quantity theory, demand pressure on an asset and its price impact is a considerable source of liquidity.

Demand pressure is the possibility that an investor may buy or sell a significant number of stocks in the shortest amount of time without changing the market price (Sloman & Kelvin, 2007). When massive investors place enormous orders that disturb the supply and demand equilibrium in markets lacking perfect liquidity, prices shift. This may cause a fall in prices when selling and an increase in prices when buying. This is a disadvantage to the investor. The extent of the impact of the price depends on market liquidity, where more liquid markets have less of an impact. There may also be some informative influence on price. A quick move by a shareholder to buy or sell a significant number of stocks could be interpreted by other market participants as an indication that the investor has access to important information that other investors do not, which could put pressure on the price of the stock. This kind of price impact, however, is not sustainable in efficient markets since supply and demand dynamics will cause prices to rebalance or else cause speculative bubbles (Hubbard & Obrien, 2009).

Trade volume, a widely used indicator of trading volume, is the total number of shares exchanged during a specific period, which can be any suitable period for study, including daily, weekly, and annual intervals. It has a time dimension benefit in that the time required to trade a certain number of shares decreases with increasing volume. Accordingly, greater values for volume-related metrics should be indicative of strong liquidity (Brennan & Subrahmanyam 1996). The turnover rate, or the ratio of volume traded to the outstanding amount of stock, was introduced to trading volume. Because the turnover rate allows one to compare different equities, it is seen to be a more accurate indicator of liquidity than trading volume. Since frequent trading lowers the expenses associated with inventory control, the urgency price would be lower for equities that are traded frequently. The turnover rate is even higher when trades are not delayed. The rate has a negative relationship with bid-ask spreads and stock returns (Chordia, Subrahmanyam, & Anshuman, 2011).

2.2.2 Trading Cost Theory

The Theory was developed in the 1980s by Yakov Amihud & Haim Mendelson. One of their important works is a paper on Asset Pricing and the Bid-Ask Spread published in 1986, which investigated the relationship between liquidity and the prices of assets. They proposed the theory to explain how trading costs (especially transaction costs) affect stock prices and returns. It looks to understand the relationship between market liquidity and the expected returns on assets. The theory suggests that assets with higher trading costs (lower liquidity) should offer higher expected returns as compensation for the higher cost of trading.

The theory makes some assumptions about the market. It assumes that markets are normally efficient but are susceptible to frictions in the market like transaction costs, and investors' compensation for the liquidity risk (the risk of not being able to quickly sell an asset without a substantial change in the price). The theory presumes that the main indicator of the trading cost and liquidity and trading costs is the bid as spread and that there is a relationship between an asset's liquidity and the expected return.

The main proposal of the theory is that stocks that have high trading costs mostly generate higher expected returns to compensate for the expenses and risks associated with the stocks. This relationship suggests that liquidity is an important determinant of asset prices and returns.

This theory supplies a basis to better interpret the relationship between liquidity and stock returns and offers a method to measure the effect of trading costs on the price of stocks. The theory aids in estimating liquidity risk as a measure of asset valuation. It also helps in developing optimal investment strategies that account for how important liquidity is to determine asset returns.

A limitation of the theory is that it focuses on bid as spread as a measure of liquidity which could potentially dismiss alternative liquidity measures like market depth and the robustness of the market. The theory assumes that markets are efficient and fail to account for anomalies in the market anomalies and some behavioral factors that could affect returns.

2.2.3 Efficient Market Hypothesis

The efficient market Hypothesis suggests that markets are efficient in that all information is available in the market and that share prices reflect information as it is made publicly available in the market. In the 20th century, between 1930 and 1960, ideas on how to make profits in the stock market were very predominant. It was believed in the 18th century that prices fluctuated on a single value and Adam Smith suggested that markets are naturally unpredictable. Assumptions regarding how to profit from the stock market were common from the 1930s until the early 1960s. Since Adam Smith in the 1700s, the prevalent notion has held that prices often swing around a true or fundamental value and that markets are inherently erratic.

Traditional investment research, which dates to Benjamin Graham's groundbreaking work, includes carefully examining corporate financial statements to determine underlying values and whether an investment is expensive or cheap. The plan would be to sell high and buy low. Any profits attained would be at the expense of irrational traders who failed to thoroughly research their purchases.

This research is basic to the analysis of securities. It was evident by the 1960s that these risk-free investment strategies were ineffective. The hypothesis was developed to explain the phenomenon that analysis-based methods did not outperform the buy-and-hold strategies. Due to the way prices are determined in the market, they are affected by the trading habits of well-informed investors. Passive investors can therefore rest on the knowledge that professional investors maintain efficiency in the market.

In an efficient security market, any new information about a company immediately gets released at the price of the company's stock, which means that the prices change for an individual share as new incoming information is released. Fama (1970), using the fair game model, postulated that an investor can be in a position where he can be certain that a market pricing system reflects all relevant information concerning security and the return that is reflected in this cost is predictable. The efficiency of the market has, however, been broadened to accommodate various levels of information. These take the strong form, where prices of the markets reflect all the available information, irrespective of whether it is public or not; the semi-strong form, where prices of the

markets reflect all the publicly available information; and the weak form, where prices of the markets reflect all information that can be derived from historical prices of the security.

The importance of market efficiency is that it is not possible to identify under or over-priced securities, which can then be traded to generate excess risk-adjusted returns. Hence, investors can't use information to obtain higher returns. According to the Efficient Markets Hypothesis (EMH), active investment management, with its active trading policy and a consequent higher level of management fees, cannot be justified.

According to Reilly (2006), some conditions should be met for the market to be referred to as proficient. Profit-seeking investors should first evaluate each stock independently and the latest information is made publicly available to the market and each announcement is made independently of the others. Security prices should be promptly updated swiftly to cater to the latest information. The market could sometimes over-adjust or under-adjust and there would be no exchange advantage in that case.

2.2.4 Market Microstructure Theory

Maureen O'Hara (1998) developed the theory of market microstructure to explain how several factors such as the trading process, the behavior of market participants, and the design of market structures affect the price formation of financial assets. The theory looks to provide a complete understanding of dynamics that affect trading and their impact on the stability of the market. Frictions in the market are the basis of the market microstructure theory (Cohen, Maier & Schwartz, 1986).

The theory argues that investors are rational, and their main aim is to maximize their profits. It recognizes the irregularity in the information among investors which could cause differences in the perceived value of the assets. Well, set rules and regulations in the market are important to facilitate efficient market operations. Intermediaries in the market like brokers and their actions could influence trading dynamics and the determination of asset prices.

The analysis of the theory is useful in providing a detailed review of the trading process and how it affects asset prices. It also provides valuable perceptions on the financial markets and the studies that have been done and highlights the importance of market designs and participant behavior. The theory offers a background to examine the structure of the market and how it impacts liquidity changes efficiency and volatility which is important for policy making.

Market liquidity is a central concept in MMT that refers to the ease with which assets can be traded without significantly affecting their prices. It encompasses dimensions such as tightness, depth, and resiliency, which are directly influenced by market microstructure elements. MMT suggests that illiquid stocks require a higher expected return as compensation for liquidity risk due to the higher transaction costs and greater difficulty in trading these stocks without impacting their prices significantly.

According to O'Hara (1995), the bid-ask spread is a critical element of transaction costs, which are higher in less liquid markets. Investors in illiquid stocks face higher spreads, leading to higher required returns to compensate for these costs. O'Hara (1995) discusses the concept of adverse selection, where market makers adjust prices based on the perceived risk of trading with better-informed investors. In illiquid markets, the risk of adverse selection is higher, contributing to wider spreads and higher expected returns for stocks.

A disadvantage of the theory is that it highly relies on the assumption that the market participants are rational which may not hold in the practical market. It also emphasizes information irregularities and fails to consider other factors that could affect the market like the behavior of investors, and the role that psychology may play in making trading choices. Some microstructure models may not predict prices accurately (Hasbrouck, J 2007).

2.3 Empirical Review

Investors and financial analysts need to understand the relationship between liquidity and returns. This section gives a detailed analysis of past studies conducted in both developed and emerging markets. It highlights their findings, advantages, limitations, and how current studies differ from past studies.

2.3.1 Developed Markets

Over time, several studies have examined the liquidity relationship with stock market performance in different trading markets. In his study, Amihud (2006), reports a positive relationship between the stock market return of the security listed in the New York Stock Exchange and liquidity. In this paper, the price effect measure is the bid-ask spread. A larger surplus demand is found to have a greater impact on prices, thus leading one to believe that the traders are likely to have significant information. According to Kyle (1985), market participants are not capable of distinguishing orders produced by knowledgeable traders from those produced by noise traders, which means liquidity. Instead, they set up price structures that rise in response to variations in the order flow thereby mirroring the presence of intelligent trading. Brennan and Eleswarapu (1996) tried to analyze the dependence of stock return on its liquidity over various time frequencies in their work. They concluded that the expected liquidity of a stock and its return are positively correlated. The researchers managed to use real-time information on stock quotes and transactions throughout the day. They developed a technique to estimate price impact, which includes the fixed cost of trading and mirrors the change in stock price according to the size of an order.

Microstructure data on quotes and transaction costs may not always be available. Amihud (2002) went further to develop a liquidity indicator that can easily be computed in most emerging countries using data that is easily available. This is the measure of the elasticity of prices to changes in trading volume. When the latest information hits the market, there are temporary as well as permanent oscillations in prices that cannot be differentiated by this liquidity indicator. The capital asset pricing model is a means to collect data about market volatility. A stock's beta shows how much of its systematic risk cannot be diversified away, whereas unsystematic risk persists even after the systematic risk has been controlled. All these are similar techniques used in Black, Jensen, and Scholes (1972); Black & Scholes (1974); and Fama & MacBeth (1973).

According to Damoradan (2010), investors assessed how various categories of investors were affected by illiquidity. In most cases, attractive opportunities usually occur for long-term investors who do not give much priority to liquidity compared to other investors. In this category, there are also opportunities for investors who can perfectly anticipate changes in market liquidity. He highlighted that liquidity is valued by investors because it influences asset price and valuation and

even portfolio management. According to Amihud, Mendelson, and Pedersen, (2005), there are many possible causes of illiquidity in assets, including transaction costs, inventory risk, demand pressure, search friction, and private information. Among others, the transaction costs component includes order processing charges, brokerage fees, and transaction taxes. In addition, a stipulated transaction fee is required upon every purchase or sale of an asset by the buyer or seller. Not forgetting, considering the life expectancy, the buyer expects to pay more in future sales.

Demand pressure is an agent that is not regularly active in the market. This can put an agent in a situation where he would have to sell, even urgently, and yet buyers may easily not be forthcoming. In such a case the seller may sell to a market maker who buys with the hope of eventually being able to move the position. For this risk of price fluctuation, the market maker must be compensated for holding the commodity in inventory. Such compensation involves a cost that is paid by the seller (Theart, 2014). In another instance, when one enters into a contract involving a counterparty with specific sensitive information, there are chances of incurring financial loss when one trades with a counterparty having such knowledge. Lui, (2006), further postulates that illiterate traders will opt not to trade upon the realization that some traders possess pre-knowledge of confidential information. This non-trading will have a negative effect on liquidity. In addition, Subrahmanyam, (2005), established that monetary policy has an effect on the liquidity in the stock market. Companies can also be partially responsible for low liquidity in their stocks in case of an insufficient management team or high default risk. In such a scenario, investors would not care about holding on to their shares. Haugen & Baker (1996) showed that the determinants of cross-sectional stock returns vary little across time and countries for the developed markets.

3.3.2 African Market

Mpofu (2012), researched in Africa, particularly in South Africa's Johannesburg Securities Exchange, to establish the relationship that exists between trading volume and stock returns. Vector autoregressive tests were used in the assessment of price and trading return data for the period ranging from July 1988 to June 2012 of the FTSE/JSE index. The obtained results showed a strong association between the transaction volume with price changes. In a similar line, Ehiedu (2014), looked at the impact of liquidity on profitability in his research by looking at companies in Nigeria that are listed on the Nigeria Securities Exchange through conducting simple correlation

analysis. As Ehiedu (2014) states, 75% of companies agree that there exists a powerful positive relationship between liquidity and profitability.

There is a clear correlation between the liquidity and JSE stock market return job that was discovered by Theart (2014) in his research study. The role of the risk factor liquidity in affecting the total of investment portfolio returns was researched by Theart (2014). In establishing fault, criteria such as size, book-to-market, and market premium were used in the study. It also examined the potential of passive investing style index strategies versus other style index strategies for superior risk-adjusted performance. In this regard, the research established that the presence of liquidity does not have a statistically significant effect on market returns in the South African stock market. There is a need to re-evaluate the appropriateness of the liquidity proxies used in the research. Although it is elementary, the traditional least squares method in estimation can produce inefficient estimates if serial correlation is in existence.

Findings of mixed results in the turnover rate as a liquidity indicator introduced doubts about the indicator's reliability and prompted a paper, by Makau, Onyuma, and Okumu (2015) to specifically evaluate how cross-listing affected stock liquidity in the East African market. They measured liquidity through the volume traded and stock turnover rate. The researchers produced the average trading volume during the pre- and post-cross listing periods as well as the turnover rate. Finally, they assessed the statistical significance of these average values through a paired t-test, then estimated it at the scale of significance level at five percent. The cross-listing of any stock can enhance the company's liquidity, but most of the data on those changes was not statistically significant. The direction of change in the liquidity proxy leads to whether the effect is positive or negative.

2.3.3 Kenyan Market

Ayako (2005) conducted a study in Kenya to examine the impact of trading volume/activity on futures prices. His primary objective was to ascertain the extent to which trading volumes of power could forecast the subsequent behavior of stock prices. The focus of his research was on companies that were listed on the National Stock Exchange (NSE) for a duration of five years, specifically from 1998 to 2002. By employing ANOVA tests for analysis, he determined that there was no

significant correlation between trading volumes and stock returns for companies listed at NSE. He argues that his findings support the Fama Random Walk hypothesis, which suggests that the stock price fluctuations at NSE do not have any memory. However, this contradicts the idea proposed by Amihud and Mendelson, which states that liquidity has a substantial impact on returns.

Koech (2012) conducted a study on the fifty-seven firms that were listed on the NSE for a duration of five years, specifically from 2007 to 2011. The researcher employed a basic regression model to ascertain the link between liquidity and stock returns, using turnover rate as a surrogate. The analysis revealed a feeble correlation between liquidity and stock returns, which was deemed to lack statistical significance. This statement contradicts most facts discovered by academics, particularly in developed markets. He elaborates that the disparity in market efficiency between developing and developed markets could be a contributing factor to the conflicting results.

Nyaga (2016) conducted a cross-sectional analysis of liquidity and stock returns, focusing on different sectors within the NSE. The study found that the relationship between liquidity and returns varied across sectors, with financial and industrial sectors showing a stronger positive correlation compared to the agricultural sector. This study's sector-specific analysis provided valuable insights, but it was limited by its cross-sectional nature, which might not capture long-term trends.

More recently, Wambua (2019) explored the role of liquidity in asset pricing models within the Kenyan context. The study integrated liquidity measures into traditional asset pricing models and found that incorporating liquidity factors improved the explanatory power of these models. This study's innovative approach was a strength, but it faced limitations in generalizability due to the specific market conditions of the NSE during the study period.

Over the last decades, empirical research on market liquidity and stock returns has been through significant growth and development. Early research established that there is a correlation between market liquidity and stock returns. Consequent research continued to use more advanced models and metrics but despite the advancements there still exist some gaps in dealing with the complexities of liquidity, the risks associated with it, and how it impacts stock returns. Recent studies should enhance the models used to more suitably fit liquidity, stock returns, and how they interact with each other.

2.4 Conceptual Framework

The conceptual framework illustrates the link between the study's variables, which helps to explain the conclusions that follow. The study's approach acknowledges the influence of market liquidity on stock prices. In this study, market liquidity is the independent variable, while stock return is the dependent variable.

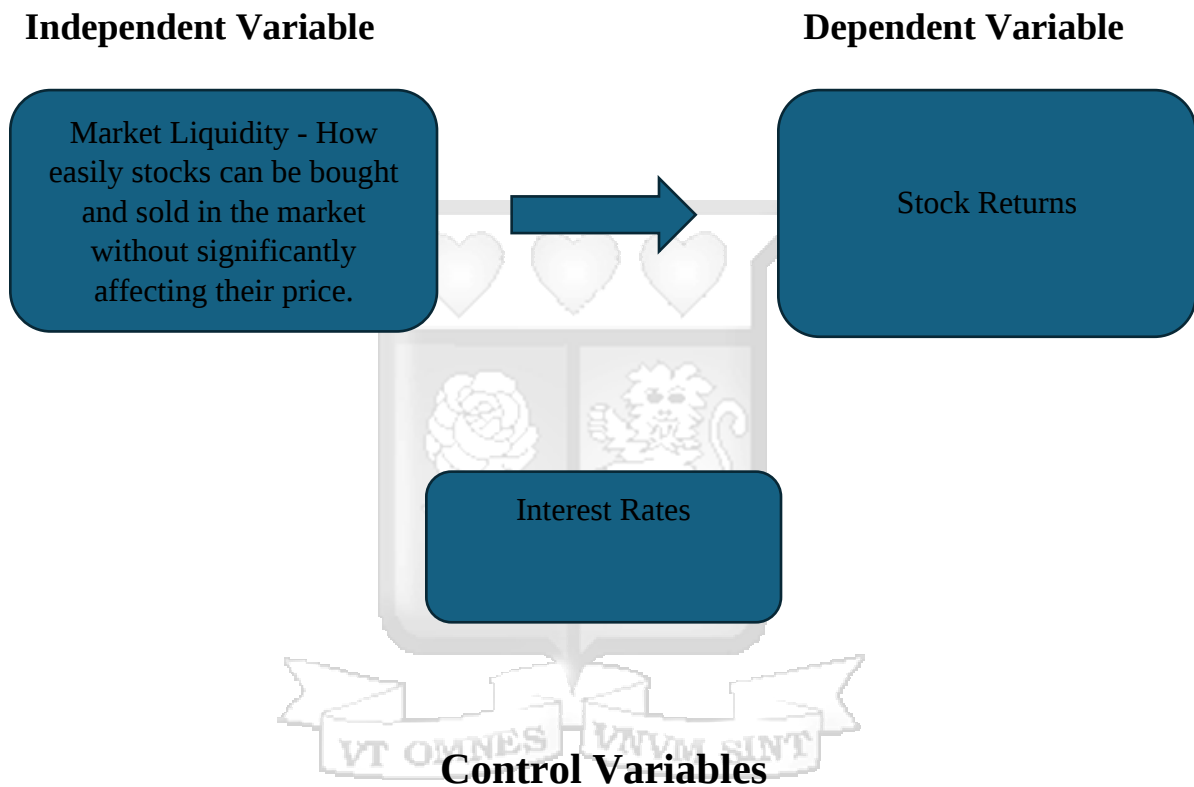


Figure 2.1: Conceptual Framework 1

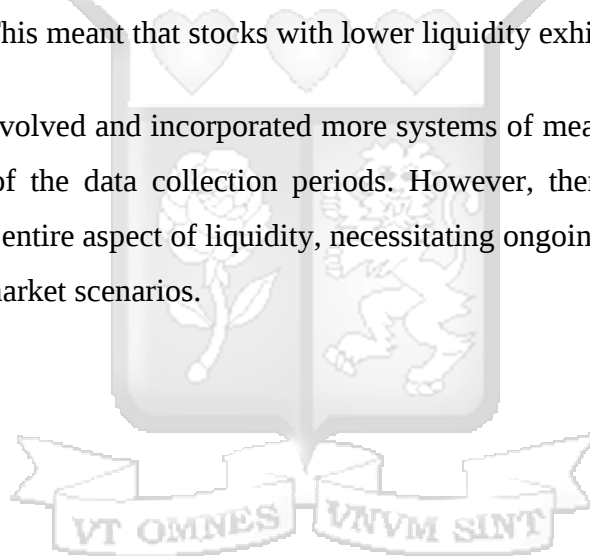
2.5 Summary of Literature

This chapter lays down a theoretical basis for the study of the relationship between market liquidity and stock returns. It reviews important theories that give insight into different aspects of liquidity that influence stock returns. These theories include trading quantity theory, trading cost theory, market microstructure model, and the efficient market hypothesis. It highlights that high trading volumes indicate greater liquidity which leads to lower stock returns.

Studies in international markets like Amihud & Mendelson (1986), and Chordia, Roll, & Subrahmanyam (2000), found that lower returns are associated with lower liquidity. The studies different ways to measure liquidity like bid-ask spread and trade volumes and provided evidence that supported the existence of a liquidity premium. Some limitations of the earlier studies are that they relied heavily on a single measure of liquidity and concentrated on a short period for the data used. More recent studies like Acharya & Pedersen (2005), used both expected liquidity and liquidity risk in models for asset pricing which offered stronger and more nuanced insights.

In African markets, studies like Osei (1998) & Adelegan (2009) have had similar results and highlighted illiquidity premiums across African markets. Kenyan-focused studies like Ngugi, Amanja, & Maana (2009) and Mwangi (2014), concluded that stock returns are positively influenced by liquidity. This meant that stocks with lower liquidity exhibited higher returns.

Over time, the research evolved and incorporated more systems of measurement of liquidity and extending the duration of the data collection periods. However, there are still difficulties in accurately measuring the entire aspect of liquidity, necessitating ongoing enhancements to ensure its relevance in various market scenarios.



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

In conducting a quantitative research method, empirical data was be used. In performing the study analysis, the conceptual framework involved the correlational design. It was expected to establish the relationship that exists between asset returns and liquidity. The design was used since the sole purpose of the study is to establish whether liquidity affects asset returns. Additionally, findings such as that of Bekaert, Harvey, and Lundblad (2007) motivated the decision.

3.2 Population and Sampling

Currently, there are sixty-four listed companies in Kenya, thereby representing its population since they are allowed to operate in the country. The stock market was represented by the Nairobi All Share Index (NASI). The NASI was used to track the stock returns performance at the NSE. Data was sourced from the NSE website as well as the firm's financial statements.

3.3 Data Collection

The five-year period, running from 2017 to 2023, captures some especially important aspects that may influence the stock values in the economy. Sources of data included the NSE's list, financial reports, publications by listed businesses, trading volume and daily closing stock prices. Stock prices were then transformed into stock returns because the stock prices were non-stationary.

Monthly return was calculated using the holding period yield formula, which is the percentage change in prices between time t and t-1.

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$$

Where, $R_{i,t}$ = monthly return.

$P_{i,t}$ = the price of stock i at time t.

$P_{i,t-1}$ is the price of stock i at time t-1.

Total volume of shares traded in a month.

$$V_{it}$$

The Amihud Illiquidity Ratio will be calculated as

$$AR_{i,t} = \frac{|R_{it}|}{V_{i,t}}$$

Where, $|R_{i,t}|$ = the absolute return on the stock on month t

$V_{i,t}$ = the trading volume for stock i at time t ,

$AR_{i,t}$ = the Amihud Illiquidity Ratio.

3.4 Variables Operationalization

The variables used in the study are,

Table 3.1: Variables Operationalization 1

VARIABLE	CATEGORY	MEASURE
Share Volume	Independent	Total volume of all shares traded in the respective month.
Amihud Illiquidity Ratio	Independent	$\frac{\text{Absolute return}}{\text{Trading volume}}$
Stock Returns	Dependent	Holding period yield $\frac{\text{End Value} - \text{Initial Value}}{\text{Initial Value}}$
Interest Rate	Control Variable	Commercial interest rate as per CBK

Stock returns are dependent on a firm's liquidity. The stock liquidity was the independent variable, and the stock returns the dependent variable. The proxied total shares traded at the Nairobi Securities Exchange represented the stock market liquidity; this study is concerned with the volumes per month from January 2017 to December 2023.

3.5 Descriptive Statistics

The descriptive statistics of the data was utilized in specifying the model. This is the definition of stock returns and market liquidity characteristics according to the information of the stock market and the company records. Here, the study tries to fulfill the needs of the data and make it applicable to the model. A few diagnostic tests were run on the data to identify its properties and ascertain whether any changes need to be made before further analysis is done. Once obtained, the data was exported from Excel and loaded into Stata for analysis.

3.6 Regression Model

The following regression model was used in the study:

$$Y_{i,t} = \alpha + \beta_1 V_{i,t} + \beta_2 AR_{i,t} + \beta_3 I_{i,t} + \varepsilon$$

Where, $Y_{i,t}$ = The monthly Nairobi All Share Index return

α = Regression Intercept

$\beta_1 V_{i,t}$ = The monthly traded share volumes at the NSE

$\beta_2 AR_{i,t}$ = Amihud Illiquidity Ratio

$\beta_3 I_{i,t}$ = Interest Rate

ε = Error term

3.7 Diagnostic Tests

3.7.1 Testing for Multicollinearity

Multicollinearity may result in large forecasting errors, and it may be hard to identify the relative importance of variables in the model. Another basic tenet of regression analysis that was checked in this study is checking for multicollinearity among the independent variables by applying the variance inflation factor. If the Variance Inflation Factor has a value of 1, then there is no multicollinearity; between 1 and 5, there is moderate multicollinearity; and if the VIF value is higher than 10, there is severe multicollinearity, which may be a problem.

3.7.2 Test of Significance

The t-tests were used in the research to assess the overall significance of each coefficient. The p-value of each variable in the regression model was used to establish or quantify its significance; if the variable p-value is 0.05 or below, it was considered significant. The relationship between the dependent and independent variables will be either high or low, positive, or negative, depending on the value of the beta coefficient.

3.7.3 Goodness of fit

The goodness of fit test is a statistical hypothesis test used to determine how well a statistical model fits a set of data. These tests are especially important in knowing when to use a complicated nonlinear model or when a simple linear regression model would be enough. An R^2 method, otherwise called R-squared, was used to determine the percentage of variation that can be predicted from the independent variables in the dependent variable. The R^2 value, near one, exhibits good fitting, meaning that the model could explain most of the variation in the dependent variable.

CHAPTER FOUR: RESULTS AND FINDINGS

4.1 Introduction

The results of the data analysis and their interpretation are presented in this chapter. The chapter also examines how stock market liquidity affects stock returns for companies listed on the Nairobi Securities Exchange.

4.2 Descriptive Statistics

Using information gathered from company and stock market data, this is an overview of market liquidity factors and stock returns. The variables' mean, standard deviation, skewness, kurtosis, and lowest and maximum values are displayed in the table below.

Table 4.2: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
Return	84	.03	.263	-.424	.723	.667	3.12
Vol	84	4.090e+08	1.600e+08	1.645e+08	8.625e+08	.901	3.411
Amihud	84	5.70e-10	4.49e-10	6.20e-12	1.72e-09	.67	2.355
Interest	84	8.786	1.201	7	12.5	.028	2.688

The study findings indicate that the average stock returns were 3% and the standard deviation was 26.3%. The average Amihud ratio was 0 with a standard deviation of 0 while the traded share volume on the other hand was 4.090e+08 with a standard deviation of 1.600e+08 for the five-year period. The interest rate had a mean of 8.786% and standard deviation of 1.201%.

4.3 Diagnostic Tests

4.3.1 Multicollinearity Test

As one of the assumptions of regression analysis, multicollinearity among the independent variables was examined in the study using the variance inflation factor. The study's results are displayed in Table 4.2 below.

Table 4.3 Variance inflation factor

	VIF	1/VIF
Vol	1.229	.813
Amihud	1.18	.847
Interest	1.053	.95
Mean VIF	1.154	.

The results in Table 4.2 shows that variance inflation factor for volume of traded shares (VIF=1.229), Amihud illiquidity ratio (VIF=1.18) were less than 10, indicating that multicollinearity was not a reason for concern. Similarly, variance inflation factor for interest rate (VIF=1.053) was less than 10 indicating that multicollinearity was not a problem.

4.3.2 Test of Significance

The study carried out linear regression analysis to determine the significance of the relationship between the variables.

Table 4.4 Regression Coefficients

Return	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
Vol	0	0	2.23	.028	0	0
Amihud	2.102e+08	62808443	3.35	.001	85172640	3.352e+08
Interest	-.066	.022	-2.97	.004	-.11	-.022
Constant	.325	.23	1.41	.162	-.133	.782

From the above results, the p-value of the traded shares volume is 0.028, Amihud ratio 0.001 and interest is 0.004 which are less than 0.05. This shows significance of the variables hence we reject the null hypothesis that the effect of market width on stock returns is not significant.

4.3.3 Goodness of fit

The study carried out tests to determine how well the statistical model fits a set of data.

Table 4.5 Model Summary

Model	R Squared	Adjusted R Squared
	0.2213	0.1921

According to the study results in Table 4.5, the interest rate, traded share volume, and Amihud ratio accounted for 22.13% of the variation in stock returns, with a coefficient of determination (R square) of 0.2213 reflecting a reasonable influence of these factors on returns. This therefore underlines the importance of liquidity and market dynamics when interpreting stock performance. Although the model summary's findings show that the R squared is lower than expected the regression equation the study used was suitable still for forecasting.

Table 4.6 Analysis of variance

Source	Sum of squares	df	Mean Square	F	Prob > F
Model	1.27090231	3	0.423634102	7.58	0.0002
Residual	4.47166853	30	0.055895857		
Total	5.74257084	83	0.0691876		

The value of F statistic $F = 7.58$ was significant as indicated by a probability value $p=0.0002$ which is less than $\alpha=0.05$ (95 percent level of confidence). This showed that the regression model adopted by the study was fit for prediction of the relationships among variables.

4.4 Test for Hypothesis

4.4.1 Traded volume and stock returns

Evaluating the impact of market liquidity's traded volume component on stock returns for companies listed on the Nairobi Securities Exchange was the study's first objective. The null hypothesis stated that stock returns were not significantly impacted by the traded volume component of market liquidity.

Table 4.7 Regression; Return and Volume traded

Return	Coefficient	Std. err.	t	P> t	[95% conf. interval]
Volume	2.86e-10	1.82e-10	1.58	0.119	-7.52e-11 6.48e-10
Constant	-.0866752	.0793154	-1.09	0.278	-.2444879 .0711375

As the above figure shows, traded share volume on its own is not significant at 5% level of significance as its p-value is 0.119. This is more than 0.05 hence we fail to reject the null hypothesis that the effect of quantity of trading activity is not significant on stock returns. This can be interpreted as traded share volume does not affect returns hence quantity of trading activity is insignificant to stock returns.

4.4.2 Amihud Illiquidity Ratio and stock returns

The study's second objective was to evaluate how the Amihud illiquidity ratio, which measures market liquidity, affected the stock returns of companies that were listed on the Nairobi Securities Exchange. The null hypothesis was that there would be significantly positive impact of the Amihud ratio component of market liquidity on stock performance.

Table 4.8 Regression; Return and Amihud Illiquidity Ratio.

Return	Coefficient	Std. err.	t	P> t	[95% conf. interval]
Amihud	1.39e+08	6.38e+07	2.17	0.033	1.16e+07 2.66e+08
Constant	-.0501136	.0464835	-1.08	0.284	-.1426012 .042374

From the above results, the p-value of the Amihud ratio is 0.033 which is less than 0.05 which shows significance hence we reject the null hypothesis. This can be interpreted as the Amihud Illiquidity Ratio does affect returns. The R-squared value was 5.5% which though is low, implies that the model used was suitable.

Table 4.9 Regression; Return Vol, Amihud

Return	Coefficient	Std. err.	t	P> t	[95% conf. interval]
Volume	5.09e-10	1.87e-10	2.73	0.008	1.37e-10 8.80e-10
Amihud	2.08e+08	6.65e+07	3.13	0.002	7.55e+07 3.40e+08
Constant	-.2969703	.1010121	-2.94	0.004	-.4979909 -.0959498

When both Amihud Illiquidity ratio and the traded share volume, were used, they proved to be statistically significant in measuring liquidity as a factor affecting returns. From the results above, the p-value of the Amihud Illiquidity ratio was 0.002 and that of the traded share volume was 0.008. They are both below 0.05 hence we reject the null hypothesis proving the significance of the variables. The R-squared of the regression was 13.53%.

4.5 Discussion of Findings

The study found that liquidity is an important determinant of stock returns of firms listed at the NSE. Interest rate was the control variables influencing the relationship existing between stock market liquidity and stock returns. The results indicated that higher levels of liquidity at the stock market provide opportunities for listed firms to sell their assets at prevailing prices in the market, thus having an impact on stock returns. Optimal levels of liquidity provide an opportunity for listed firms to create investment portfolios that attract higher returns.

These results imply that stock market liquidity is one of the contributing factors in fluctuations in stocks' returns for firms listed on the NSE. The findings agree with the Capital Markets Authority, CMA (2015) report, which found low securities market liquidity was identified to be one of the main challenges facing Kenya's securities market, especially in the equity and bonds secondary markets.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

The objective of the study was to assess the effect of market liquidity on stock returns of companies listed on Nairobi Securities Exchange. Two aspects of liquidity which included price impact per dollar traded and quantity of trading activity were examined. For each dimension of liquidity, a different liquidity measure adopted in previous studies was employed. The Amihud ratio was used to measure the price impact per dollar traded aspect of liquidity while the volume of traded shares was used to measure the quantity of trading activity aspect of market liquidity. The study utilized a panel regression model for the analysis of the research data.

The average of the independent variables, traded share volume and Amihud ratio, were $4.090e+08$ and $5.70e-10$, respectively, and the average of the control variable, interest rate, was 8.786. The average of the stock returns was 0.03. Using two factors—volume traded ($p=0.028$) and Amihud ratio ($p=0.033$)—the study found that stock market liquidity has a statistically significant impact on the stock returns of companies listed at the Nairobi Securities Exchange. Interest rates had an impact on the correlation between stock market liquidity and stock performance ($p=0.004$). The results of the study demonstrated that changes in the levels of stock returns are influenced by stock market liquidity.

The study found a significant positive relationship between stock market liquidity and stock returns. This suggests that liquid markets enable investors to sell assets quickly at favorable prices, leading to higher returns. However, the study emphasizes that liquidity is not the sole determinant of stock returns, as other factors, such as interest rates, also play a role. Notably, this finding contradicts some earlier research in the Kenyan context, which either found no significant relationship between liquidity and returns or even a negative one. These conflicting results may be attributed to differences in research methodologies, market efficiency levels during the study periods, and the specific liquidity metrics used in each analysis.

The NSE All Share Index (NASI) served as a stand-in for the stock market in this study. The biases in the weighting of stock index components, such as price weighting, market capitalization weighting, and equal weighting, may have an impact on the results due to use of an index as a proxy for stock market liquidity. The stock returns being measured may be skewed upward due to survivorship bias in the index's use. This study reviewed data from January 2017 to December

2023 and therefore the results do not factor in the NSE share data that existed before that period. The study's five-year duration was constrained in part due to time and resource constraints.

This study recommends to fund and investment managers that when making important financial decisions that could impact a company's return, they should consider liquidity as well as other factors that may have a greater impact. The study also encourages policymakers to enact policies that would improve market liquidity and foster growth because of the correlation between stock returns and market liquidity on the NSE. For further research, a study to determine whether the results of this study are valid and to obtain more trustworthy results, a similar study should be conducted using a different methodology. If the same study were conducted with various proxies of stock market liquidity, including bid-ask spread, it would be intriguing. Other industries listed on the Nairobi Securities Exchange may be the subject of the same investigation in order to verify if similar findings can be achieved.



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