

**IMPACT OF COVID-19 ON THE RELATIONSHIP BETWEEN  
STOCK MARKET LIQUIDITY AND PERFORMANCE OF FIRMS  
LISTED AT NAIROBI SECURITIES EXCHANGE, KENYA**

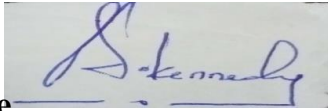
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DEGREE OF MASTERS OF BUSINESS ADMINISTRATION (MBA),  
FUCULTY OF BUSINESS AND MANAGEMENT SCIENCE,  
UNIVERSITY OF NAIROBI.**

## DECLARATION

This research project is my original work and has not been presented anywhere and all the reference materials from other authors have been duly acknowledged.




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Date: 22/11/2022

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D61/19529/2019

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

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## **DEDICATION**

This project is dedicated to all my family members for their encouragement and sacrifices they made during my master's program. May God bless you all.

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## **LIST OF ABBREVIATIONS AND ACCRONYMS**

BVA	Book Value of Assets
CMC	Capital Market Authority
CBC	Central Bank of Kenya
EMH	Efficient Market Hypothesis
LPT	Liquidity Preference Theory
MV	Market Value of a firm
NSE	Nairobi Securities Exchange
PwC	Pricewaterhousecooper
TCT	Trading Cost Theory

## **ABSTRACT**

The Covid19 pandemic brought a lot of uncertainties and fear not only in the health sector but also among the investors and to the economy at large. This has informed the need to investigate the impact of covid19 on the relationship between market liquidity and stock performance of firms quoted in NSE, Kenya. Market width, market depth and market resilience were considered as the aspects of market liquidity and risk-free rate as a control variable. All firms which are listed in NSE were used as a study population and Nairobi All Share index as a measure of stock performance. Data were obtained from NSE and CBK websites. Descriptive research design was adopted for data analysis. The results revealed that risk free rate directly and significantly affected stock performance. Market depth revealed a direct and significant relationship with stock performance in the year 2019 just before covid19 but had an indirect and insignificant association in the year 2020 when the country was experiencing the scourge of covid19. However, market width and market resilience showed indirect and insignificant effect on the stock performance for the two years. The study concluded that overall, market liquidity had an effect on stock performance and covid19 adversely affected the stock performance. The study therefore recommended that the CBK should be proactive enough and come up with good fiscal policies so as to

deal with any unforeseen calamities that may paralyze the normal operations of the economy in Kenya.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Stock markets are very crucial when it comes to mobilization of funds for both investors and companies. Sidhu (2016) opined that firms whose stocks are highly liquid enjoy good corporate image in the financial market which in turn increase their value. Firms are therefore expected to be liquid enough for them to achieve their main and long-term goal of wealth maximization. Liquidity in a stock market ensures seamless operations of the market while its absence adversely affects the activities in the financial market (Naik & Reddy, 2021). On the same breadth, investors commit their funds in stock market with an aim of gaining through share appreciation and dividends. Reddy (2016) argued that these returns are influenced by factors that are specific to individual firms and are very sensitive to macroeconomic factors such as political instability, natural disasters and global pandemics like Ebola, Covid-19 and so on. According to Hamal and Gautam (2021), Covid-19 brought confusion among investors which adversely affected the financial markets. It is against this backdrop that informs the need for this study

This study would be anchored on liquidity premium theory (LPT) which was postulated by Keynes (1936), Trading cost theory (TCT), Trading volume theory (TVT) and Efficient market hypothesis (EMH). The proponents of LPT

opines that investors expect a higher rate of return for assets whose maturity period are longer since investors prefer liquid assets which can readily be sold to illiquid investments so as to make use of any new investments that may come up in the market. TVT was advanced by Karpoff (1986) who argued that investors process information differently and this results into a higher trading volume. On the other hand, EMH was suggested by Malkiel and Fama (1970) and they viewed an efficient market to be that which accurately adjusts to new information. Proponents of the TCT as advanced by Amihud and Mendelson (1986), opines that stocks with a wide bid-ask spread are expected to give a higher return.

Dynamics do exist in the environment in which businesses operate an experience that a majority of firms across the world go through. Kenya being one of the fastest growing economies is not left behind, a phenomenon that has forced the securities exchange market to undergo a lot of reforms so as to cope up with ever changing business environment. Investors who have bought shares in Kenya are interested to know the liquidity level of their stock in different firms so as to plan their finances. In Kenya, all the listed companies trade their shares in NSE Market. It is noted that NSE is one of the largest stock markets though it still remains small and illiquid (Nyasha & Odhiambo,



2013). This makes NSE an area of interest among scholars since it represents other security markets that are still evolving

### **1.1.1 Stock Market Liquidity**

An asset whose sale can be executed quickly at the least cost possible with no or little price disturbance is said to be liquid. Liquidity is a multidimensional concept which can be viewed as the process of incurring the minimum cost to transact large quantity of securities within the shortest time possible without necessarily bringing about a major price impact (PWC, 2015). As indicated by Li et al. (2020), stocks and bonds are liquid especially if there is high possibility of them being replaced by cash without experiencing any difficulties. Therefore, liquid stock markets are known for low transaction costs, fast trading and large trade sizes accompanied by low price impact. A stock market is viewed to be liquid if it can facilitate the sales of assets as quickly as possible without any price reduction (Sikarwar et al., 2015). According to Abdul-Khaliq (2013) stock market liquidity is a measure of economic development since it provides an avenue for the allocation of capital among various firms and this brings about an overall economic growth in a country.

Kyle (1985) categorized market liquidity into three major elements: tightness, depth and market resilience. Tightness entails the cost involved in the sell or

purchase of an asset within a short duration and depth is the ability to absorb any amount of securities with minimum price disturbance and its concerned with the bid-ask spread while resilience shows the speed at which security prices bounces back from a uniformed shock. The fourth aspect is the width which considers the costs associated with the purchase and sale of stock (Pham, 2020).

The fact that Stock liquidity entails a number of elements and dimensions makes it difficult for a single aspect to measure it (Amihud & Mendelson, 1986). Stock Liquidity measures include: bid-ask spread which refers to the premium that the dealer enjoys for offering the liquidity services, impact of trading volume on prices, turnover ratio which is quotient of total shares and outstanding shares, coefficient of illiquidity, Amihud Trade impact, effective spread which is a price inside the quoted spread. This study used depth, resilience and width dimensions as liquidity measures. According to Pham (2020), the three measures are adequate and comprehensive enough to represents all the different dimensions of stock market liquidity. Turnover rate, bid-ask spread and Hui- Heubel Liquidity ratio was used as proxies for depth, width and resilience respectively. This was in line with (Dalvi & Baghi, 2014; Kahuthu, 2017; Kariuki, 2018).

### **1.1.2 Stock Market Performance**

Performance is the process of quantifying the success of any decision taken by a firm after it has been implemented. It shows how a firm carries out its activities with an ultimate aim of achieving the set goals (Joash & Njangiru, 2015). Khan, Nouman and Khan (2015) viewed these goals as a course of action meant to evaluate the outcome of an organization's guidelines and action in fiscal shape which helps in establishing overall economic fitness of a firm. Stock Market performance therefore refers to return which stockholders earn on shares and this is usually inform of dividends or share appreciation.

There are three ways of measuring the performance indices of firms listed in NSE: The NSE 20 share index which compute the mean weight for all the listed companies and then considers the best 20 performing firms for ranking market capitalization. The other approach is the NSE 25 share index which was adopted to cure the biasness experienced by the former and it is intended to measure the performance of top 25 Kenyan firms that are listed in NSE. The third approach is Nairobi All Share Index (NASI) which categorizes the firms into sectors and then all the listed firms in NSE are considered.

The stock market performance can also be approached from the accounting point of view where figures such as earnings, (EPS),(DPS), return on assets,

return on equity are computed from the information contained in the financial statements (NA & M, 2016).EPS is a ratio obtained by dividing the profit after tax and preferred dividends with the outstanding shares. Badruzaman opined that EPS is an indicator on how management has efficiently utilized the firm resources to generate profit.DPS is the amount of dividends that the shareholders receives for each share held and it is computed by dividing the total dividend with the outstanding shares. Leonard and Ogochukwu (2021) argued that stockholders attach a lot of weight on dividends since it directly translates to real income on their investments in a firm.

This study employed NASI as a proxy for stock performance. It is a measure of stock performance which include all the listed firms in NSE.The study considers NASI to be ideal since it incorporates all the firms that trade their shares in NSE which makes it possible to reflect the actual performance of the firms under study. The choice of this measure concurs with (Rono, 2018).

### **1.1.3 Stock Market Liquidity and Stock Market Performance**

The stock market liquidity and stock performance have been an area of interest in the recent past especially on how they are related. This is because investors are exceptionally keen on the returns of their investments and the ease with which they can sell their shares in any given firm which makes stockholders

and portfolio managers to pay attention on it. Onoh (2016) found out that stock liquidity and stock performance are positively related and further asserted that the return on shares need to be carefully monitored since it has a great impact on the firm.

Fang, Noe and Tice (2009) argued that, shares facilitate the flow of cash and exchange of ownership in a business entity. Therefore its tradability is very essential for effective management and performance appraisal of firms. Maug (1998) did a theoretical analysis and concluded that liquid markets provides an avenue for exchange of shares among investors thereby helping a firm to raise additional capital necessary for its expansion. Theoretically, stock market performance and stock liquidity are expected to have a direct relationship since the latter facilitates the exchange of shares which in turn builds confidence among the investors. Although most of the studies concur with this theoretical belief, some found out a negative relationship while others showed statistically an insignificant relationship (Dalvi & Baghi, 2014; Fang et al., 2009; Singh, Gupta & Sharma, 2015a).

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

Nairobi Securities exchange is the only market in Kenya where shares and bonds are exchanged through buying and selling. This ensures that firms are able to raise funds for the investment in the long-term assets and investors to

gain through either share appreciation or dividends. Over and above, it may also deal in government securities and stocks of local authorities. It further provides a platform where foreigners can directly invest into the country. Kenya has NSE as the only stock market and it is considered as one of the most highly developed in East African region though its yet to meet international standards (Nyasha & Odhiambo, 2013).

Nairobi Securities Exchange was formed in 1954 and registered under company's act (Cap 486). CMA is mandated to develop appropriate rules and laws that govern the operations of NSE under Capital Markets act (Cap 485A). This ensures that the financial reports of all listed firms are in conformity to the international standards which makes them reliable and therefore can be used for academic purposes. Currently, there are 78 firms listed in NSE where the share prices of such firms are fixed through the interaction of demand and supply among stockholders. Nairobi Securities Exchange serves as both primary and secondary market for shares. The efficiency of any securities market is reflected in share prices and therefore NSE plays a very important role in stock market liquidity.

## **1.2 Research Problem**

As with the well-known 2007/2008 global financial crisis which disrupted most of the investments and adversely affected the financial markets, the

social and economic impact of Covid-19 is evident globally even though it cannot be quantified. Epidemics spark unusual and abrupt changes in the economy which by extension affect the stock market liquidity (Marozva & Magwedere, 2021). This is likely to cause fear and anxiety among investors due to uncertainties about the future of their investments. Hung, Hue and Duong (2021) opined that investors normally shy away from volatile economic environment brought about by infectious diseases like Covid-19 leading to decline in stock prices. This ultimately has far reaching consequences on the stock performance. The aforementioned issues have shifted the attention of scholars and corporate managers on the role of liquidity and its sustainability during crisis. The impact of covid19 not only paralysed the business activities but also changed their mode of operations .While majority of countries showed a negative impact of Covid-19 , a few experienced a positive impact yet some showed no relationship at all (Hamal & Gautam, 2021).

Kenya equally suffered the impact of covid19. The scourge slowed down business activities and Nairobi Securities Exchange was no exception. The pandemic lead to high level of risks and brought uncertainty on the future of firms quoted at NSE(CMA,2020). This implied that the gains and reforms that the NSE had made since its inception have been threatened by the

scourge.NSE has evolved over time and in 1994 it was rated the best performing market in the world (NSE,2014).NSE is considered as one of the best in the continent and it was ranked fifth in market capitalization in Africa (Njogu, 2017).Therefore any crises that destabilize the normal operations of NSE weaken the economic well-being of Kenya as a country and beyond.However,from the time Covid-19 was declared a global pandemic by World Health Organization, the liquidity in Nairobi Securities Exchange has not been given due consideration by the scholars. It is for this reason that has necessitated the need for more research within the Kenyan context.

The analysis of financial literature reveals that, there is limited literature that exist on how stock market liquidity and stock performance are related especially after the wave of Covid 19. Most studies that have been conducted in Kenya were done before the pandemic and this creates a gap. While a majority of similar studies in the developed economies showed an inverse association between stock market liquidity and stock return (Amihud, 2002; Huang,Sun,Yao & Yu, 2012; Vasquez-Tejos & Lamothe Fernandez, 2020),the findings in Kenya were inconsistent. Contrary to Kahuthu (2017 ) who found out a weak positive relationship between stock liquidity and stock return, Rono (2018) reported a statistically significant relationship. The conflicting findings between developed market and that of Kenya together



with inconsistent results of the studies conducted in Kenya reveal a contextual gap. This study intended to address the gaps identified by answering the research question: What is the impact of Covid-19 on the relationship between market liquidity and the stock performance of firms quoted in NSE, Kenya?

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

#### 1.3.1 General objective

To investigate the impact of Covid-19 on the relationship between stock market liquidity and stock performance of firms listed in NSE, Kenya.

#### 1.3.2 Specific Objective

- i.To determine the influence of market depth on the stock performance of firms quoted in NSE.
- ii.To determine the influence of market width on the stock performance of firms registered in NSE.

iii.To determine the effect of market resilience on the stock performance of firms listed in NSE

#### **1.4 Value of the study**

This study would act as a reference point in the financial literature by scholars and gaps identified in the study would form the basis for future research. It would further lay the foundation for the improvement of theories considered relevant for this study by researchers.

The firm managers have fiduciary responsibility of ensuring that the firms under their management perform well which is reflected in the stock performance. Investors too are interested in the return for their investment and the ease with which they can sell their shares. Findings from this study would enable them make sound investment decisions.

The Kenyan government and monetary experts would find the recommendations from this study useful especially when coming up with appropriate fiscal policies. For instance, setting the minimum amount of capital which would enable firms to withstand financial shocks in the market. This in turn ensures the survival of firms in an ever-changing environment.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This section discusses the theories upon which this study was built, it analyses the relevant literature and identifies the research gaps.

### **2.2 Theoretical Review**

Theoretical framework provides a strong ground on which the concepts under study are built. This study has identified four theories that give insight onto the concepts that are being examined.

#### **2.2.1 Liquidity Premium Theory**

According to the theory, investors would opt for liquid cash instead of illiquid assets so as to take advantage of any investment opportunities. Keynes (1936) asserts that long term interest rate factors in both future interest rates and a premium because investors prefer bonds whose maturity period is shorter to long term bonds. The proponents of this theory hold that it is money which spurs the economic activities and not the savings. Therefore a professional investor would be concerned about the future of his investment. Bibow ( 2005) revisited the LPT and concluded that it provides the basic structure for examining the role of monetary policy and the financial system which is relevant even today. Bibow concurs with the theory that there are four

motives for holding money: precautionary, speculative motive, business motive and income motive.

In an attempt to analyze more on liquidity preference theory, Cardim de Carvalho (1995) argued that the interest paid on bonds is a compensation for parting with a liquidity since those who possess money would have to delay its consumption when they buy bonds and money is considered to be the most liquid asset because it can settle the contractual debt when they fall due. This implies that there is need for an extra compensation for securities that cannot be easily converted into cash since they are riskier than short-term assets. Some of the risks that are associated with such assets include: interest rate risk and liquidity risks. Investors prefer short term securities to long term securities that can easily be converted into cash and therefore expect higher returns on long term securities to compensate for the risks and uncertainties associated with such securities.

Liquidity Premium theory shouldn't be limited to bonds alone but instead it's a general principle that needs to be applied to all assets since the implication of this model is that assets considered to be highly illiquid need high premium while liquid assets should be offered at discounts (Cardim de Carvalho, 1995). Therefore, the principle of LPT can be extended to other financial instruments like stocks and treasury bills. This would give a

theoretical justification why investors expect a higher rate of return on illiquid assets than liquid assets which is why different classes of stock attract different return due to risks and uncertainties which come with long-term securities.

Liquidity preference theory find its relevance since it explains immediacy as one of the elements of stock market liquidity which looks at the efficiency in the financial system and the speed to effect a transaction and liquidate an asset into cash. The theory suggests high returns for illiquid assets.

### **2.2.2 Trading Cost Theory**

Amihud & Mendelson (1986) argued that when the investors perceive value on securities based on the return net trading costs, then they expect higher return as a reward for engaging in a costly trade. This implies that investors should not only consider risks that are associated with a security alone but also its liquidity. According to this theory, investors with shorter time horizon are ready to acquire the low spread securities at a higher price than those with the longer periods since the costs shall be borne only once over a holding period. This implies that longer holding period reduces the amortized cost per unit.

The theory suggests the existence of liquidity clientele for different classes of assets and argued that, a fund with long-term investment may consider illiquid stock which provides high returns to long-term investments while those with short-term investment would consider liquid stock which can be easily converted into cash to cater for their daily operations. Therefore, portfolio managers need to consider their client's planning horizon while making investment decisions. The interaction among investors with different liquidity preference affect the asset pricing (Huang et al., 2012)

Stockholders get their return in form of share appreciation and dividends which are dependent on the stock performance of a firm. This therefore means that high performing stocks are likely to give high returns compared to low performing firms. According to trading cost theory, illiquid stocks commands high return to take care of the huge transactional costs involved in such assets. This implies that stockholders are concerned on the ease with which their shares can be sold and the cost associated with such transactions determines the expected return.

Trading cost theory helps to illustrate how the market width as an aspect of stock market liquidity relates with the transactional costs incurred while trading on securities. This by extension influences the stockholders' expected return on their investments in stock.

### **2.2.3 Trading Volume Theory**

Trading volume refers to the number of shares that can be exchanged between sellers and buyers in the stock market so long as the two parties have agreed on the share price (Abbondante, 2010). Trading volume theory was advanced by Karpoff (1986) who argues that the amount of shares being traded depends on the informational event that has been released in the market. According to him, increase in the trading volume may be due to different interpretation of informational events or having divergent views based on the prior expectations among the investors. This implies that volume conveys some information or a particular event to market participants. Mpofu (2012) opined that volume drives prices and concluded that the volume and stock returns are positively related.

According to Ahmed, Hassan and Nasir (2015), the existence of heterogeneous investors brings about an increased trading volume. They further opined that bad news results into negative shocks in the market more than good news. The investors have different reasons for trading in stock market which make them process information differently (Yonis, 2013). Therefore trading volume is associated with asymmetric information coupled with divergent expectations among participants in the financial markets and this has an impact on the stock performance. Abbondante (2010)

reported a direct relationship between the trading volume and stock performance which concurred with (Ahmed et al., 2015).

Trading volume theory finds its relevance since it demonstrates how market depth as a measure of stock liquidity affect the stock performance. Furthermore, this is an event study. Therefore, this theory further finds its relevance as it would show how the stockholders processed the news of Covid 19 pandemic to influence their trading pattern.

#### **2.2.4 Efficient Market Hypothesis**

A market where the prices of financial instruments adjust quickly and fully reflect both the private and public information is considered to be efficient. The efficient market hypothesis can be traced back when Malkiel and Fama (1970) comprehensively reviewed the previous studies on market efficiency and concluded that such markets are able to fully adjust within the shortest time possible to fully accommodate the latest information in the price of their securities. In an efficient market, no single investor would make abnormal profit nor beat the market and the only way to earn abnormal return is through investing in high risk assets (Ṫiřan, 2015).

In spite of its shortcomings, this theory provides a framework for asset pricing (Nwaolisa, 2012). If there are signs that the price of securities are likely to rise, then investors would purchase such securities and the bids would be reflected



in the new information. Hodrea (2015) concluded that market liquidity influences informational efficiency positively. Portfolio managers and investors at large are supposed to understand EMH so as to invest wisely.

Efficient market hypothesis finds its relevance to this study in that it demonstrates how NSE adjusted the share prices to reflect the new information when Covid19 rocked the country. Hodrea (2015) concluded that any improvement in stock market liquidity leads to greater efficiency. EMH would also assist to establish whether shares are fairly priced and the role played by information asymmetry in asset pricing. It is only then that such a market is viewed to be efficient and stock market said to be liquid.

## **2.3 Determinants of Stock Performance**

Le et al. (2021) argued that the choice of the determinants depends on the nature and the objectives of the study being undertaken. This study has identified two key determinants of stock performance as discussed under;

### **2.3.1 Stock Market Liquidity**

J et al. (2017) opined that liquidity refers to how quickly an investment portfolio can be converted into cash with little or no adverse impact on its value. Stock Market is viewed to be liquid if it facilitates the exchange of voluminous shares between buyers and sellers within a short time span at

minimum cost and less price disturbance. Liquidity shows the capacity of an organization to change over a resource for money quickly and this enables a firm to utilize fluid resources for speculative reasons (Matar & Eneizan, 2018).The most liquid asset is cash and efficient market should easen the conversion of stocks to cash. From the accounting point of view, liquidity enables a firm to settle its debts when they fall due.Mumo (2017) established a direct association between stock liquidity proxied by turnover ratio and stock return

### **2.3.2 Risk Free Rate**

This is the amount of return which a stockholder would expect on an asset with zero risk. This rate is normally set by the central bank of Kenya. An investor should only invest in a risky asset if the required rate of return is higher than that of risk-free asset. The premium charged is a compensation for taking up a risky asset. While Aurangzeb (2012) found an indirect correlation between stock performance and risk free rate,Muriuki (2014) revealed a direct association between risk free rate and stock market return. The study used 91 days treasury bill as a proxy for risk-free rate.

## **2.4 Empirical Review**

Wang (2014) examined how market liquidity and stock return of firms quoted in London Stock Exchange between January 1991 to May 2011 are related. The study employed the dataset which contained 1823 stocks from the index that were traded across the whole-time horizon. Each stock contains 252 observations. Thomson DataStream was used to obtain data on several variables. Time-series test based on CAPM was used and results suggested that liquid stocks yield higher return than illiquid stock.

Singh et al. (2015) investigated how stock liquidity influences the performance of firms quoted in India. The sample included all the firms that were continuously listed in top ten and non-probability judgment was used to collect 35 companies to form the sample size over the period between 2005-2014. The OLS was used and the proxy for dependent variable was Tobin Q while the predictor variables considered were return on investment, market to book value, index and xlog. The study revealed that stock liquidity and firm performance are directly related.

Nguyen, Duong and Singh (2016) investigated how stock liquidity and the value of firms that trade in Australian Stock Exchange (ASE) are related. The study samples included 10712 firms and they were considered for the period between 2001-2010. Financial data were obtained from FinAnalysis and

Tobin's Q was used to capture the firm value. Results revealed a direct association between stock liquidity and the value of the firm. However, an evidence showed that stock liquidity and profitability are inversely related something which authors attributed to the fact that most investors prefer liquid stock which makes them to trade at high prices and this leads to high value.

Lam, Tam and Dong (2019) carried out a study to ascertain how stock liquidity and stock performance of firms quoted in China are related. The study sample had 1310 listed firms in both the Shanghai and Shenzhen stock exchanges between July 1994 to June 2014. Value-weighted market returns was used as a proxy for market returns. Turnover ratio, trading speed, price impact and trading cost were used as liquidity measures. Time series test was employed to test whether the asset pricing models could explain the time series variations in stock return. A four-factor asset pricing model was employed and the study found out that liquidity significantly affected the stock return.

Boloupremo (2020) investigated if stock liquidity and the performance of all firms quoted in Nigeria stock Exchange between 1985-2015 were related. Market turnover and trading volume was employed as proxies for liquidity while market capitalization which served as a control variable was a proxy for

market size. Vector Auto-regression model was adopted the study findings indicated that stock return and liquidity variables are positively related. The author argued that there is a minimal degree of liquidity to become a risk factor between emerging and developed market which might have contributed to such results.

Zhong and Takeha (2020) investigated whether stock liquidity of firms listed in Tokyo Exchange, Japan is well priced for the period ranging 1978-2016. The authors employed six liquidity measures which include: relationship between trading volume and return, estimator of effective spread, turn-over adjusted zero return, security turn-over, regression slope( $r$ ) and limited dependent variable to estimate the marginal cost of trades. The main data source was NIKKEI NEEDS database. The results revealed that portfolio with illiquid stock had higher monthly return than those with liquid stocks. The authors concluded that there exist liquidity premium and the investors expect higher return for illiquid stock since they require more compensation.

Vasquez-Tejos and Lamothe Fernandez (2020) did a study in Latin American markets to investigate the relationship between stock liquidity and stock returns between January 1998 and July 2018. The study considered shares that had an average stock presence of over 70% which translated into 96 of shares

of firms under study. The study adopted both descriptive and correlational designs. The findings revealed that stock liquidity and stock return in Chile, Mexico and Peru are indirectly related which is consistent with the theory. However, a direct relationship was observed in Colombia which is similar to most studies in emerging markets.

Marozva (2018) did a study to investigate how liquidity influences stock return of all firms that trade in Johannesburg Stock Exchange for the period between 2007-2016. Data were collected from Bloomberg Terminal. After the selection process, the final sample was 100 stocks which were further divided into those with small-capitalization stock fund and those with large-capitalization stock fund. The study adopted Fama and Macbeths (1973) multiple cross-sectional regression approach was applied in data analysis and liquidity was added as the fourth factor to determine its direct influence on stock return. The study revealed a direct and significant association between stock excess return and illiquidity which is an indication that liquidity is priced.

A study done by Kahuthu (2017) to investigate if market liquidity and stock returns of 64 listed firms in NSE for five years ranging between 2012-2016 are related. Market depth as measured by the trading quantity and market width as measured by the trading costs were used as proxies for market

liquidity. It was an explanatory research that adopted quantitative design. Panel regression model was adopted for data analysis and Pearson's correlation coefficient was used. The findings revealed a weak association between the liquidity and stock return.

Alusa (2021) investigated if there exist an association between market liquidity and stock performance of 65 firms which are quoted and have been trading in NSE between 2014-2018 and survey design was adopted. Hue-Hubel Liquidity, stock market capitalization, stock turn-over and stock spread were used as proxies for stock liquidity. The findings showed that stock liquidity and stock performance are significantly and positively related.

Hung et al (2021) investigated the impact of Covid-19 on stock market returns of 733 firms quoted in Vietnam for the period ranging between January 2020 to December 2020. The study adopted a random effect model of panel regression. The study revealed an indirect association between dependent and predictor variables. However, the impact differed across sectors where the financial sector suffered most.

Kanyugi (2020) investigated the impact of Covid-19 on the performance of stock for firms listed in NSE, Kenya for 72 days before the first case was confirmed in Kenya and another 72 days after the confirmation and the study adopted descriptive design. The study reported a large a lower mean after the pandemic which confirmed that Covid-19 had an adverse impact on the performance of NSE.

#### **2.4 Summary of Literature Review and Research Gap**

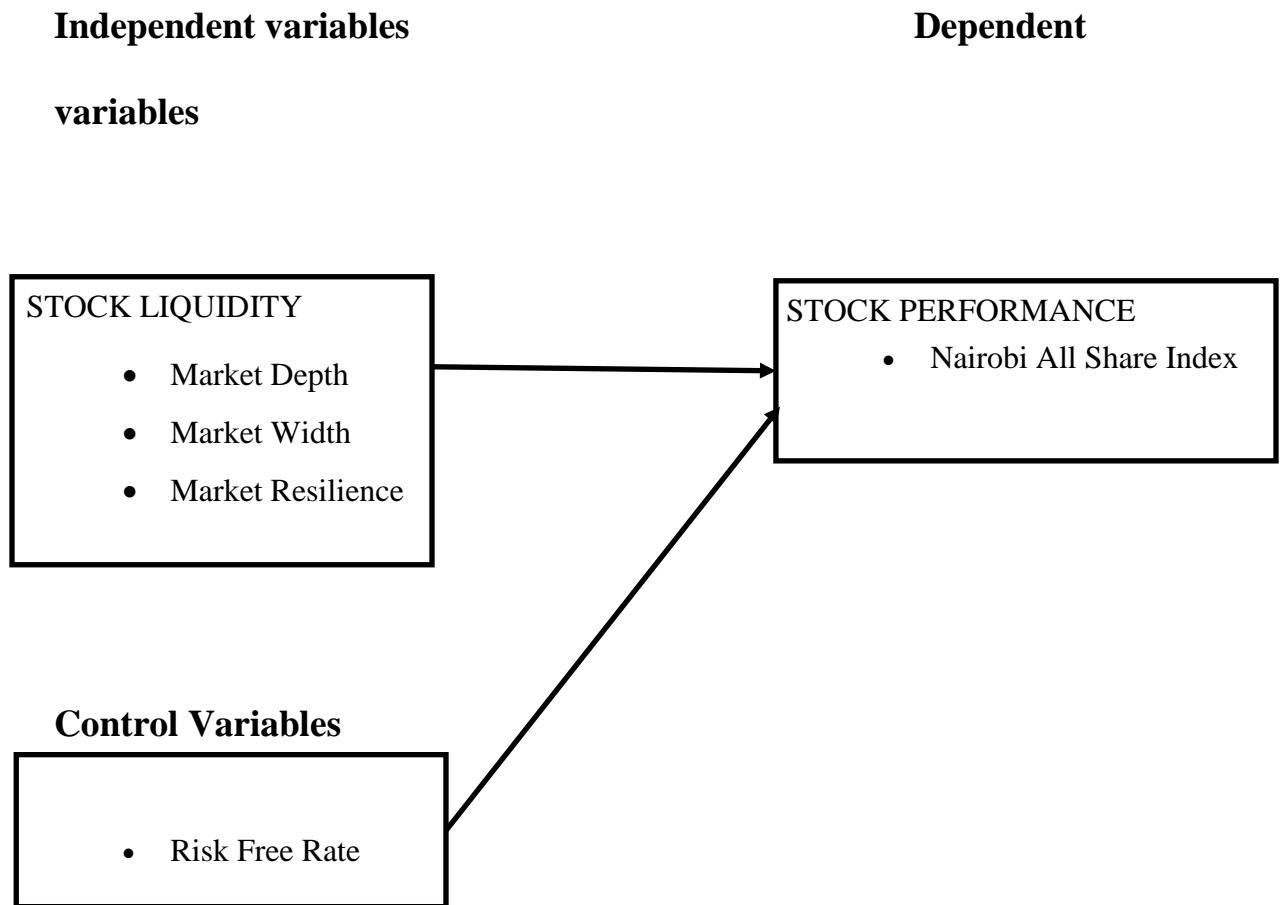
While most of the analysis of the previous studies revealed a significant direct association between stock liquidity and its return from developed economies, findings from the emerging markets revealed mixed results ranging from weak correlation to no correlation at all and other studies revealed a direct association. The inconsistencies in the findings of the studies creates a gap. Another gap exists since the findings from most of the studies carried out in the developing economies differ from those in the developed markets. A good number of studies in developed markets have employed a multiple measures of stock liquidity. This is not the case in the developing markets where most studies have adopted a single measure of stock liquidity creating a methodical gap.



The previous studies especially in advanced economies have examined the influence of stock liquidity on a number of issues ranging from stock return to firm performance or firm value. However, most studies in Kenya were more on stock market liquidity and stock return with little attention given to firm performance and this creates a conceptual gap. Again, a few studies have been done on Covid-19 . Furthermore, the association between stock market liquidity and stock performance after Covid-19 has not been given due consideration. It is for these aforementioned gaps which forms the background of this study. The study therefore intends to add onto existing literature by addressing some of the gaps identified.

## 2.5 Conceptual Framework

Figure 2.1: Conceptual Framework



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter outlines the methodologies which were adopted to collect data. It goes further to discuss research design, the study population and concludes by identifying tools that are considered suitable for data analysis.

### **3.2 Research Design**

Research design brings out the frame upon which research work is carried out. It entails the plan that would ultimately aid in gathering, measuring, analyzing and interpretation of data (Dulock, 1993). A causal study was adopted for this study. It is considered ideal since the study intended to investigate the influence of Covid-19 on the relationship between market liquidity and stock performance. Descriptive design was also employed so as to provide a comprehensive explanation of the stock market performance as influenced by the level of stock liquidity.

### **3.3 Population of the study**

Population refers to all the units with the required variable characteristic which a researcher is interested in the study and for whose findings can be generalized (Shukla, 2020). The units of analysis for this study were 78 companies which trade their shares in the NSE as per by the time under

which the study was conducted. Census approach was adopted since this would give a comprehensive view on how all firms were affected by covid19.

### **3.4 Data Collection**

The study relied on data collected from NSE and Central Bank of Kenya. The two institutions are fairly reliable and accurate since they are known to be operating strictly under the law. Therefore, the data from NSE and CBK were considered appropriate and entirely adequate enough in addressing the problem that the study investigated. The 91 days treasury bill was obtained from the CBK website. A two-year period running from January 2019 to December 2020 where weekly data on stock market liquidity aspects such as share prices and their trading volumes, bid-ask spread and costs associated with share transfers were obtained from the NSE website. The year 2020 was included in the study since that was the year when cases of covid-19 were reported in Kenya.

### **3.5 Diagnostic Tests**

These tests are done before the actual data analysis to check if regression assumptions hold (Kothari, 2012). Normality, multicollinearity and heteroscedasticity tests were conducted.

### **3.5.1 Normality**

A histogram was used to test for normality. The bell-shaped distribution of residuals is an evidence that the residuals are normally distributed especially when the clusters are broadly around the trend.

### **3.5.2 Multicollinearity Test**

Variance of Inflation Factor (VIF) was adopted to check a multicollinearity between the predictor variables. VIF of more than ten implies multicollinearity while VIF of less than ten implies absence of multicollinearity.

### **3.5.3 Heteroscedasticity Test**

A residual plot was used to test for heteroscedasticity. The presence of a cone shaped residual plots confirms heteroscedasticity otherwise, the data is homoscedastic.

### 3.6 Data Analysis

Theoretically, it is expected that stock liquidity to be related with the firm's performance. Therefore, the study employed ordinary least square (OLS) method and inferential statistics was adopted. This was in line with the existing literature, for instance the studies of Onoh (2016) and (Singh et al., 2015c). The linear regression model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where Y is the stock performance,  $X_1$  is the market width,  $X_2$  is the market depth,  $X_3$  is the stock market resilience,  $X_4$  refers to the risk-free rate:  $\beta_0$  is the y-intercept while  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  represent the coefficients of  $X_1$ ,  $X_2$ ,  $X_3$  and  $X_4$  respectively and  $\varepsilon$  is the error term.

### 3.7 Operationalization of Variables

**Table 3. 1: Operationalization of Variables**

VARIABLES	CATEGORY	MEASUREMENT
Stock Return	Dependent	Nairobi All Share Index
Market Width	Independent	Measured as weekly spread  Spread=(Ask Price-Bid Price)
Market Depth	Independent	Measured as weekly Turnover ratio  $TR = \frac{\text{Number of shares Traded}}{\text{Market capitalization}}$
Market Resilience	Independent Variable	Hui- Heubel Liquidity Ratio(HHL)  $HHL = \left( \frac{\text{Max Price} - \text{Min Price}}{\text{Minimum price}} \right) / TR$  TR- Turnover ratio

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Risk	Free	Control	91 days treasury bill rate
Rate		Variable	

---

### **3.8 Test of Significance**

T-test was used to ascertain the coefficient value of the individual regression. This was achieved by calculating the t-statistic for coefficients of each independent variable in the regression equation. Analysis of variance (ANOVA) was used to test the strength of the model at 95% confidence level and 5% level of significance.



## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter deals with the data analysis, the findings from the study, diagnostic tests and the interpretation of the results.

### 4.2 Descriptive Statistics Results

This section gives a descriptive summary of statistics for each variable.

**Table 4. 1: Descriptive summary for the year 2019**

	Obs	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
NASI Market Width	4056	137.03	165.41	152.440	6.5000	0.065	-0.713
	4056	0.9053	5.0166	2.1449	0.9189	0.947	0.879

---

Market							
Depth	4056	0.0039	0.0826	0.0265	0.0169	1.561	2.704
Market							
Resilien							
ce	4056	0.1211	2.5961	0.5517	0.4102	2.758	11.27
Risk							
Free							
Rate	4056	6.307	7.697	6.8866	0.3856	-0.039	-1.159

---

The study revealed that the respective means for NASI, market width, market depth, market resilience and risk-free rate were 152.44,2.144,.0265,0.5517 and 6.866 for the year 2019.NASI, market width, market depth, market resilience and risk free had a standard deviation of 6.50,0.9189,0.0169,0.4102 and 0.3856 respectively for the year 2019.

**Table 4. 2: Descriptive summary for the year 2020**

	Obs	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
NASI	4056	127.3	171.36	143.19	10.9175	1.195	0.648
Market Width	4056	0.2054	3.8885	1.3231	0.94504	1.509	1.543
Market Depth	4056	0.006	0.0763	0.0283	0.01526	0.772	0.615
Market Resilience	4056	0.1311	1.6553	0.4980	0.34039	1.692	2.941
Interest Rate	4056	6.011	7.333	6.8518	0.44528	-0.424	-1.403

The results in table 4.2 revealed that the respective means for NASI, market width, market depth, market resilience and risk-free rate recorded means of

143.19,1.3232,0.0283,0.4981 and 6.8518 for the year 2020 while their respective standard deviation were:10.9176,0.945,0.0153,0.3404,0.4453.

### 4.3 Diagnostic Tests

These tests were conducted so as to ascertain the reliability and accuracy of the data.

#### 4.3.1 Multicollinearity Test

**Table 4. 3:Multicollinearity Test**

	Collinearity Statistics	
	Tolerance	VIF
<b>Market Width</b>	0.974	1.027
<b>Market Depth</b>	0.443	2.255
<b>Market Resilience</b>	0.454	2.204
<b>Interest Rate</b>	0.940	1.064

The results showed that Variance Inflation Factor for market width, market depth, market resilience and interest rate were 1.027,2.255,2.204 and 1.064 respectively. Since they all have a VIF which is less than 5, this is an indication that the independent variables are not collinear. Furthermore, the

level of tolerance for market width, market depth, market resilience and interest rate were 0.974,0.443,0.454 and 0.940 respectively. This showed the absence of multicollinearity since they all have tolerance value of more than 0.1.

### 4.3.2 Normality Test.

**Figure 4.1: Histogram**

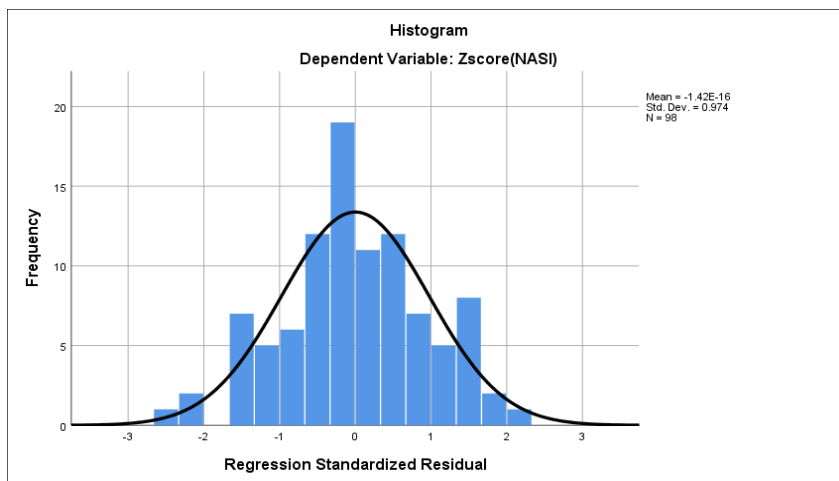


Figure 4.1 shows a histogram and the bell-shaped distribution of residuals is an evidence that the residuals are normally distributed since the clusters are broadly around the trend.

### 4.3.3: Heteroscedasticity Test

**Figure 4. 1: Heteroscedasticity Test**

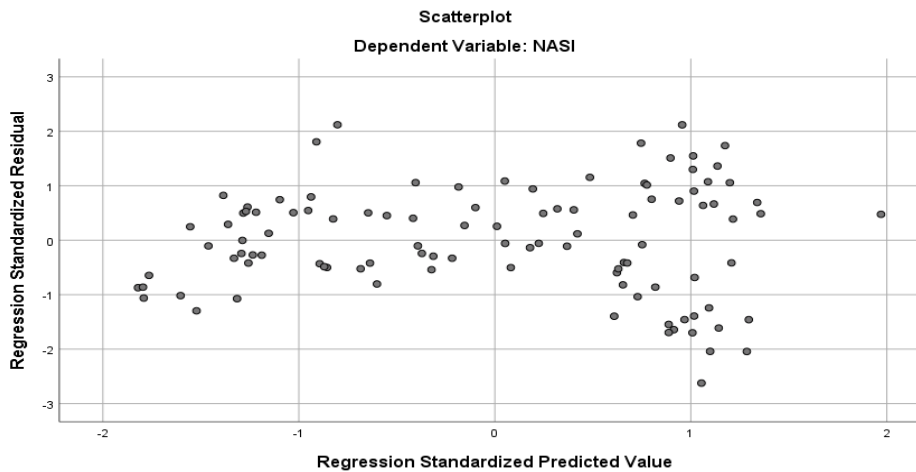


Figure 4.2 shows the scatterplot of standardized residuals against the predicted values and since the data do not take a cone shaped pattern confirms that it is homoscedastic. Therefore, heteroscedasticity is not a problem

#### 4.4 Pearson Correlation Matrix

Pearson bivariate was calculated to find out whether the variables correlate as shown in tables 4.4 and 4.5

**Table 4. 4: Correlation Matrix for the year 2019**

		Market				
		NAS I	Market Width	Market Depth	Resilienc e	Risk-Free Rate
<b>NASI</b>	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	52				
<b>Market Width</b>	Pearson Correlation	-.372*	1			
	Sig. (2-tailed)	0.007				

	N	52	52			
<b>Market</b>	Pearson	.442*	-0.254	1		
<b>Depth</b>	Correlation	*				
	Sig. (2-tailed)	0.001	0.069			
	N	52	52	52		
<b>Market</b>	Pearson	-	.330*	-.681**	1	
<b>Resilienc</b>	Correlation	.393*				
<b>e</b>		*				
	Sig. (2-tailed)	0.004	0.017	0.000		
	N	52	52	52	52	
<b>Risk-</b>	Pearson	.386*	-0.060	-0.086	0.128	1
<b>Free</b>	Correlation	*				
<b>Rate</b>						
	Sig. (2-tailed)	0.005	0.671	0.544	0.364	
	N	52	52	52	52	52

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).



Table 4.4 reveals that Market Width and NASI had a negative significant association ( $r = 0.007, p = -0.372$ ). Market depth revealed a moderately direct and significant correlation with NASI ( $r=0.442, p=0.001$ ). Market resilience indicated a direct significant correlation with NASI ( $r=0.393, p=-0.004$ ). This implied that any changes in the market resilience resulted into a slight improvement in the stock performance on the same direction. Risk free rate also had a direct significant correlation with NASI ( $r = 0.388, p=0.005$ ).

**Table 4. 5: Correlation Matrix for the year 2020**

			<b>Mark et I</b>	<b>Mark et Depth</b>	<b>Market Resilien ce</b>	<b>Risk- Free Rate</b>
<b>NASI</b>	Pearson	1				
	Correlation					
	Sig. (2-					
	tailed)					
	N	52				
<b>Market</b>	Pearson	-	1			
<b>Width</b>	Correlation	0.230				
	Sig. (2-	0.101				
	tailed)					
	N	52	52			
<b>Market</b>	Pearson	-	0.246	1		
<b>Depth</b>	Correlation	0.029				
	Sig. (2-	0.836	0.079			
	tailed)					
	N	52	52	52		

<b>Market</b>	Pearson	0.061	-0.134	-.805**	1	
<b>Resilience</b>	Correlation					
	Sig. (2-tailed)	0.669	0.345	0.000		
	N	52	52	52	52	
<b>Risk-Free Rate</b>	Pearson	.468*	0.053	.523**	-.406**	1
	Correlation					*
	Sig. (2-tailed)	0.000	0.709	0.000	0.003	
	N	52	52	52	52	52

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 4.5 reveals that NASI and risk-free rate had a moderately direct and significant correlation ( $r=0.468$ ,  $p=0.000$ ). NASI showed a weak positive and insignificant correlation with both market depth ( $r=-0.029$ ,  $p=0.836$ ) and market width ( $r=-0.230$ ,  $p=0.836$ ) market resilience indicated a weak direct and insignificant correlation ( $r=0.069$ ,  $p=0.669$ ).

## 4.5 Regression Analysis

### 4.5.1 Model Summary

**Table 4. 6: Model Summary for the year 2019**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.667 <sup>a</sup>	0.444	0.397	5.0469

a. Predictors: (Constant), Interest rate, Market Width, Market Depth, Market Resilience

b. Dependent Variable: Stock Performance

From Table 4.6,  $R = 0.667$  which implied that the predictor variables are positively related with the stock performance. The table further revealed an adjusted R Square of 0.397. This meant that stock market liquidity contributed to 39.7% of the variations in the stock performance. The remaining 60.3% was due to other factors which are not in this model.

## 4.5.2 Analysis of Variance

**Table 4.7: Analysis of Variance for the year 2019**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	957.599	4	239.400	9.399	0.000 <sup>b</sup>
	Residual	1197.155	47	25.471		
	Total	2154.754	51			

a. Dependent Variable: NASI

b. Predictors: (Constant), Risk Free Rate, Market Width, Market Depth, Market Resilience

Table 4.7 indicates the fitness of the regression model to the data at 95% level of significance. Since the F-test of 9.399 had a p-value of  $0.000 < 0.05$ , this proved a significant association between the market liquidity and stock performance.

### 4.5.3 Regression co-efficient

**Table 4.8: Regression Coefficients for the year 2019**

		Unstandardized			
		Coefficients			
		Std.			
Model		B	Error	t	Sig.
1	(Constant)	105.086	13.206	7.957	.000
	Market	-1.510	.820	-1.840	.072
	Width				
	Market	120.325	57.115	2.107	.041
	Depth				
	Market	-2.587	2.430	-1.065	.292
	Resilience				
	Risk Free	7.090	1.859	3.814	.000
	Rate				

Dependent variable: NASI

The estimated equation was as follows:

$$Y=105.086 - 1.51X_1 + 120.325X_2 - 2.587X_3 + 7.09X_4$$

Where  $Y$ ,  $X_1$ ,  $X_2$ ,  $X_3$  and  $X_4$  represent NASI (stock performance), market width, market depth, Market Resilience and Risk-Free Rate respectively.

Table 4.9 shows regression results which reveals that market width had an indirect and insignificant effect on stock performance ( $r = -1.51$ ,  $p = 0.072$ ).

Market width revealed a direct and significant association with stock performance ( $r = 120.325$ ,  $p = 0.041$ ), market resilience had an indirect and insignificant influence on stock performance ( $-2.587$ ,  $p = 0.292$ ) and interest rate had a positive and significant effect on stock performance ( $r = 7.090$ ,  $p = 0.000$ ).

#### 4.5.4 Model Summary

**Table 4.9: Model Summary for the year 2020**

R				
Model	R	Square	Adjusted R Square	Std. Error of the Estimate
1	.599 <sup>a</sup>	0.358	0.304	9.10950

a. Predictors: (Constant), Risk Free Rate, Market Width, Market Resilience

Market

Depth

b. Dependent Variable: NASDAQ

Table 4.9 revealed that R= 0.599. The implication is that the predictor variables and stock performance are positively related. The table results further shows the adjusted R Square of 0.304. This implied that stock market liquidity accounts for 30.4% of variations in stock performance. However, 69.6% were caused by other factors which are not in this model.



#### 4.5.5 Analysis of Variance for the year 2020

**Table 4.10: Analysis of Variance for the year 2020.**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2178.670	4	544.668	6.564	0.000 <sup>b</sup>
	Residual	3900.202	47	82.983		
	Total	6078.872	51			

a. Dependent Variable: NASI

b. Predictors: (Constant), Interest Rate, Market Width, Market Resilience, Market Depth.

Table 4.10 shows an F statistic of 6.564 with a p-value of  $0.000 < 0.05$ .

This infers a significant association between independent variables and dependent variable.

#### 4.5.6 Regression co-efficient for the year 2020

**Table 4.11: Regression Coefficients for the year 2020**

		Unstandardized			
		Coefficients			
Model		B	Std. Error	t	Sig.
1	(Constant)	40.992	22.631	1.811	.076
	Market Width	-2.228	1.408	-1.583	.120
	Market Depth	-162.846	156.403	-1.041	.303
	Market Resilience	3.606	6.368	.566	.574
	Risk Free Rate	15.757	3.378	4.664	.000

Dependent variable: NASI

The estimated equation is as follows:

$$Y = 40.992 - 2.228X_1 - 162.846X_2 + 3.606X_3 + 15.757X_4$$

Where Y, X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> represent NASI (stock performance), market width, market depth, Market Resilience and Risk-Free Rate respectively.

Table 4.11 reveals that market width had an indirect and insignificant effect on stock performance (r= -2.228, p=0.076). Market depth had indirect and an insignificant effect on stock performance (r=-162.846,

$p=0.303$ ), market resilience revealed a positive and insignificant association with stock performance ( $-3.606$ ,  $p=0.574$ ) and interest rate revealed positive and significant association with stock performance ( $r=15.757$ ,  $p=0.000$ ).

#### **4.6 Discussion of the findings**

The study findings for the year 2019 revealed that a unit increase in market depth leads to an increase in stock performance by 120.3 units which concurred with Vasquez-Tejos and Lamothe Fernandez (2020). Market depth and stock performance for the year 2019 had a p value of  $0.041 \leq 0.05$  which implied that they are positively and significantly correlated .

The findings for the year 2020 revealed that a unit increase in market depth results to a decrease in stock performance by 162.8. However, the results for the year 2020 were statistically insignificant since it had a p value of  $0.303 \geq 0.05$ . This showed that market depth was not a good predictor of stock performance for the year 2020. Similar results were realized by (Kahuthu, 2017).

The results for the market depth showed that there was a decrease in stock performance in the year 2020 compared to that of 2019. The difference in

results for the two years could be attributed to impact of covid19 which adversely affected the stock performance as found by (Hamal & Gautam, 2021).

The findings further revealed that a unit increase in market width results into a decrease in stock performance by 1.51 and 2.2 for the years 2019 and 2020 respectively. The results revealed that there was a decrease in the regression coefficient of market width since it was lower in the year 2020 than 2019 which implied that market width had a more adverse impact on stock performance in the year 2020 than 2019. This could be attributed to the adverse impact of covid19.

The market width although revealed a negative sign which suggest that both of them led to a lower stock performance for the years 2020 and 2019, the results were statistically insignificant since the p-value for the year 2019 was 0.120 while that of 2020 was 0.072 which were both greater than an alpha value of 0.05. This implied that market width was not a good predictor of stock performance for the years 2020 and 2019. Similar results were realized by Dalgaard (2015) who found that market width had a non-significant association with stock return.

The study findings for the market resilience revealed that for a unit increase in market resilience results into a decrease in stock performance by 2.587 for the year 2019 and an increase in stock performance by 3.606 for the year 2020. This showed that the regression co-efficiency of market resilience increased in the year 2020 compared to the year 2019 .

The results for market resilience were statistically insignificant for both the years since the p-value for the year 2019 was  $0.292 \geq 0.05$  while that of 2020 was  $0.574 \geq 0.05$ . This implied that market resilience was not a good predictor of stock market performance for the years 2020 and 2019. The findings concurred with the CMA (2015) which reported a very low level of stock liquidity in Kenya and argued that it was the reason for the fluctuations in the stock performance. This therefore implies that NSE is still developing and therefore not liquid enough to adjust very quickly so as to reflect the prevailing economic situation in the market. It is only developed markets that adjusts very fast and bounces back to normalcy when the crises such as covid19 hit the stock market.

An increase in risk free rate by one unit, results into an increase in the stock performance by 7.09 units for the year 2019 and 15.757 units for the year 2020. The findings concurred with (Muriuki, 2014). Risky assets like shares are expected to have a higher return than risk free assets in order to compensate the investors for high risks in such assets (Eldomiaty et al., 2020). Therefore increase in risk free rate results into increase in the required rate of return for stock since they have some components of risks. This would drive stock prices up which explained a positive association between risk free rate and stock performance.

From the study findings, risk free rate was statistically significant since both the years 2020 and 2019 reported a lower p-value of  $0.000 \leq 0.05$ . This meant that risk free rate was a good predictor of stock performance. The year 2020 had a higher regression coefficient of 15.757 compared to 2019 whose coefficient was 7.09. This could be attributed to the CBK decision to increase risk free rate so as to compensate the investors for the economic shocks which were experienced in the country as a result of Covid19.

The study results revealed F-values of 9.399 and 6.564 for the years 2019 and 2020 respectively with a p value of  $0.000 < .05$  for both the years which

implied that the regression model fits the data better than if there were no independent variables . This implied that all the independent variables (market resilience, market depth and market width) when put together with risk free rate as a control variable positively and significantly affected the stock performance. Therefore, jointly all the independent variables in the regression model are good predictors of stock performance.

The f-value of 9.399 for the year 2019 was higher than that of 6.564 for the year 2020. This implied that the joint influence of all the predictor variables on the stock performance decreased in the year 2020 during the covid19 period as compared to 2019 when there was no covid19. This might be attributed to the adverse effect of the covid19 pandemic which eroded the stock market resulting into fear and uncertainties among the stockholders.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter summarizes the findings, conclusions, study limitations and recommendations for policy development together with suggestions for future research.

### **5.2 Summary of the Findings**

The study results revealed a positive significant effect of market depth on stock performance for the year 2019. However, the year 2020 showed a negative insignificant effect of market depth on the stock performance. This implied that covid19 adversely affected the stock market performance.

The study revealed an indirect and insignificant connection between market width and stock performance for the years 2020 and 2019. However, the year 2020 showed a decrease in stock performance due to lower regression coefficient for the year 2019. This implied that covid19 adversely affected stock performance.

The study further discovered an indirect and non-significant association between the market resilience and stock performance for the years 2020 and



2019. This implied that market resilience was not a good predictor of stock performance for the two years under study.

The findings further revealed that risk free rate had a strong positive correlation with stock performance for the years 2020 and 2019. However the year 2020 had a higher regression co-efficiency than 2019. This could be due to the government decision through the CBK to increase the risk-free rate so as to make treasury bills more attractive to investors since pandemics like Covid 19 normally scare away investors.

### **5.3 Conclusion**

The study concluded that market depth directly and significantly affected the stock performance in the year 2019. However, this was not the case for the year 2020 since market depth revealed negative insignificant association with stock performance. This might be attributed to covid19 which negatively affected the operations at the stock exchange market and brought fears among the investors thereby reducing the volume of stock turnover.

The study further revealed that even though the market width had a lower regression co-efficiency in the year 2020 than 2019, they were negative and insignificant for both the years 2020 and 2019. The lower regression

coefficient value in the year 2020 might be due to adverse impact of Covid 19 which scared away the investors.

The study further discovered a direct connection between market resilience stock performance for the year 2020 and a negative effect for the year 2019. However, the results revealed an insignificant association between the market resilience and stock performance for both the years. The study therefore concludes that market resilience does not play any significant role on stock performance. This might be attributed to the fact that NSE is still considered as one of the emerging markets and the level of stock market liquidity in such markets is still very low.

The risk-free rate which was used as a control variable positively and significantly related with stock performance for both the two years. The study therefore concludes that risk rate had an influence on stock return. This finding further showed that macroeconomic environment plays a key role in influencing the relationship between stock performance and stock market liquidity. The study concluded that Covid-19 adversely impacted on the relationship between stock performance and stock liquidity since the year 2020 revealed a higher regression coefficient than 2019.

The F-value revealed that market liquidity positively and significantly affected the stock performance for the years 2019 and 2020. However, the f-value was lower in the year 2020 than 2019. This could have been attributed to the adverse effect of covid19 pandemic. The study therefore concludes that covid19 adversely affected stock performance.

#### **5.4 Recommendations**

The findings revealed that stock market liquidity as measured by market depth, market width and market resilience in NSE is still very low. However, the overall effect of stock liquidity on stock performance is significant. It is therefore advisable that the government does benchmarking with the developed markets and adopt some of the best practices which make such markets to be liquid. This would enable stock market in Kenya to be liquid thereby easing the transfer of shares.

The findings from the study have shown that macroenvironmental factors like pandemics has an influence on both stock liquidity and stock return. The study therefore recommends that the CBK should be proactive enough to deal with any unforeseen calamities and come up with good fiscal policies so as to stabilize the economy and build confidence among the investors. This would in turn ensures that financial market is not eroded which by extension keeps the stock market liquidity at a reasonable level.

### **5.5 Limitations of the study**

The study used NASI as a measure of stock performance. NASI could be affected by survivorship biasness since some companies that have been used in the computation of NASI had either been delisted or suspended during the study period.

Again, the study reviewed the stock for the years between 2019 and 2020. This was because Covid 19 was first detected in Kenya in 2020 and since it was a causal effect study, it was only possible to consider a year before and after the pandemic. Future studies should be conducted over a longer period of time so as to examine if the findings would be similar with this study.

### **5.6 Suggestions for further Study**

Similar study should be conducted to examine other macroeconomic variables that affect both market liquidity and stock performance. This would bring in a more comparative approach with the variables identified in this study together with other similar studies.

This study forms part of the literature that gives conflicting findings. This provides a strong ground for other scholars to conduct a research similar to this since the findings from this study concept confirms that stock liquidity is still elusive.

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## APPENDICES

### Appendix I: Listed Companies at the Nairobi Securities Exchange

<b>Listed Companies</b>	<b>INSURANCE</b>
<b>AGRICULTURAL</b>	Britam Holdings Plc
Eaagads Ltd	CIC Insurance Group Ltd
Kakuzi Plc	Jubilee Holdings Ltd
Kapchorua Tea Co.	Kenya Re Insurance Corporation Ltd
The Limuru Tea Co.	Liberty Kenya Holdings Ltd
Sasini Plc	Sanlam Kenya Plc
Williamson Tea Kenya Ltd	
	<b>INVESTMENT</b>
<b>AUTOMOBILES</b> & <b>ACCESSORIES</b>	Centum Investment Co
Car & General (K) Ltd	Home Afrika Ltd
	Kurwitu Ventures Ltd



<b>BANKING</b>	Olympia Capital Holdings ltd
ABSA Bank Kenya Plc	Trans-Century Plc
BK Group Plc	<b>INVESTMENT SERVICES</b>
Diamond Trust Bank Kenya Ltd	Nairobi Securities Exchange Plc
Equity Group Holdings Plc	
HF Group Plc	<b>MANUFACTURING &amp; ALLIED</b>
I&M Holdings Plc	B.O.C Kenya Plc
KCB Group Plc	British American Tobacco Kenya Plc
National Bank of Kenya Ltd	Carbacid Investments Ltd
NCBA Group Plc	East African Breweries Ltd
Stanbic Holdings Plc	Flame Tree Group Holdings Ltd
Standard Chartered Bank Kenya Ltd	Kenya Orchards Ltd
The Co-operative Bank of Kenya Ltd	Mumias Sugar Co. Ltd
	Unga Group Ltd

<b>COMMERCIAL AND SERVICES</b>	
Deacons (East Africa) Plc	<b>TELECOMMUNICATION</b>
Eveready East Africa Ltd	Safaricom Plc
Express Kenya Plc	
Homeboyz Entertainment Plc	<b>REAL ESTATE INVESTMENT TRUST</b>
Kenya Airways Ltd	ILAM FAHARI I-REIT
Longhorn Publishers Plc	
Nairobi Business Ventures Ltd	<b>EXCHANGE TRADED FUNDS</b>
Nation Media Group Plc	NEW GOLD ETF
Sameer Africa Plc	<b>ENERGY &amp; PETROLEUM</b>
Standard Group Plc	KenGen Co. Plc
TPS Eastern Africa Ltd	Kenya Power & Lighting Co
Uchumi Supermarket Plc	Kenya Power & Lighting Plc
WPP Scangroup Plc	Kenya Power & Lighting Plc

	Total Kenya Ltd
<b>CONSTRUCTION &amp; ALLIED</b>	Umeme Ltd
ARM Cement Plc	
Bamburi Cement Ltd	
Crown Paints Kenya Plc	
E.A. Cables Ltd	
E.A. Portland Cement Co. Ltd	

Source: NSE (2021)

## Appendix II: Raw Data

Date	NASI	MARKET WIDTH	MARKET DEPTH	MARKET RESILIENCE
4-Jan-19	137.03	3.84	0.00385187	2.596141371
11-Jan-19	142.61	2.36	0.01117592	0.894780903
18-Jan-19	145.27	2.39	0.040371418	0.247699997
25-Jan-19	146.48	1.71	0.034522516	0.289666026
1-Feb-19	154.52	2.74	0.036200746	0.276237402
8-Feb-19	160.44	1.59	0.0365029	0.273950836
15-Feb-19	157.29	3.70	0.038342589	0.260806596
22-Feb-19	154.36	1.16	0.02807353	0.356207437
1-Mar-19	152.91	2.90	0.019721961	0.507048974
8-Mar-19	156.11	4.17	0.035784312	0.279452072
15-Mar-19	158.07	1.16	0.036269556	0.275713328
22-Mar-19	160.00	2.43	0.042600253	0.234740388
29-Mar-19	157.66	3.13	0.024863717	0.40219248
5-Apr-19	159.52	1.60	0.01357783	0.7364947
12-Apr-19	157.91	2.80	0.010287426	0.972060493
26-Apr-19	158.19	1.69	0.007793473	1.283124945

3-May-19	160.19	1.66	0.018653034	0.536105815
10-May-19	153.29	2.18	0.020588611	0.48570543
17-May-19	145.33	0.94	0.026395309	0.378855199
24-May-19	146.46	2.76	0.024395349	0.409914201
31-May-19	149.92	1.01	0.01680107	0.595200193
7-Jun-19	150.47	2.04	0.011675475	0.856496208
14-Jun-19	150.12	1.94	0.009748728	1.025774811
21-Jun-19	147.35	1.56	0.015526014	0.644080311
28-Jun-19	149.61	2.70	0.043421292	0.230301763
5-Jul-19	149.80	2.86	0.026134998	0.382628688
12-Jul-19	149.73	2.67	0.019395302	0.515588765
19-Jul-19	149.82	1.82	0.021548184	0.464076226
26-Jul-19	149.00	2.26	0.01875398	0.533220137
2-Aug-19	148.33	4.07	0.007579794	1.319296991
9-Aug-19	148.05	2.09	0.017041816	0.586791908
16-Aug-19	151.40	1.60	0.031648456	0.315971184
23-Aug-19	149.87	2.45	0.00906324	1.103358151
30-Aug-19	147.58	2.64	0.012681503	0.788550043
6-Sep-19	142.52	2.80	0.017564358	0.569334773

13-Sep-19	143.81	5.02	0.019448305	0.514183621
20-Sep-19	144.98	2.17	0.021807295	0.458562146
27-Sep-19	144.27	1.54	0.024057511	0.415670592
4-Oct-19	147.23	1.65	0.030937149	0.323235989
11-Oct-19	147.64	1.65	0.011092362	0.901521252
18-Oct-19	148.36	2.27	0.018251843	0.547889877
25-Oct-19	150.29	2.27	0.068555915	0.145866335
1-Nov-19	164.35	1.13	0.074143165	0.134874199
8-Nov-19	160.99	1.13	0.065706814	0.152191218
15-Nov-19	155.98	1.10	0.015815627	0.632286022
22-Nov-19	154.84	1.10	0.023241335	0.430267888
29-Nov-19	157.93	1.18	0.030925359	0.323359222
6-Dec-19	160.29	1.64	0.038679047	0.258537912
13-Dec-19	160.52	1.26	0.030905455	0.323567473
20-Dec-19	163.90	1.15	0.082574193	0.121103212
27-Dec-19	165.41	0.91	0.024531792	0.407634313
3-Jan-20	167.37	0.91	0.006041364	1.655255392
10-Jan-20	171.36	0.21	0.020083616	0.497918296
17-Jan-20	166.23	0.87	0.033536419	0.298183299

24-Jan-20	164.98	0.36	0.022260392	0.449228389
31-Jan-20	162.09	0.79	0.014735854	0.678616952
7-Feb-20	168.65	1.08	0.040631964	0.246111658
14-Feb-20	162.37	1.44	0.050116228	0.199536165
21-Feb-20	158.38	1.38	0.022790674	0.438775966
28-Feb-20	148.60	0.75	0.029542894	0.33849087
6-Mar-20	156.17	0.87	0.038495851	0.259768256
13-Mar-20	133.66	0.87	0.057512442	0.173875419
20-Mar-20	132.93	0.70	0.024721754	0.404502046
27-Mar-20	127.30	0.92	0.041920044	0.23854937
3-Apr-20	138.68	0.83	0.041626318	0.240232631
9-Apr-20	136.73	1.75	0.042147809	0.237260254
17-Apr-20	135.93	1.30	0.040463247	0.247137856
24-Apr-20	135.78	0.60	0.037296169	0.268124055
24-Apr-20	137.88	1.55	0.036285826	0.275589703
8-May-20	140.87	3.89	0.036471333	0.274187948
15-May-20	135.33	2.95	0.042678427	0.234310414
22-May-20	140.39	3.21	0.076289254	0.13108006
29-May-20	137.13	1.56	0.025665289	0.389631303

5-Jun-20	139.18	0.51	0.039658972	0.252149752
12-Jun-20	142.88	3.81	0.05661466	0.176632696
19-Jun-20	144.58	1.41	0.036853415	0.271345272
26-Jun-20	137.75	3.68	0.025865536	0.386614843
3-Jul-20	139.57	1.39	0.006310789	1.584587961
10-Jul-20	132.38	1.06	0.025852177	0.386814626
17-Jul-20	132.25	0.35	0.03565975	0.280428217
24-Jul-20	134.59	0.93	0.011462158	0.872436099
24-Jul-20	132.45	1.34	0.010843068	0.922248182
7-Aug-20	130.58	1.32	0.010595744	0.943775159
14-Aug-20	129.46	0.81	0.013969373	0.715851734
21-Aug-20	131.75	3.44	0.031626839	0.316187147
28-Aug-20	138.74	0.73	0.031328577	0.319197388
4-Sep-20	139.27	1.24	0.016333244	0.61224825
11-Sep-20	140.87	1.53	0.011845426	0.844207696
18-Sep-20	140.24	0.62	0.019955925	0.5011043
25-Sep-20	140.37	0.82	0.029629946	0.337496391
2-Oct-20	140.22	2.09	0.009310064	1.074106515
9-Oct-20	140.07	0.76	0.012234558	0.817356844



16-Oct-20	139.65	1.45	0.009817648	1.018573929
23-Oct-20	141.21	1.65	0.025185969	0.397046474
30-Oct-20	140.04	3.08	0.017390739	0.575018687
6-Nov-20	141.32	0.27	0.019414983	0.515066128
13-Nov-20	143.93	0.72	0.0163168	0.612865259
20-Nov-20	143.72	0.85	0.038435443	0.260176525
27-Nov-20	143.30	0.89	0.021871498	0.457216054
4-Dec-20	148.12	0.34	0.057851927	0.17285509
11-Dec-20	147.12	0.42	0.009153718	1.092452286
18-Dec-20	148.04	0.99	0.020230228	0.494309795
24-Dec-20	143.68	1.53	0.019495932	0.51292752
31-Dec-20	145.15	0.68	0.020087071	0.497832666

Source: NSE (2021)

### Appendix III: 91 days Treasury Bill

<b>Issue Date</b>	<b>Issue No</b>	<b>Risk Free Rate</b>	<b>Issue Date</b>	<b>Issue No</b>	<b>Risk Free Rate</b>
07-Jan-19	2298	7.316	06-Jan-20	2350	7.2
14-Jan-19	2299	7.2	13-Jan-20	2351	7.2
21-Jan-19	2300	7.134	20-Jan-20	2352	7.232
28-Jan-19	2301	7.122	27-Jan-20	2353	7.279
04-Feb-19	2302	7.061	03-Feb-20	2354	7.296
11-Feb-19	2303	7.04	10-Feb-20	2355	7.3
18-Feb-19	2304	7.016	17-Feb-20	2356	7.314

25-Feb-19	230 5	6.963	24-Feb-20	2357	7.319
04-Mar-19	230 6	6.886	02-Mar-20	2358	7.315
11-Mar-19	230 7	6.883	09-Mar-20	2359	7.31
18-Mar-19	230 8	6.837	16-Mar-20	2360	7.313
25-Mar-19	230 9	7.697	23-Mar-20	2361	7.275
01-Apr-19	231 0	7.5	30-Mar-20	2362	7.24
08-Apr-19	231 1	7.444	06-Apr-20	2363	7.22
15-Apr-19	231 2	7.397	13-Apr-20	2364	7.209
22-Apr-19	231 3	7.305	20-Apr-20	2365	7.201

29-Apr-19	231 4	7.298	27-Apr-20	2366	7.212
03-May-19	231 9	6.995	04-May-20	2367	7.242
06-May-19	231 5	7.25	11-May-20	2368	7.253
13-May-19	231 6	7.196	18-May-20	2369	7.266
20-May-19	231 7	7.16	25-May-20	2370	7.319
27-May-19	231 8	7.085	01-Jun-20	2371	7.333
10-Jun-19	232 0	6.915	08-Jun-20	2372	7.325
17-Jun-19	232 1	6.895	15-Jun-20	2373	7.259
24-Jun-19	232 2	6.814	22-Jun-20	2374	7.089

01-Jul-19	232 3	6.738	29-Jun-20	2375	6.7
08-Jul-19	232 4	6.685	06-Jul-20	2376	6.546
15-Jul-19	232 5	6.6	13-Jul-20	2377	6.274
22-Jul-19	232 6	6.498	20-Jul-20	2378	6.011
29-Jul-19	232 7	6.592	27-Jul-20	2379	6.112
05-Aug- 19	232 8	6.547	03-Aug- 20	2380	6.121
12-Aug- 19	232 9	6.449	10-Aug- 20	2381	6.123
19-Aug- 19	233 0	6.355	17-Aug- 20	2382	6.2
26-Aug- 19	233 1	6.398	24-Aug- 20	2383	6.257

02-Sep-19	233 2	6.385	31-Aug- 20	2384	6.273
09-Sep-19	233 3	6.375	07-Sep-20	2385	6.295
16-Sep-19	233 4	6.315	14-Sep-20	2386	6.267
23-Sep-19	233 5	6.368	21-Sep-20	2387	6.273
30-Sep-19	233 6	6.307	28-Sep-20	2388	6.309
07-Oct-19	233 7	6.378	05-Oct-20	2389	6.4
14-Oct-19	233 8	6.369	12-Oct-20	2390	6.468
21-Oct-19	233 9	6.362	19-Oct-20	2391	6.52
28-Oct-19	234 0	6.424	26-Oct-20	2392	6.589

04-Nov-19	234 1	6.39	02-Nov-20	2393	6.653
18-Nov-19	234 3	6.68	09-Nov-20	2394	6.666
25-Nov-19	234 4	7.131	16-Nov-20	2395	6.674
02-Dec-19	234 5	7.162	23-Nov-20	2396	6.706
09-Dec-19	234 6	7.162	07-Dec-20	2398	6.861
16-Dec-19	234 7	7.151	14-Dec-20	2399	6.901
23-Dec-19	234 8	7.177	21-Dec-20	2400	6.916
30-Dec-19	234 9	7.2	28-Dec-20	2401	6.929
			30-Dec-20	2397	6.73

Source: C.B.K (2020)