

**WORKING CAPITAL MANAGEMENT, FIRM SIZE AND  
STOCK LIQUIDITY OF FIRMS AT NAIROBI  
SECURITIES EXCHANGE, KENYA**

**KADIMA MURUNGA JOHN**

**DOCTOR OF PHILOSOPHY**

**(Business Administration)**

**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

**2024**

**Working Capital Management, Firm Size and Stock Liquidity of Firms  
at Nairobi Securities Exchange, Kenya**

**Kadima Murunga John**

**A Thesis Submitted in Partial Fulfillment of the Requirements for the  
Degree of Doctor of Philosophy in Business Administration (Finance) of  
the Jomo Kenyatta University of Agriculture and Technology**

**2024**

**DECLARATION**

This thesis is my original work and has not been presented for a degree in any other University

Signature ..... Date .....

**Kadima Murunga John**

This thesis has been submitted for examination with our approval as University Supervisors

Signature ..... Date .....

**Dr. Tobias Olweny, PhD**

**JKUAT, Kenya**

Signature: ..... Date: .....

**Dr. Clive Mukanzi, PhD**

**JKUAT, Kenya**

## **DEDICATION**

This thesis is dedicated to my family Margaret, Halima, Tunai, Juma and Elisha.

## **ACKNOWLEDGEMENT**

My recognition and gratitude go to my supervisors Dr. Tobias Olweny and Dr. Clive Mukanzi for having provided vital guidance during the thesis period. I also owe gratitude to the director Dr. Douglas Musiega of Jomo Kenyatta University of Agriculture and Technology for enabling great atmosphere, competent personnel and interesting courses offered during my study. I want to mention the support of my dear wife Margaret and young ones Halima, Tunai, Juma and Elisha and lastly my mom Makonjo for her encouragement. My sincere vision is that the findings of this research will enable future researching on working capital management, firm size and stock liquidity at the securities exchange.

## TABLE OF CONTENTS

<b>DECLARATION.....</b>	<b>ii</b>
<b>DEDICATION.....</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT .....</b>	<b>iv</b>
<b>TABLE OF CONTENTS.....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>xii</b>
<b>LIST OF FIGURES .....</b>	<b>xiv</b>
<b>LIST OF APPENDICES .....</b>	<b>xv</b>
<b>ABBREVIATION AND ACRONYMS .....</b>	<b>xvi</b>
<b>DEFINITION OF TERMS.....</b>	<b>xviii</b>
<b>ABSTRACT.....</b>	<b>xx</b>
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.1 Background of the Study.....	1
1.1.1 Global Perspective of Stock Liquidity and Working Capital Management.....	4
1.1.2 Regional Perspective of Stock Liquidity and Working Capital Management ..	7
1.1.3 Local Perspective of Stock Liquidity and Working Capital Management .....	10
1.2 Statement of the Problem.....	12

1.3 Objectives of the Study .....	14
1.3.1 General Objective of the Study .....	14
1.3.2 Specific Objectives of the Study .....	14
1.4 Hypotheses of the Study .....	14
1.5 Significance of the Study .....	15
1.6 Scope of the Study .....	16
1.7 Limitation of the Study .....	16
<b>CHAPTER TWO .....</b>	<b>18</b>
<b>LITERATURE REVIEW.....</b>	<b>18</b>
2.1 Introduction.....	18
2.2 Theoretical Literature Review.....	18
2.2.1 Agency Theory.....	20
2.2.2 Trading Cost Theory .....	21
2.2.3 Resource Based View Theory .....	24
2.2.4 Keynesian Liquidity Preference Theory .....	25
2.2.5 Asymmetric Information Theory .....	25
2.3 Conceptual Framework.....	28
2.4 Review of Variables.....	29

2.4.1 Accounts Payables Conversion Period and Liquidity .....	29
2.4.2 Accounts Receivables Conversion Period and Liquidity .....	33
2.4.3 Inventory Conversion Period and Liquidity.....	37
2.4.4 Cash Conversion Period and Liquidity .....	38
2.4.5 Firm Size and Stock Liquidity .....	45
2.4.6 Stock Liquidity of Securities.....	46
2.5 Empirical Review.....	60
2.6 Critique of the Existing Literature .....	66
2.7 Research Gap .....	68
2.8 Summary .....	73
<b>CHAPTER THREE .....</b>	<b>74</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>74</b>
3.1 Introduction.....	74
3.2 Research Design.....	74
3.3 Research Philosophy .....	75
3.4 Study Population .....	78
3.5 Sampling Frame and Technique.....	79
3.6 Data Collection Instruments.....	79



3.7 Data Collection Procedure .....	80
3.6.1 Justification of use of panel data .....	81
3.7 Measurement of Study Variables .....	82
3.7.1 Accounts Payables Conversion Period.....	82
3.7.2 Accounts Receivables Conversion Period .....	82
3.7.3 Inventory Conversion Period .....	83
3.7.4 Cash Conversion Period.....	84
3.7.5 Controlling Variable (Firm Size) .....	84
3.7.6 Stock Liquidity.....	85
3.8 Data Analysis and Presentation.....	86
3.9 Model Specification and Rationale of Variables .....	87
3.9.1 Unit Root Test.....	87
3.9.2 Diagnostic Tests for the Model;.....	96
<b>CHAPTER FOUR.....</b>	<b>98</b>
<b>RESEARCH FINDINGS AND DISCUSSIONS.....</b>	<b>98</b>
4.1 Introduction .....	98
4.2 Response Rate .....	98
4.3 Descriptive Statistics.....	99

4.4 Panel Unit Root Test .....	100
4.4.1 Stock Liquidity .....	101
4.4.2 Accounts Payables Conversion Period (days).....	102
4.4.3 Accounts Receivables Conversion Period (days) .....	102
4.3.5 Cash Conversion Period (days).....	104
4.3.6 Firm Size .....	104
4.5 Correlation Results.....	105
4.6 Multivariate Results .....	106
4.6.1 Model (1).....	107
4.7 Hypotheses .....	119
4.7.1 Hypothesis 1: Accounts Payables Conversion Period and Stock Liquidity..	119
4.7.2 Hypothesis 2: Accounts Receivables Conversion Period and Stock Liquidity .....	120
4.7.3 Hypothesis 3: Inventory Conversion Period and Stock Liquidity .....	120
4.7.4 Hypothesis 4: Accounts payables Conversion Period, Accounts Receivables Conversion Period, Inventory Conversion Period, Firm Size and Stock Liquidity .....	121

<b>CHAPTER FIVE.....</b>	<b>122</b>
<b>SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>122</b>
5.1 Introduction.....	122
5.2 Summary of the Findings .....	122
5.2.1 Accounts Payables Conversion Period on Stock Liquidity of Securities .....	124
5.2.2 Accounts Receivables Conversion Period on Stock Liquidity of Securities .....	124
5.2.3 Cash Conversion Period Influence on Stock Liquidity of Securities.....	124
5.2.4 Inventory Conversion Period on Stock Liquidity of Securities .....	125
5.2.5 Firm Size (Controlling Effects) on the Relation between Working Capital Management and Stock Liquidity of Securities .....	125
5.3 Conclusion .....	126
5.3.1 Accounts Payables Conversion Period on Stock Liquidity .....	126
5.3.2 Accounts Receivable Conversion Period on Stock Liquidity of Securities..	126
5.3.3 Cash Conversion Period on Stock Liquidity.....	127
5.3.4 Inventory Conversion Period on Stock Liquidity .....	127
5.3.5 Firm Size (Controlling Effects) on the Relationship between Working Capital Management and Stock Liquidity.....	128
5.4 Recommendations .....	128

**REFERENCES .....132**

**APPENDICES .....151**

## LIST OF TABLES

<b>Table 2.1:</b> Summary of Research Gaps.....	72
<b>Table 3.1:</b> Summary of Computation and Measurement of Variables .....	86
<b>Table 4.1:</b> Response Rate.....	98
<b>Table 4.2:</b> Descriptive Statistics Table .....	99
<b>Table 4.3:</b> Unit Root Test.....	101
<b>Table 4.4:</b> Unit Root Test.....	102
<b>Table 4.5:</b> Unit Root Test.....	103
<b>Table 4.6:</b> Unit Root Test.....	103
<b>Table 4.7:</b> Unit Root Test.....	104
<b>Table 4.8:</b> Unit Root Test.....	105
<b>Table 4.9:</b> Correlation of Stock Liquidity with Independent Variables.....	106
<b>Table 4.10:</b> Correlated Fixed Effects - Hausman Test.....	108
<b>Table 4.11:</b> Fixed Effects Model Applied.....	108
<b>Table 4.12:</b> Correlated Fixed Effects - Hausman Test.....	110
<b>Table 4.13:</b> Fixed Effects Model.....	110
<b>Table 4.14:</b> Correlated Fixed Effects - Hausman Test.....	112
<b>Table 4.15:</b> Fixed Effects Model.....	112

<b>Table 4.16:</b> Correlated Fixed Effects - Hausman Test.....	113
<b>Table 4.17:</b> Fixed Effects Model.....	114
<b>Table 4.18:</b> Correlated Fixed Effects - Hausman Test.....	116
<b>Table 4.19:</b> Fixed Effects Model.....	116

## LIST OF FIGURES

<b>Figure 2.1: Conceptual Framework</b> .....	29
---	----

## LIST OF APPENDICES

<b>Appendix I:</b> Letter of Authorization .....	151
<b>Appendix II:</b> Firms at the Nairobi Securities Exchange as on 30 <sup>TH</sup> June, 2023.....	152
<b>Appendix III:</b> Record Survey Sheet .....	153



## **ABBREVIATION AND ACRONYMS**

<b>AP</b>	Accounts Payable Deferred Period
<b>AR</b>	Accounts Receivable Conversion Period
<b>CC</b>	Cash Conversion Cycle
<b>CIMA</b>	Chartered Institute of Management Accountants
<b>FGCP</b>	Finished Goods Conversion Period
<b>GDP</b>	Gross Domestic Product
<b>GOC</b>	Gross Operating Cycle
<b>GOP</b>	Gross Operating Profit
<b>IP</b>	Inventory Conversion Period
<b>NASDAQ</b>	National Association of Securities Dealers Automated Quotation
<b>NSE</b>	Nairobi Securities Exchange
<b>NYSE</b>	New York Securities Exchange
<b>PEX</b>	Palestinian Exchange
<b>RMC</b>	Raw Material Consumption
<b>RMCP</b>	Raw Material Conversion Period
<b>RMI</b>	Raw Material Inventory
<b>RML</b>	Regional Multiple Listing

**WIPCP**            Work in Process Conversion Period

**Z**                 Firm Size

## DEFINITION OF OPERATIONAL TERMS

<b>Accounts Payable Conversion Period</b>	Refers to the duration that a firm is able to defer payments for various resources purchased (Mathuva, 2015).
<b>Accounts Receivable Conversion Period</b>	Refers to mean duration taken to convert accounts receivables into cash (Mathuva, 2015).
<b>Cash Conversion Period</b>	The difference between Gross Operating Cycle and payables deferral period less depreciation (Ngari & Kamau, 2021).
<b>Firm Size</b>	Firm Size refers to how small or large a firm is measured by its market value, sales, assets, profit or market capitalization that give information about its risk and opportunity to raise external financing (Tita,2016)
<b>Inventory Conversion Period</b>	Refers to mean duration taken to sale finished goods (Ngari & Kamau, 2021).
<b>Stock Liquidity</b>	Liquidity is the exercise of trading a security that just makes it one of the key determinants upon which the investor will decide whether to invest in an organization or not (Acharya & Pederson, 2019).
<b>Working Capital Management</b>	Working Capital Management stipulates how a firm administers four major working

capital components; Inventory, Receivables, Payables and Accruals (Bashir et al., 2018).

## ABSTRACT

Globally stock liquidity plays a major role for firms' stakeholders. Stock liquidity as an indicator of performance for both inside and outside of the firm, reflects and gives a direction to whether an investor should transact or not given an investment opportunity. Poor stock liquidity performance in developing economies has led to eventual collapse of high profiled companies and as such awakens the need of understanding how the firm should manage working capital components and stock liquidity at the securities market. Whereas some studies have favored the correlation of working capital management, firm size and Stock liquidity at the securities market, other studies have little to do with it or none of such a relationship exist. Stock Liquidity determines whether it could be easy for a firm to raise funds or not, the higher the liquidity of the stock, the higher the chances of external raising of funds considering the firm size and availability of positive information both inside and outside of the firm. This study applied five theories, namely; Agency theory, Trading Cost theory, Resource Based View Theory, Keynesian Liquidity Theory, and lastly asymmetry theory. Hence, the general objective of the study was to establish the effect of working capital management, firm size on stock liquidity of securities at Nairobi Securities Exchange. Specific objectives were; to establish effect of accounts payables conversion period on stock liquidity at Nairobi Securities Exchange, determine effect of accounts receivables conversion period on stock liquidity of securities of firms at Nairobi Securities Exchange, ascertain the effect of cash conversion period on stock liquidity of securities of firms at Nairobi Securities Exchange, to ascertain effect of inventory conversion period on stock liquidity of securities of firms at Nairobi Securities Exchange and lastly to ascertain the effect of firm size on the relationship between working capital management and stock liquidity of securities of firms at Nairobi Securities Exchange. Due to nature of the study, descriptive survey research design was used and more so, ontological research philosophy of positivism was considered. A census of all firms at Nairobi Securities Exchange as at June 2023 constituted the study population. The study employed secondary data extracted from audited financial statements and annual reports of individual companies at Nairobi Securities Exchange for ten-year period covering 2013-2023. Record survey sheet was used when collecting data for both independent and dependent variables. Secondary data collected from Nairobi Securities Exchange was analyzed by using both descriptive and inferential statistics. E-views software was used on analysis of determination of descriptive and inferential statistics. Multivariate regression analysis within panel data framework were used. Results of the analysis indicated that inventory conversion period and firm size had an effect on stock liquidity of securities of firms at Nairobi Securities Exchange, Accounts payables conversion period and firm size had an effect on stock liquidity of securities of firms at Nairobi Securities Exchange, accounts receivables conversion period and firm size had an effect on stock liquidity of securities of firms at Nairobi Securities Exchange, cash conversion period and firm size had an effect on stock liquidity of securities of firms at Nairobi Securities Exchange. Lastly firm size had an effect on the relationship between working capital management practices and stock liquidity of securities of firms at Nairobi

Securities Exchange. Study recommendation was that managers should embrace proper techniques of managing components of working capital in firms since a managerial combination of working capital components and Stock Liquidity of securities improves trading transactions of individual companies at the securities exchange market.

## **CHAPTER ONE**

### **INTRODUCTION**

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

Globally organizations seek for long term objectives and neglect short term goals that normally form the basis for success and prosperity of an organization; working capital management practices determine a lot to do with short term decisions making, but very necessary for long-term decisions (Chet et al., 2019). Many organization have failed and could not sustain themselves within the threshold of listing norms at the securities exchange market as guided by the capital market authority principles, among such organizations include the recent Silicon Valley Bank and Signature Bank in the United States of America that collapsed in march, 2023 due to individual firm's internal poor managerial standards that escalated to external knowledge of the stakeholders causing unfavorable effects on stock liquidity of securities of the banks at the securities market (Elliot, 2023). In Kenya, Capital Market Authority (2023) report, embraced quite a number of firms at the Nairobi Securities Exchange among them; Uchumi Supermarkets, Athi River Mining, Everyday East Africa, Kenya Power, National bank and Trans- century have had their shares delisted from securities exchange market due to their corporate governance challenges resulting from the mix of losses, working capital components shortfalls, lack of revenue and patchy financial reports and such has a negative effect on the performance of stock liquidity at the securities exchange.

Keen attention on stock liquidity of securities at the securities market and working capital management is essential for an individual firm that is listed (Anyanzwa, 2019). Stock liquidity at the securities exchange market being important to reflect the financial performance of individual firms, most of the developing economies normally use spread to measure liquidity which is the difference between the Bid and Ask prices, where by spreads are compared across firms with different market structures with a purpose of collecting information to have a conclusive understanding on stock liquidity of a security (Acharya & Pederson, 2019).

The liquidity of a stock is the relationship between the volume of trading and changes in market price, hence higher stock liquidity is a desirable characteristic that any investor should consider when making investment decisions (Le, 2019). The management of a firm should thus consider the means available at their disposal to enhance the stock liquidity. Stock liquidity facilitates the entry and exit of holders of securities of all capacities into a market, making it easier for investors who want to buy or opt out of an investment be able to do so in a flexible way depending on the value creation being sorted and as such depends on the inside information from working capital management and outside information from the securities market (Bashir et al., 2018).

Management's consideration of Stock Liquidity at securities exchange market and Working Capital Management is vital in corporate finance and direct concern of shareholders is wealth maximization and company value which comes as a result favorable trading transactions of stock liquid securities at the securities exchange market (Estifanos, 2017). Amihud et al., (2015) considered liquidity being an exercise of trading a security that just makes it one of key determinants upon which an investor could decide whether to invest or not depending on the information from the individual firms both from inside and outside. Globally, most of the researchers among them; Kumar and Misra (2018) embrace stock liquidity being the life blood of stock markets; hence has vital implications to traders, regulators, stock exchanges and working capital management of listed companies. Among several researchers on the study of stock liquidity; Acharya and Pederson (2019) assert stock liquidity is very difficult to state what it is, though easy to feel it; hence consist of multi-dimension characteristics namely; tightness, immediacy, depth, breadth and resiliency that cannot be captured in a single measure. Globally acceptable measures of stock liquidity that can represent most of characteristics continue to be an area of research while considering the internal and external factors of the individual firms (Jiang, Zhang & Gao, 2019).



Apart from capital structure and capital budgeting, working capital management is very crucial for success of a company (Ngari & Kamau, 2021). Working capital management refers to how a company can manage four major working capital accounts, which includes inventory, receivables, payables and accruals (Kumar *et al.*, 2018). Working capital is a vital factor in maintaining existence of liquidity, solvency and profitability of companies. Poor management of working capital has made companies to close or even relocate (Gweyi, Olweny & Oloko, 2018). In the study by Ali, Liu and Su (2020), poor management of working capital elements impairs liquidity of the stocks at the securities exchange market.

In the study by Abdulazeez *et al.* (2019) on life of a business, firms require liquid assets and cash for their daily operations. These assets are referred to as current assets. Frequent lack of liquidity to meet current obligations on their due dates is not a welcoming situation and may cause business failure once information is relayed to the traders at the securities exchange market. This may be aggravated by heavy borrowing which bring heavy interest burden to the firm. In the study by Gweyi, Olweny and Oloko (2018) on working capital management practices and assets liquidity, the greater the relative proportion of liquid assets, the lesser the risk of running out of cash, all other things being equal. It is vital for the management to control the current assets and current liabilities components in order to have the liquidity capability to make an organization to move on. Kumar and Misra (2018) assert, the management of individual institutions should be keen on both what is happening at the securities market in terms of liquidity and working capital management internally within the organization herself.

Profitability and liquidity trade-off is important an important aspect if working capital management is given due considerations for the firms not likely to fail and face solvency considering significance of working capital management efficiency is irrefutable (Akomeah & Frimpong, 2019). Working capital is known as life giving force for any economic unit and its management is considered among most important functions of corporate management; hence, every organization whether, profit oriented or not, irrespective of size and nature of business, requires necessary amount

of working capital which is most crucial factor for maintaining liquidity, survival, solvency and profitability of business (Southakarian & Khodakarani, 2019). The greater the relative proportion of liquid assets, the lesser the risk of running out of cash, all other things being equal. All individual components of working capital including cash, marketable securities, account receivables and inventory management play an important role in the performance of any firm (Afrifa & Tingbani, 2018).

Liquidity shows how a given firm can convert current assets into cash in times of need and hence portrays a reflection of how such a firm can generate cash and pay short term bills (Anyanzwa, 2019). According to Mathuva (2015), liquidity or profitability and balance between the two is very challenging decisions while conducting a firm's day and day operations. Liquidity is a firm's precondition to ensure that firms are able to meet short term obligations and their continued flow can be guaranteed from a profitable venture. Thus, management is in a dilemma of achieving desired tradeoff between liquidity and profitability. Mathuva (2015) signaled importance of tradeoffs between dual goals of working capital management, particularly between liquidity and profitability and stated that decisions which tend to maximize profitability tend not to maximize the chances of adequate liquidity, focusing entirely on liquidity will tend to reduce profitability of the firm. According to Anyanzwa (2019), measuring liquidity of securities is an empirical question and that liquidity for an ongoing firm is not really dependent on liquidation value of its assets but rather on operating cash flow generated by those assets.

### **1.1.1 Global Perspective of Stock Liquidity and Working Capital Management**

Whereas different studies have a common understanding about liquidity, the concept of global liquidity at securities markets and determinants vary significantly depending on country's economic level of development hence cannot be assessed based on a single indicator in all countries, more so management of working capital components in firms vary from economy to economy depending on development perspective of a given particular economy. Liquidity in emerging markets is

significantly affected by globalization factors and leverage of global financial institutions; hence, in advanced markets, liquidity is determined by financial market drivers and risk aversion practices (Dinh, 2017). Credit as a measure of global liquidity, credit aggregates are characterized as final link in financial intermediation chain and source of liquidity, credit is seen as availability of liquidity in funding market; hence credit is a strong source of funds which is a sizable working capital component (Kumar & Misra, 2018). In the study by Labidi and Gajewisk (2019), global liquidity measurement is based on common factors in dynamics of large number of quantitative liquidity indicators (including monetary aggregates, domestic and cross border credit aggregates, money market rates and stock market volatility as well retail lending rates).

According to consideration context of liquidity in developing markets, some researchers had different concepts, among them, Liu, Liu and Ma (2017) observed the findings of Gibbs, Amihud and Amivest measures proved to be effective measures, whereas in an emerging market, Będowska- Sójka and Echaust (2020) found that the Closing Quoted Spread measure based on daily data was the best performing liquidity measure during the periods of extreme liquidity. Furthermore, Będowska-Sójka (2018) made a comparison between different liquidity measures and concluded that the Amihud illiquidity ratio evolves as the best transactional cost measure, though other scholars had other opinions.

In the study by John (2019) on understanding global liquidity at the securities market, liquidity improves by enhanced global credit supply which contributes to financial development caused by improved capabilities of well managed working capital components. In the study by Sterenczak, Zaremba and Umar (2020) on whether there is a global liquidity factor, global liquidity of individual stocks and their implications for pricing of financial assets in an international framework for a sample from United Kingdom, United States and Japan, the conclusion given was, individual stock liquidity exhibits itself within countries and industries and co-moves globally.

In the study by Afrifa and Tingbani (2018) on components of working capital, management of working capital involves management of transformation process of resources from cash invested in inventory once payables and operating accruals when they are to be paid, through operations or production process, followed by selling process, and finally, credit collection process. Management of this transformation process has a profound impact on liquidity position of the firm. Working capital policy on the other hand refers to basic principles and guidelines the firms use when they control their working capital management.

Dabata, Dash and Mahakud (2018) indicated that cross-sectional stock returns in developed markets have common determinants from period to period, from country to country, and that liquidity of stocks is one of the important determinants of stock returns. Kyle (1985) proposed that, because market makers cannot distinguish between orders flow that is generated by informed traders and by liquidity (noise) traders, they set prices that are an increasing function of the imbalance in the order flow which may indicate informed trading; hence such creates an imbalance with individual firm trading capabilities that result from the how the working capital components have been managed. This creates a positive relationship between order flow or transaction volume and price change, commonly called the price impact. Dinh (2017) argue that liquidity can positively affect corporate governance and firm performance, and in turn, affect stock returns. Improved liquidity also stimulate trade by informed investors thereby improving investment decisions through more informative share prices (Kumar & Misra, 2018).

Thanatawee (2021) Considers inconclusive evidence on return–spread relationship; hence, situation leads to development of turnover rate as a liquidity proxy. Turnover rate is defined as total currency value of trading in a stock over a given period divided by market capitalization. Al -Jaif reported a statistically significant negative return–turnover rate relationship and stated, less liquid stocks are found to have higher returns. In the study by Abdullah (2019), asserted for a potential explanation for the positive correlation between liquidity and emerging stock market and the expression employed in the study was returns could be made from perspective of

lower level of global market integration. However, Lee and Chou (2018) found evidence for varying degrees of integration of emerging equity markets with the world economy basing on how developed working capital management in various economies; hence, emerging markets are not fully integrated with the global economy, lack of liquidity will not function as a risk factor, and thus cross-sectional returns will not necessarily be lower for liquid markets. In this sense, findings were supportive of the view that emerging equity markets have a lower degree of integration with the global economy because most of the firms are yet to mature on dealing with the working capital management components.

### **1.1.2 Regional Perspective of Stock Liquidity and Working Capital Management**

Liquidity and working capital management in Africa's economy are prone to globalization factors. Global financial crisis leads to downfall of large firms that spill over to multi-national companies with business around the globe. Effects are reflected by company's securities performance at securities exchange markets especially equity securities (Boloupremo, 2020). African securities markets suffer from problem of low liquidity, as measured by turnover ratio is low; hence, liquidity means that it will be harder to support a local market with its own trading system with local perception of working capital management policies, market analysis, and brokers not well versed with techniques of advice, because business volume would simply be too low (Asensio, 2017).

Africa being an emerging continent faces global effects on liquidity as well as managerial techniques that affect management of short-term resources that consist of accounts receivables, accounts payables and inventory. Managing of working capital includes all aspects of administration of current assets and liabilities which should be the work of strategic managers (Altaf & Shah, 2017). Strategic managers should be concerned about four elements of working capital management for a company to succeed and maintain the liquidity levels (Adeyusi, Nwekpa & Bassey, 2017). African markets in general are still thin and illiquid; hence, thinness and illiquidity of

stock markets serves as a big hurdle against financial regionalization of African stock markets that would aid in mobilizing of financial resources in order to fund regional firms and by so doing, the markets would also be injected with more liquidity that should result from proper management of working capital components (Amr, 2019).

In the study by Tingbani (2020) on market efficiency, performance of securities market is highly influenced by efficiency of exchange. Hence efficiency is determined by liquidity of securities on the market. Market efficiency explains a degree to which share prices reflect all available and relevant information. Lyani (2017) asserts efficiency on the securities exchange market ensures accurate pricing of securities by avoiding under and over valuation of stocks which encourages share buying and as such depends on the strength of the organization in terms of its management on working capital components. Langtertaa (2019) opine, when securities are incorrectly priced, it deters potential investors from buying shares for fear of a perverse price when they decide to sell their shares and this ultimately reduces the availability of capital to firms for growth; hence it gives rise to insufficient operational working capital components. Zilaghi and Godini (2019) asserts, efficient allocation of resources in the firm improves performance that is reflected in their stock prices, which informs potential investors to take optimal investment decisions about liquidity of the securities and mind of their organizations in terms of working capital management practices.

Transactions at the securities exchange in African economy reveal that emerging capital markets including Nigeria are weak-form efficient (Ariwa, Ain, Onyela, Ekeleme & Okwuchukwu, 2017). A number of reasons have been cited to account for the inefficiency of the Ghana and Nigerian capital market, among them was the hitherto manual listing and paper certification on the exchange which hindered information flow before total automation; hence, during this era there were delays in adjusting stock prices to reflect available information on the market with resultant effects of over and under valuation of securities prices (Arogo, 2017). Automation of Nigeria Securities Exchange was premised on belief that it would improve efficiency (both operational and informational) of securities exchange market. The installation

of the Central Depository Systems and automation at Securities Exchange was expected to improve operational efficiency (Alfaf & Farooq, 2019).

Kolopo, Oke and Olaniyani (2018) referred Working Capital Management as one of the most powerful and least understood the driver for supply chain managers to improve a company's cash flow and profitability; hence, Corporate Financial literature historically focus mostly upon long term financial decisions, such as investments, capital structure, dividends or company valuation. Kumar and Misra (2015) referred to Working Capital Management as a factor that is very important in maintaining existence, liquidity, solvency and profitability of a firm. According to John (2019), while the firm's profitability or accounting profit is an important factor in management's performance, a direct concern for shareholders is wealth maximization and firm value which stock performance shows. Afrifa and Tingbani (2018) notes, financial markets are hard to understand, share prices are volatile and hard to predict. Researchers and Market Participants have to devote significant resources into trying to achieve and understand the behavior of liquidity of expected stocks and their return while at the same time monitoring the individual organization's performance in terms of working capital components.

According to Akomeah and Frimpong (2019) a firm's liquidity does to a large extent determine the profitability; however, liquidity and profitability are not the same but are the core objectives of a firm. Operation cost results from management of working capital while financing the daily activities of the company. In the study by Amri (2019) the main objective of management of working capital is to reach optimal balance between working capital components. Failure to provide sufficient management of the working capital components most of the companies close down and those firms that have relocation capabilities move to other countries with less operational costs. Bala and Hassan (2019) suggested managers can increase value by using effective working capital management policies and as such it can a reflected performance at the securities exchange.

Researchers have approached working capital management in numerous ways. While some studied the impact of proper or optimal inventory management, others studied the management of accounts receivables trying to postulate an optimal way policy that leads to profit maximization (Popoola, Ejemeyorwi, Alege, Adu & Onabote, 2017). According to Tingbani (2020) popular measure of working capital management is cash conversion cycle, that is, time span between expenditure for purchases of raw materials and collection of sales of finished goods, for example, it was found that the longer the time lag, the larger the investment in working capital. A long cash conversion cycle might increase profitability because it leads to higher sales. However, corporate profitability might decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers; hence affecting the conditions of a firm while transacting her securities at the securities market.

In the study by Kolapo, Oke and Olaniyan (2018) on working capital management, efficient working capital management was considered an integral component of overall corporate strategy to create shareholders value which could be reflected at the securities market. Working capital was time lag between expenditure for purchases of raw materials and collection for sales of finished goods. This implies that working capital (period) covers a period of cash conversion cycle, which is the continuing flow of cash from vendors of inventory to account receivable and back into cash.

### **1.1.3 Local Perspective of Stock Liquidity and Working Capital Management**

Since 1990 emerging securities markets have experienced considerable development (Mwaura, 2019). Kenya being an emerging economy with a securities market still developing, allows business to be publicly traded or raise additional funds for investment; hence with liquidity that securities market provides, allows investors to sell shares of ownership of companies in public market (Wanzala, 2018). Since automated trading system was initiated in 2006, Kenya has been ranked one of best securities market in Africa in terms of equity market performance as concerns



liquidity. Due to Globalization effects, liquidity at Nairobi Securities Exchange is prone to cross-border transactions and management of institutions' short term obligations that emanate from working capital components is affected with spillover of liquidity problems emanating from multi-national firms that end up to other firms in the country (NSE, 2018). Companies fail and face liquidity problems because of Working Capital Management techniques applied in managing internal firm operations (Muriithi & Waweru, 2017).

Low level of capital market liquidity is a major challenge facing Kenya's stock market, though Nairobi Securities Exchange is generally considered more liquid and active market than most of its East African counterparts in sub-Saharan Africa, by international standards it is small, less liquid and volatile with regard to price and returns. Low liquidity is particularly evident in secondary equity markets. In addition, there is a high incidence of buy and hold particularly among institutional investors, who dominate a market (Mutulis, 2018). Increasing listing at Nairobi Securities Exchange has always been a challenge on stocks being traded. Limited listings have a negative impact on supply of new equities that also affect liquidity. The limited supply of new equities in capital market has restricted use of equity market as a source of financing. In view of past failure to attract new equity, most difficult hurdle for Nairobi Securities Exchange is increasing a number of medium-sized and large family-owned businesses and state-owned companies operating in Kenya and listed at Nairobi Securities Exchange (NSE, 2018).

In the study by Musyoki (2017) on analysis of response of trading activities in the firms and stock liquidity at the Nairobi Securities Exchange while implementing institutional and policy reforms during revitalization process. The researcher took into consideration microstructure theory for empirical analysis testing for market response to following main changes; shifts in trading system, tightening of the regulatory system, reform of taxation policy on firms as they trade, and relaxation of capital controls. Study finding indicated that level of stock returns influenced to a large extent volume of trading activities, hence higher stock liquidity with consideration of effective working capital management in individual firms. In the

study by Irungu (2019) on price movement at Nairobi Securities Exchange, it was sought to determine factors that affect share price movement in addition to developing a model that could be used to predict price movements, the conditions of trading in individual firms and the stock market were considered. The researcher found out that it was not always possible to develop a model that accurately predict prices at Nairobi Securities Exchange since it was affected by conditions inside and outside the firm and more so, parameters used in forecasting vary over time due to changes in underlying earnings generating process in individual firms as determined by the firm's trading capabilities, hence determination of stock liquidity could not be easy as well.

Kondor and Vayanos (2019) notes market of a stock can be said to be liquid if the securities can be rapidly sold and the conditions of selling has little impact on the stock's price or to look at the bid/ ask spread. The market liquidity of assets affects their prices and expected returns. It is the stock market that makes the stocks a liquid asset considering the performance at firm's individual level of profitability where the information would be relayed to the market; hence the stock market makes it possible to sell the stocks at any point in time as the securities exchange enables the valuing of securities based on internal and outside factors on a particular firm; hence the worthiness of a security depends on how transactions within an organization are reflected at the exchange market. This helps the investors know with certainty at any given point in time the value of their investments while considering individual organizations to deal with.

## **1.2 Statement of the Problem**

Apart from global trading volatility on security exchange markets, organizations have been collapsing due to failure to maintain their stock liquidity at securities exchange markets and more so being ineffective in maintaining their working capital components, hence raising of external funds became difficulty, for example recent failure of Signature Bank and Silicon Valley Bank in United States of America (Elliot, 2023). According to Capital Market Authority (2023) report, quite a number

of firms listed at the Nairobi Securities Exchange among them; Uchumi Supermarkets, Athi River Mining, Everyday East Africa, Kenya Power, National bank and Trans- century have had their shares delisted from trading activities due to their corporate governance challenges resulting from the mix of losses, working capital components shortfalls, lack of revenue and patchy financial reports and such has a negative effect on the performance of stock liquidity at the securities exchange. NSE (2023) report stipulated the investors lost kshs.164 billion in terms of market capitalization for the year ended in July 2023, Uchumi Supermarket had a shrinkage of 94%, Mumias Sugar Company had a loss of 76% and East Africa Portland had a shrinkage of 75%. Firms have had poor working capital managerial effects that made it hard for them to honor maturing obligations and raising capital from the securities market was un promising. Anyanzwa (2019) embraces favorable information about managing working capital components of an individual firm is key to investors, a bad information reflection at the securities' market makes it difficult for the securities to be liquidated easily and more so, raising of funds for a given individual firm follows suit of difficulty. Researchers among them; (Abdulazeez *et al.*, 2018; Estifanos, 2017) had their studies on working capital management with a higher concentration on the effects of working capital management on firm's profitability and traditional accounting liquidity but not liquidity of securities at the securities market which is equally important for trading perspective. The use of liquidity on securities as a performance measure for the firms is a better assessment point since it is in line with the shareholder's long-term objectives as opposed to the use of profitability, a short-term goal, (Le, 2019). Some researchers for example Le (2019) positively supported working capital management having correlation effect with stock liquidity of the securities at the securities market, while other researchers including; Abdulazeez *et al.*, (2018) had weak and negative response on the same. This study is therefore designed to address this research gap that arises from contextual, conceptual and methodological difference among the researchers on working capital management, firm size and stock liquidity of securities of firms at Nairobi Securities Exchange.

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

#### **1.3.1 General Objective of the Study**

The general objective of the study was to establish the effect of working capital management practices, firm size on stock liquidity of firms at Nairobi Securities Exchange.

#### **1.3.2 Specific Objectives of the Study**

- i. To establish accounts payables conversion period effect on stock liquidity of firms at Nairobi Securities Exchange.
- ii. To determine accounts receivables conversion period effect on stock liquidity of firms at the Nairobi Securities Exchange.
- iii. To establish inventory conversion period effect on stock liquidity of firms at Nairobi Securities Exchange.
- iv. To ascertain cash conversion period effect on stock liquidity of firms at Nairobi Securities Exchange.
- v. To ascertain the controlling effect of firm size on the relationship between the working capital management on stock liquidity of firms at Nairobi Securities Exchange.

### **1.4 Hypotheses of the Study**

The study adopted the following hypotheses;

**H<sub>01</sub>:** Accounts payable Conversion Period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

**H<sub>02</sub>:** Accounts receivable Conversion Period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

**H<sub>03</sub>:** Inventory conversion period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

**H04:** Cash conversion period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

**H05:** Firm size has no significant effect on the relationship between working capital management and stock liquidity of firms at Nairobi Securities Exchange.

### **1.5 Significance of the Study**

Findings of the study would provide a vital insight concerning the influence of working capital management on stock liquidity of firms at Nairobi Securities Exchange. Following stakeholders would be beneficiaries of the study concerned;

The findings of the study would assist the Government in formulation of economic policies as concerns investments of the listed companies. The level of gross domestic product and employment capability of an economy depends on how the companies are performing financially. The Government would rely on performance of stock liquidity indicators of individual firms at Nairobi Securities Exchange to determine the kind of policies that should be applied in the economy in order to achieve her goals.

Findings of the study would help the chief finance officers of listed firms on improving their performance. Stock liquidity of firms would determine whether the company is attractive or not, when the company is attractive it is easier for raising capital for investment through selling securities and as well the management gets motivation of improving performance to stay afloat by setting proper operational standards of managing working capital.

Stock Analysts would benefit from results of the study while considering today's complex financial markets and volatility in stock prices. This research would give practical contribution in helping to establish if the working capital policy of the firm is an important financial indicator to look at when trying to predict stock prices and

performance. This knowledge is of importance for stock analysts and securities investors since stock price is directly linked to stock liquidity of firms.

The study would assist securities investors gain knowledge on determining whether working capital policy of firms is related to the risk-return trade-off of their stock performance. Managers of securities portfolios would use the information to enlighten investors on risks associated on different working capital management policies from results of analysis of beta of stocks.

Research scholars would use findings of the study to understand further about influence of management of working capital on stock liquidity of firms at the securities market and enable them find research gaps. This would provide an opportunity for improving of future studies associated with working capital management skills and stock liquidity.

### **1.6 Scope of the Study**

The study focused on firms at Nairobi Securities Exchange only. Listed firms were chosen for reason that stock liquidity was determined by computation of using the spread from computed Bid Ask price at Securities Exchange. There were 65 companies at Nairobi Securities Exchange that formed the units of analysis of the study on consideration of those in operations by close of business of 30<sup>th</sup> June 2023, however only 52 had the criterion for what the study wanted. The study was of concern on a time frame of a period of ten years from 2013-2023.

### **1.7 Limitation of the Study**

The study used secondary data of companies quoted at Nairobi Securities Exchange, hence the requirement was to have compliance of data for 10-year period for each individual company from published financial reports and Nairobi Securities Exchange, and as such some companies could not fulfill requirements as some data for some years was not found leading to generalization on decisions made in the

study while considering the required information on the fairly available percentage of firms that could allow unbiased decision making.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter takes into consideration previous studies done with the aim of understanding liquidity and how it is influenced by working capital components' management; it composes of Theoretical Review, Empirical Review, Conceptual Framework, Critique, Research Gaps and Summary.

#### **2.2 Theoretical Literature Review**

A theory is a reasoned statement or group of statements which are supported by evidence meant to explain some phenomena, hence is a systematic explanation of the relationship among phenomena. Theories provide a generalized explanation to an occurrence and that a researcher should be conversant with those theories that are applicable to his area of study (Calomirus & Jaremski, 2016). In the study by Grant and Osanloo (2016) assert a researcher should be conversant with those theories applicable to his area of research; hence, theoretical literature helps the researcher to see clearly variables of the study, provides a general framework for data analysis and assists in selection of applicable research design.

In this study, concentration would be placed on literature policies of working capital management and stock liquidity of firms at the securities market. Since working capital management revolves around financing of current assets from short term liabilities, particularly in form of interest free credit from suppliers, it is less expensive source of financing activities than equity or long term debt capital (Panigrahi et al.,2019).Working capital management policy employed normally could be directed by factors such as nature of business, market and demand conditions ,technology and manufacturing policies, credit policies, availability of credit from suppliers, operating efficiency and price level changes (Tarza, Sokpo, Iorember & Usar, 2017).



In the study by Afrifa and Padachi, (2016) on working capital policies, a firm can manage its short-term finances in at least two ways; managing the size of the firm's investment in current assets and managing financing of its current assets. These researchers explained that if two policies are managed together then a flexible working capital management policy would have a large investment in current assets and investment would be financed with less short-term debt. With a flexible policy, firm maintains a higher overall level of liquidity. Afrifa et al., (2016) stipulates liquidity is how quickly an asset can be converted to cash without loss of value. According to Acharya and Pederson (2019) liquidity is very important for a company, hence, if the company is more liquid then there is a smaller chance that it will suffer from financial distress. Acharya et al., (2019) embrace there is a trade off in a sense that more liquid assets are less profitable to hold. Liquidity management, therefore, describes how managers reduce liquidity risk. Managers can compare liquid assets and short-term liabilities to evaluate their exposure to stock liquidity risk.

John (2019) considered previous research on working capital components and saw evidence that supported a view that effective working capital management increases returns by reducing cost of capital and by allowing firms to achieve higher levels of asset turnover. These scholars embraced that higher levels of receivables and inventory tend to require higher levels of capital, longer receivables cycles increase risk of not collecting on accounts, and higher levels of inventory increase storage costs and risk of inventory uselessness.

Hammer et al. (2021) suggested firm's investment in working capital could be related to type of industry it operates in and vital working capital management policies each individual company adopts, as well the end results of performance from firms towards the external environment to cause influence to investors. On the same note, working capital investment decisions concern how much firms limited resources should be invested in working capital. Financing decisions relate to how investment in working capital should be financed. What may be considered an optimal level for one industry or line of business may be detrimental to the company

either by being too high or too low because of different operating or business characteristics across industries.

### **2.2.1 Agency Theory**

Globally in the literature review of many studies, an agency relationship is one in which one or more individuals (Principal(s) hires another (agent(s) to execute the roles on their behalf. The Agency Theory explains how best the relationship between agents and principals can be tapped for purposes of governing a corporation to realize its goals. Since the owners of capital (principals) have neither the requisite expertise nor time to effectively run their enterprises, they hand them over to agents (managers) for control and day- to -day operations, hence, the separation of ownership from control, and the resultant agency problems (Jensen & Meckling, 1976)

Corporate governance scholars (Lorsch and Carter, 2004; Leblanc and Gillies, 2005) also argue that at the heart of good corporate governance is not board structure but instead board process (especially consideration of how board members work together as a group and the competencies and behaviors both at the board level and the level of individual directors). This separation is however, linked and governed through proper agency relationship at various levels like, between shareholders and board of directors (BOD), between BOD and senior management, between senior management and subordinate levels of management (International Swaps and Derivatives Association, ISDA, 2002). In such principal - agent relationship, there are always inherent potential conflicts within a firm because the economic incentives faced by the agents are often different from those faced by the principals (ISDA, 2002).

Considerably all firms are exposed to agency problems and to some extent develop action plans to deal with them (ISDA, 2002). Such action plans include establishing such measures as controls on the actions of agents, monitoring the actions of agents, financial incentives to encourage agents of the principals, and separation of risk-taking functions from control functions (ISDA, 2002). Firms with greater growth

opportunities have a lower level of debt given that great investment opportunities increase the possibility of agency problems between managers/owners and creditors, because the former have a great incentive to under-invest (Myers, 1977). The theory is pertinent to the current study from the viewpoint of the financial manager. The financial manager acts as the agent of the owners (Principal) of a company. The financial manager makes decisions regarding payables, inventories and receivables of an entity (Aminu & Zainudin, 2015). Creditors provide finance to the company with the expectation of settlement of their loans as scheduled. Stockholders provide capital to the firm while expecting maximum return from their investment. Employees and management provide the firm with requisite skills as they anticipate favorable working environment and fair remuneration.

Customers offer revenue to an entity while expecting value for money and quality services. Suppliers provide input to the firm in anticipation for fair prices. Because of differences in stakeholder expectations agency relationships arise. In the present study the managers of listed firms at NSE act as agents and must act in good faith to fulfill the principles of the principal in order not to plunge the firms into financial distress. The theory informs the variables of inventory management, receivables management, cash management and payables management. Failure to address the principal agent problems may lead to poor working capital management. Cash mismanagement practices like fraudulent practices arise. Receivables and payables will not be collected and paid respectively when they fall due under principal agent problems. These negative practices brought about by principal agent problems lead to financial distress of listed firms. This theory covers all the variables since they are interlinked into transaction effects of working capital management operations and liquidity.

### **2.2.2 Trading Cost Theory**

This theory as originated by Amihud and Mendelson (1986), the scholar looks at the trading costs as a result of trading a stock; hence the scholar notes, real markets experience frictions which affect the asset prices hence these frictions should be

incorporated when determining asset prices; hence their study on how costs associated with the transaction affect stock prices concluded that stocks with larger bid-ask spreads had higher returns. In addition, they established that trade associated costs can either increase or decrease as a result to variations in time of transactional costs.

Amihud, Hammad, Kang and Zhang (2015) assert transaction costs causes the market to be segmented, as short-term investors hold comparably more liquid stocks in comparison to long-term investors. However, even though most investors have the option to avoid stocks with higher costs of transaction Acharya and Pedersen (2019) found that the expected stock return has a positive concave relationship with transaction costs, additionally, investors who are hold their stocks for longer periods can get a premium as a result of illiquidity that exceeds the expected transaction costs through holding stocks with higher spreads. Comparing investors who hold stocks for a long period, investors who hold stocks for shorter periods, are more vulnerable to costs as a result of transacting on a more frequent basis. For long term investors, costs of transaction can be depreciated over the total holding period. Information asymmetry is also an important factor in influencing transactional costs. In a perfect market, all market participants are assumed to be similarly informed on the risky asset payoff. However, in practice, different participants have different information due to the fact that market participants are accessible to different information or their abilities to process and transform information from similar sources is different. Being a source of liquidity, the essential feature of asymmetric information is that trading process involves decisions made by traders who have superior information compared to others. These informed traders, trade when they can make huge profits off the market, buying when they know the stock is undervalued and selling when they know the stock is overvalued (Adrian, Flemming, Shachar & Vogt, 2017).

Investors are also large in comparison to others in a way that they are able to influence prices in the market, either due to their size or as a result of the advantage of the information they hold. To a market-maker, he always loses with informed

traders and bears the costs of such trades; thus, they have to find ways to offset these losses through the uninformed traders. These gains arise from the bid-ask spread. Considerably, rational and competitive market-makers set their bid and ask prices accordingly, and more extreme information asymmetries lead to wider bid-ask spreads which shows that the market is less liquid (Acharya & Pedersen,2019). In a perfect market, for all periods, all market participants are present. Hence, a buyer has instantaneous accessibility to all the sellers in the market. However, practically, this is not the case. Agents incur market participation costs like costs of monitoring movements in the market. In addition to market participation costs, agents incur execution costs per each transaction. Costs associated with the transacting process causes a significant difference between the buying price and the price at which the asset is being sold at. Transaction costs which are associated with trading such as transaction taxes, fees paid to process orders and brokerage fees also affects market liquidity. Costs such as transaction taxes are seen as primitive transaction costs while other types of transaction costs are as a result of other market imperfections (Alidhubani, 2017). The above costs have a direct effect on the trader's profit with both the buyer and being affected. These costs are a representation of presence of market frictions in the stock markets hence can be seen as a determinant of market illiquidity since it affects the price investors are trading at in the market. Markets with high transaction costs are less liquid as compared to their counterparts with low exogenous transaction costs (Liu, Liu & Ma, 2017).

Lakhani (2019) embrace tightness or gap of the bid-ask spread is the most common measure of trading cost as source of illiquidity. It is normally calculated as the difference between the buying price of a stock known as the bid price and its selling price known as the ask price which directly calculates the cost of a small trade execution. Wanzala (2018) notes, bid-ask spread has two components; one which compensates market-makers for costs of holding inventory, fees associated with processing of orders, and/or monopoly profits; hence, due to the transitory nature of this component, the effect it has on stock prices is unrelated to the stock's underlying value. The adverse selection component which is the second component of the bid-ask spread is as a result of the possibility of market-makers trading with unidentified

informed traders. Pederson (2019) embraced, in a competitive market, market makers have to increase the bid ask spread so as to recover from the losses incurred as a result of informed traders with superior information from uninformed investors. This theory is relevant to the study as it shows how bid-ask spread as a measure of liquidity is related to existing costs on the securities market.

### **2.2.3 Resource Based View Theory**

Firms are viewed as a collection of resources that they exploit to generate competitive edge (Barney 1991). The superior performance of a firm which leads to their competitive advantage is based on their tangible and intangible resources that are heterogeneously distributed across the firms. The tangible resources can be categorized into physical capital and financial capital resources. The resources have been operationalized differently (Nothangel, 2008). For example, physical assets were measured by Farjoun (1998) as the sum of other tangible assets and raw materials. Financial resources were measured by Chatterjee and Singh (1999) using current ratio and leverage ratio; property-based resources like buildings were used by Miller and Shamsie (1996). The resources can be human or material.

Jiang (2014) posits that firms can take competitive edge if their resources have a low cost. This theory explains a firm's ability to deliver sustainable competitive advantage when resources are managed so that competition cannot imitate their outcomes, which ultimately creates competitive barrier. According Bala and Hassan (2018), a firm may reach sustainable competitive advantage through unique resources which it holds and these resources cannot be easily bought, transferred or replicated and simultaneously, they add value to a firm while being rare. This theory is relevant to the current study because listed firms need to manage well the resources of cash, inventory, receivables and payables. The theory informs cash management, inventory management, receivables management and payables management variables of the current study; hence, the theory includes the cognitive capability of management to effectively manage short-term assets of an entity's Working capital. Managers possess resources that recognize new opportunities,

effectively assemble resources, make payments, collect accounts receivable when they fall due in ensuring that working capital is effectively managed and eventually the firm's profitability (Aminu & Zainudin, 2015). The theory works well with the concept of working capital management and liquidity since with resources managed professionally leads to better performance at the securities market.

#### **2.2.4 Keynesian Liquidity Preference Theory**

The theory was developed by Keynes (1936) and states that rational investors prefer liquid investments to illiquid investments and seek a premium for longer maturing investments, holding all other factors constant. Therefore, the main reason for holding cash is liquidity. According to Kipng'etich (2019) a firm holds money for the following motives: to meet their daily business transactions; for speculative motive like to invest; for precautionary motive such that if anything happens, they can manage; for compensation motive to meet employees' obligation in the payroll. The theory is relevant to the present study since there is a dire need for non-financial firms listed at Nairobi Securities Exchange to have sufficient liquidity capable of supporting their day-to-day activities. The objective of working capital management is to enhance both liquidity and financial performance (Mathuva, 2015). Although Mwaura (2017) stated that there is a negative and significant relationship between a firm's liquidity and its financial performance, firms should ensure that they minimize their total cost of liquidity and the cost of illiquidity. The theory suits the operations on liquidity as an independent variable of the study

#### **2.2.5 Asymmetric Information Theory**

Certain investors or corporate insiders can have superior information (or information processing ability) about the fundamental value of securities, the insiders in a firm normally have the advantage of knowing the working capital components and how the operations in the firm are indicating in terms of performance, likewise the outsiders can also have relevant information on about the stock market conditions, hence such information affects the stock liquidity of individual firms. In his paper referred to as market for lemons Arkelof (1970) explains the information asymmetry

problem. His paper relates to buyers who are imperfectly informed about the quality of products in the market. In case of market uncertainty. Sellers of high-quality products may withdraw their products from the market because the quality of their product is not recognized by others. This creates an adverse selection problem: informed traders with bad news are likely to sell, and informed traders with good news have an incentive to buy (Akerlof, 1970).

Akerlof (1970) applied the lemon theory in the case of automobile markets where there are good cars and bad cars (lemons) either new or used cars. The individuals in this market do not know the quality of this car until they own it for a specific period. An asymmetry in available information exists between sellers and buyers. The bad cars sell at the same price as good cars since it is impossible for a buyer to tell the difference between good and bad cars because only the seller knows. The good cars may be driven out of the market by the lemons. The author concluded that the difficulty of distinguishing between good and bad quality is inherent in the business world and this may indeed explain many economic institutions and may be an important aspect of uncertainty.

Glosten and Milgrom, (1985) argue that the bid-ask spread results when Market Makers trade with insiders. The assumption is that investors have seen private signals that are unobservable to Market Makers. Hence, sales are triggered due to the knowledge that the price is going to decrease, whereas purchases are driven by the conviction that prices are going to increase. The Market Maker anticipates the price movements and therefore sells for a higher and buys for a lower price than the price with symmetric information. Without these price corrections, he would suffer from systematic losses and would be forced to exit the market. As the trades reveal information, spreads tend to decline with each trade. The bid-ask spreads widen, if the insider information becomes better or the number of insiders increases. (Kyle, 1985), Market Makers have only a passive function. The model is a sequential auction model, such as noise traders determine their quantities first and insiders learn about the ex-post liquidation value of the asset afterwards.



Insiders determine their quantity to trade, whereas they must make rational conjectures about market liquidity variables (measured by tightness, depth, resiliency) to choose optimal quantities to trade. In the sequential set up, tightness is an increasing function in how quickly a position has to be turned. Depth increases in the number of noise traders and resiliency is only established by insiders.

Easley and O'Hara, (2004) asymmetric information can exist because some agents have access to private information (not observable by others) or information is obtained from different sources or processed differently. This situation will lead to a liquidity premium when agents want to invest in markets with a high proportion of private information (O'Hara 2003). It can also cause spillover effects in other assets/markets because of information inefficiencies. Cespa and Foucault (2014). This market imperfection is especially important for markets with scarce and thin information such as real estate, where a greater difference between offer prices can be observed than in more efficient markets, such as those for publicly-traded equities or bonds.

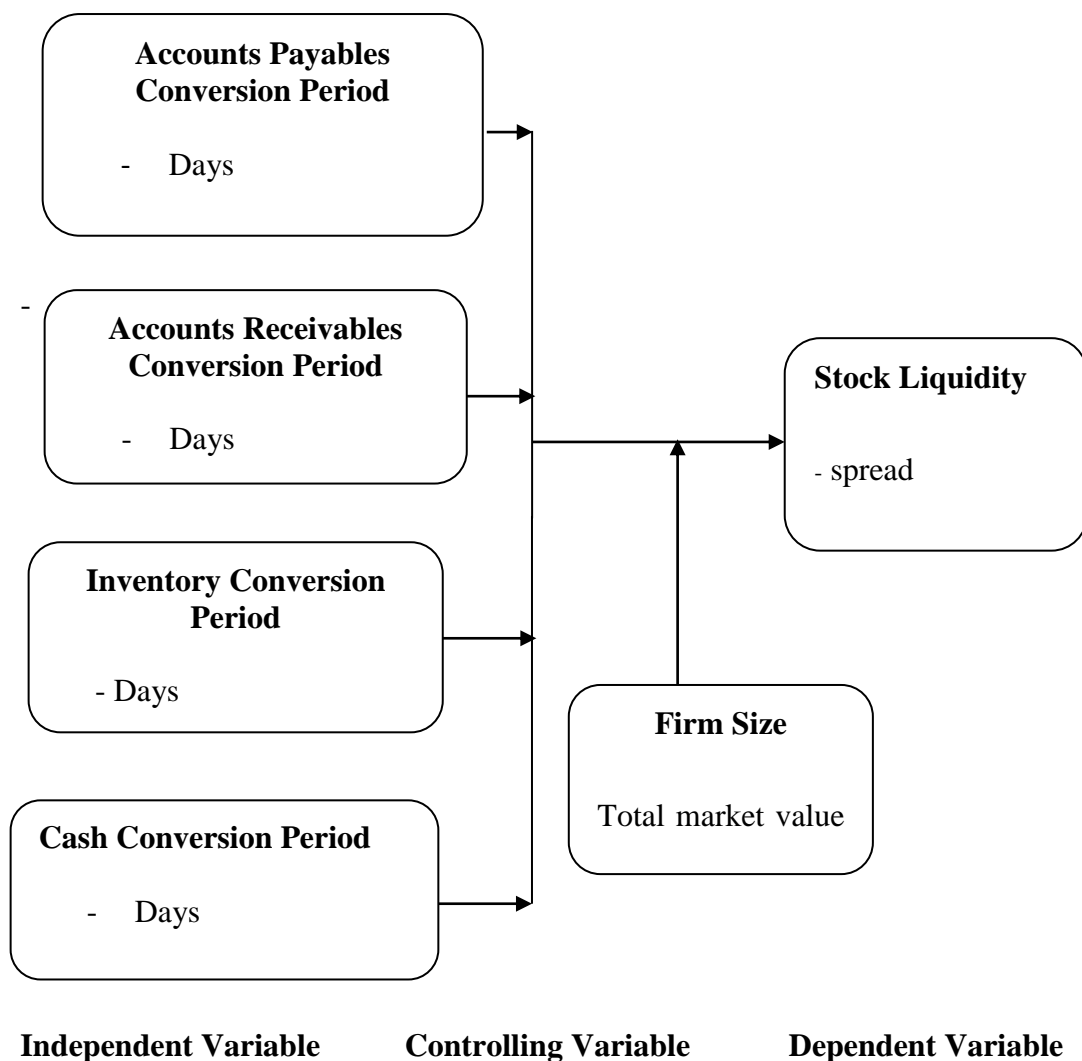
O'Hara (2003) and Easley and O'Hara (2004) show in a multi-asset extension of Grossman and Stiglitz (1980) that prices are lower and expected returns higher when agents receive private signals than when signals are public. This comparison, however, is driven not by asymmetric information per se but by the average quality of agents' information. Indeed, while prices in their model are lower under asymmetric information than when signals are public, they are higher than under the alternative symmetric- information benchmark where no signals are observed. Garleanu and Pedersen (2004) show in a model with risk-neutral agents and unit demands that asymmetric information can raise or lower expected returns, with the effect being zero when probability distributions are symmetric as is the case under normality, an assumption used in much of the literature. Thus, both the bid-ask spread and the market impact are measures of market illiquidity that can result from information asymmetry. This theory takes care of working capital management information and as well the stock liquidity at the securities market.

### 2.3 Conceptual Framework

The conceptual framework was developed from literature review and it was to shed light on methodology that was used in the study. In order to hold new and existing knowledge together, there should be a theory to provide conceptual framework so that knowledge can be interpreted for empirical application in comprehensive manner. This study has five independent variables and one dependent variable. It was assumed that liquidity of equity securities at Nairobi Securities Exchange was to be affected by accounts payables conversion period, accounts receivables conversion period, cash conversion period, inventory conversion period and firm size could affect the relationship of working capital management and the liquidity of equity securities at Nairobi Securities Exchange. There was ample evidence that supported the fact that proper Working Capital Management Improved Liquidity of equity securities and more so the firm size had an effect on the relationship of working capital management and liquidity of equity securities at the securities exchange market.

Figure 2.1 conceptualized dependent variable stock liquidity of firms at the securities market on independent variables accounts payables conversion period, accounts receivables conversion period, cash conversion period, inventory conversion period and firm size influence the relationship of working capital management and stock liquidity of securities at Nairobi Securities Exchange.

In the study, the dependent variable (stock liquidity) was operationalized through liquidity measured by bid-ask price, independent variables; accounts payables conversion period was measured by number of days it took for a supplier to be paid, accounts receivables conversion period was measured by number of days it took for receivables to be converted into cash, cash conversion period was measured by days while considering accounts receivables conversion period plus inventory conversion period less accounts payables conversion period, inventory conversion period was measured by number of days it took for inventory to be converted into cash and firm size was measured by market value of company's assets.



**Figure 2.1: Conceptual Framework**

## 2.4 Review of Variables

### 2.4.1 Accounts Payables Conversion Period and Liquidity

Global consideration of short-term financial management emphasizes, accounts payable is one of major sources of unsecured short-term financing; hence, accounts payables deferred period is mean time taken to pay a supplier (Ahmed & Mwangi, 2021). Management of accounts payables is a vital aspect of ensuring proper management of working capital components through good relationship with suppliers (Le, 2019).

In the study by Althaqafi (2020), current liabilities are liabilities that become due within the next year or within the normal operating cycle if it would not be longer than one year; hence Current liabilities are closely related to current assets since current assets are supposed to raise the cash that is needed to pay the current liabilities. It is through current liabilities that phenomenon of accounts payables conversion period arises. The liabilities accounts include accounts payables and short-term borrowings. Scholars like Altawalbeh (2020) stated that while paying bills, transaction costs may be reduced by trade credit; hence instead of paying bills every time goods are delivered, a buyer might want to accumulate the obligation to pay them within specified times and such an action will enable the firm to separate the cycle of payment from the delivery schedule.

In the study by Afrifa and Padachi (2016) on working capital components, trade credit follows industry policies and the policy of trade credit may not be taken seriously with some firms as they consider institutional financing than accepting trade credit because of cost implications, this makes the offer only worthwhile to high-risk marginal customers whose access to institutional finance that is prohibitively costly raising the bad debts incidence. Theoretically it is an artificial definition of profit and wage management, all dynamic changes lead to profit but only unpredictable changes give rise to the profits and liquidity. The theory does not real express the element of risk involved in the business due to dynamic changes.

In the study by Bashir *et al.* (2018) on working capital components, account payables are generated from the day-to-day activities of firms. When a firms purchase supplies or services that will be used in their production but do not pay for them immediately it goes in under category of account payables. Such supplies as well as services are bought on credit and are then used to generate income before an invoice being paid. Sometimes suppliers offer a cash discount for early payments. However, this is not always beneficial for a buyer. The discount rate must be higher than interest rate of a company would have to pay for a loan over same period as the discount period. If no discount rate is offered then a firm benefit most from using the whole credit time and pay on last possible date. Paying after due date will give a penalty cost and should be

avoided. Using account payables as financing can be called a spontaneous source of financing (Sensini, 2020). Advantages with account payables are that they are convenient, informal, cheap and available for companies of all sizes (Bala & Hassan, 2018). When a company possesses excess cash, the firm would use it for making new investment but if the funds are limited resulting in cash shortages, then the firm might not have any other option than making a short-term borrowing. Financial institutions are main suppliers of short-term borrowings and they often come as a loan. Finance companies also have big sources of cash; however, they mainly finance receivables and inventories. Moreover, firms can sell short-term commercial paper or medium-term notes to banks. Banks then relend money to other firms or individuals and make a profit by charging borrowers a higher rate of interest than they have offered to lender. Sometimes it can ease to take use of a bank to arrange these commercial papers; it saves the lender trouble to search for borrowers. (Liu, Liu &Ma, 2017).

John (2019) argues that granting credit is a journey, success of which depends on methodology applied to evaluate and award credit; hence the journey starts from the application for credit through acquisition of credit sales and ends at a time a debt is fully paid. Granting credit exists to facilitate sales. However, sales are pointless without due payment, therefore the sales and credit functions must work together to achieve the well-known objective of maximum sales within minimum length of time. Mwaura, (2017) asserts that a credit policy touches on credit period, credit standards, collection efforts and credit terms. This study takes consideration at credit standards, credit terms, collection efforts and credit worthiness of customers and loss given default theory.

In the study by Waswa, Mukras and Oima (2018) on relationship of working capital policies on stock performance, aggressiveness working capital management policy means an institution taking an option of low-level percentage in current assets but a high level of current liabilities in its operation. On contrary Conservative working capital management emphasizes on high level of current assets to enable solving of short-term obligations and improvement of liquidity. In the study by Sureshi (2015)

on need of credit policy, for a firm to improve on its capabilities of liquidity the management should invest ideas on relationship with suppliers, invent ways on how to deal with payments and determine the relative payment period. In the study by Wanzala (2018) on techniques of financial analysis, accounts payables deferred period plays a big role on how to manage liquidity of a company. Proper management of creditors enables a firm to maintain good relationship with the suppliers and ultimately ensures that such a firm has a continuous provision of trade credit which is a cheap source of finance that maintains liquidity. Under accounts payables conversion period, firms indulge in various practices as follows:

#### **2.4.1.1 Relationship with Suppliers**

Making use of relationship with a creditor is a sound objective that should be highlighted as vital as having optimal level of inventories (Kinyua, 2015). Accounts payables should be totally used by firms. Able management of suppliers' credit requires current and up to date information on account and aging of payables to ensure proper payments (Sureshi, 2015). Proper management of creditors enables a firm to maintain good relationship with suppliers. Hence ensures that a firm has a continuous provision of trade credit which is a cheap source of finance.

#### **2.4.1.2 Delays in Payments**

Not paying creditors on time allows a firm to assess quality of purchased products and hence it can be an inexpensive and flexible source of financing the firm. On the other hand, late payment of invoices can be very costly if a firm was offered a discount for early Payment (Musyoki, 2017). A study by Mathuva (2010) reflected an increase in number of day payable by 1 day which was associated with increased profitability. However, Irungu (2019) indicated, more profitable firms could wait longer to pay their bills; hence, meant that they withhold their payment to their suppliers so as to take advantage of cash available for their working needs. Delaying payments to suppliers is in line with working capital management rule that firms should strive to lag their payments to creditors as much as possible, taking care of not spoiling business relationship (Musyoki, 2017).

### **2.4.1.3 Payment Period**

In the study by Mathuva (2010) on working capital management components, results indicated firms in Kenya take an average time of 64 days to pay creditors with a standard deviation of 103 days. Hence discovered that maximum time firms take to pay for supplies is 534 days and a minimum of 0 days. Average payment period is considered by firms because it has a direct relationship with profitability. Mathuva (2010) defines average payment period as length of time a firm is able to defer payments for various resources purchased, it is time taken by a firm to pay its creditors. Using data from financial statements the average payment period is obtained by dividing accounts payable by cost of sales and multiplying the results by 365days; hence, argues that there is a highly significant relationship between time it takes a firm to pay its creditors and profitability. However, this contradicts an opinion of Kombo and Wekesa (2017) who assert that there is a negative relationship between average payment period and profitability. Mutesi and Mulyungi (2018) carried out a study about influence of working capital management on firm's profitability. The study did not confirm nor reject that, average payment period affects profitability.

### **2.4.2 Accounts Receivables Conversion Period and Liquidity**

In the study by Akomeah and Frimpong (2019) on credit risk management practices, when a firm sells its products or services and does not receive cash for it, a firm is said to have granted trade credit to its customers. Trade credit creates accounts receivables which a firm is expected to collect in future as a supplier offer terms that allow a buyer to delay payment. In the study by Mathuva (2015) on financial management, accounts receivable conversion period is time taken for accounts receivables to be converted into cash. In the study by Abdullah (2019) on why credit policy is needed, accounts receivables are executed by generating an invoice which is delivered to the customer, who in turn must pay within agreed terms that improves the liquidity.

Investment in debtors takes a big chunk of organization's assets. More so assets are highly vulnerable to bad debts and losses. It is therefore necessary to manage accounts receivables appropriately (Zimon & Tarighi, 2021). Trade credit is vital to a firm because it helps to protect sales from being eroded by competitors and also attract potential customers to buy at favorable terms (Iqibali, Hussain, Khalique & Tabassum, 2020). Given that investment in receivables has both benefits and cost, it becomes necessary to have such a level of investment in receivables at same time observing the objectives of liquidity in order to remain in business (Althaqafi, 2020).

Proper management of receivables is vital since management of receivables is a practical problem and businesses can find liquidity under considerable strain if levels of accounts receivables are not properly regulated (Oseifuah & Gyekye, 2017). Building up of excessive levels of accounts receivables lead to declining cash flows and ultimately results into bad debts which lower firm's liquidity (Southakian & Khodakarami, 2019). Among scholars, Ngari and Kamau (2021) on definition of credit policy, it was emphasized as combination of such terms as credit period, credit standards, collection period, cash discounts and cash terms.

In the study by Le (2019) on time to review credit policy, there were four reasons why organizations have credit policies. First and foremost, undertaking of managing receivables is a serious responsibility, since it involves limiting bad debts and improving cash flow. Outstanding receivables become a major asset of a firm hence requires a reasoned and structured approach. Second, a credit policy reflects a degree of consistency among departments. Third, by writing down what is expected, aims of a company will realize having a common set of goals. Fourth, it provides for a consistent approach among customers. Decision making becomes a logical function based on pre-determined parameters. In the study by Kulo, Joshua and Obeng (2020) on credit policy, it provides recognition of credit department as a separate entity, one which is worthy of providing input into overall strategy of a firm and allows department to be an important resource to top management.



In the study by Botoc and Anton (2021) on financial management, credit standard is a criterion used by a firm to decide on type of customers to whom goods could be sold on credit. If firm's credit standard is too strict, volume of credit sales will be too low but the firm will have little collectable debts. Before extending credit, a firm probably wishes to investigate credit worthiness of a customer. This investigation may simply focus on firm's customer's credit history with a firm or may include contacting various credit reporting agencies, checking customer's bank and other suppliers of credit and examining customer's financial statements and operations. In the study by Oseifuah et al. (2017) on credit policy, credit standard involves application of well-defined procedures to ensure a standard way of granting credit is followed and emphasized on Credit procedures as specific ways in which top management require credit department to achieve best results for an organization.

In the study by Weston and Copeland (1995) on financial theory and corporate policy, there are six Cs of credit which should be considered by credit managers in any industry. These are character, capacity, capital, collateral, condition and contribution. The six Cs can help firms to decrease default rate, as they get to know customers. The six Cs of credit represent factors by which credit risk is judged. Information on these is obtained from a number of sources, including a firm's prior experience with customer, audited financial statements for previous years, credit reporting agencies or customer's commercial banks.

Credit terms refer to a period allowed to the customers. It also includes cash discount offered to encourage prompt payment. Many firms establish a credit period for their customers and offer discounts to encourage them to pay early (Ngari & Kamau, 2021). A firm can shorten its credit period if customers are defaulting too frequently and bad debts are building up. However, lengthening credit period affects liquidity of a firm (Nguyen et al., 2020). Nyaeda, Sare and Anwar (2018) developed a model of trade credit in which asymmetric information leads good firms to extend trade credit so that buyers can verify product quality before payment. Scholars defined trade credit policy as the average time receivables are outstanding and measured this variable by computing each firm's days of sales outstanding, as accounts receivable

per dollar of daily sales. To reduce variability, they averaged and all other measures over a three-year period. They found evidence consistent with the model. Findings suggest that producers may increase the implicit cost of extending trade credit by financing their receivables through payables and short-term borrowing.

Collection Effort refers to a procedure followed by a firm in an attempt to pursue the customers who do not pay on due dates. It may involve reminding debtors through a politely worded letter, a strongly worded letter, sending a representative and eventually contemplating a legal action or writing off debt altogether (Sensini, 2020). Collection efforts may involve reminding the debtor by sending a demand note to inform him of amount due. If no response is received, progressive steps using tighter measures are taken (Zimon & Tarighi, 2021). These other measures include sending a polite letter to the customer and if no response, the customer is contacted through telephone or through visiting him or her and as last resort taking legal measures (Bashir et al., 2018). A collection effort is a control process and ensures that trade debts are recovered early enough before they become un-collectable and therefore a loss to the organization (Sensini, 2020).

Credit worthiness of customers is vital where accounts receivable processes exist. Average collection period determines speed of payment by customers and delayed payment by customers is a potential ground for bad debts and subsequent low liquidity. More so, the firm can shorten its credit period if customers are defaulting too frequently and bad debts are building up there should be strict control on customers who carry goods on credit (Mbathi, Mwambia & Makena, 2021). Purpose of credit control is to ensure that trade debts are recovered early enough before they become uncollectable and therefore a loss to the organization (Altawalbeh, 2020). Managers can create liquidity for their companies if they maintain accounts receivables at optimal level, create value for shareholders by means of decreasing receivable accounts (Ahmed & Mwangi 2021).

It is common that today's companies have large investments in receivables yet there is evidence that a lot of companies lack formal policies for how to manage their receivables and credit extension policy. For the financial managers to be able to add value for the company's shareholders they can properly influence three areas: the company's aggregate investment in receivables, the credit terms and the credit standards (Iqibali, Hussain, Khalique & Tabassum, 2020). Accounts receivables conversion period which confirms number of days outstanding before actual receipts are realized, where a company has delivered a good or service and given the customer an extending credit; hence, in the world of today most sales are through credit and this trend is growing. Credit sales make it challenging for companies to measure revenue and managing the assets. It is of importance that they manage the accounts receivables well so they receive their payments in time. The main benefit for companies to offer trade credit is that it can boost the sales of the company (Althaqafi, 2020).

### **2.4.3 Inventory Conversion Period and Liquidity**

Inventory is an asset of an organization like other components of current assets. Inventory constitutes a very significant part of working capital or current assets in an organization that needs physical, quantity and value control. Inventory conversion period is a number of days taken to convert inventory into cash (Kiptoo, 2017). In the study by Panigrai, Jena, Tandon, Maher and Mishra (2021) on understanding working capital financing strategy, large stock and trade credit policy can increase sales volume which in turn can increase liquidity if debt collection period is shortened; hence, the policy of working capital management whether to employ aggressive or conservative working capital management practice always depend on the level of current assets. In the study Osuma and Ayuma (2018) on relationship of working capital policies on securities performance, a firm working with low level of current assets leads to low level of liquidity. Employing aggressive working capital management policy leads to inability to settle upcoming short-term obligations. Conservative working capital management policy is associated with having a high

level of current assets leading to an increase of liquidity making a firm to settle short term obligations.

#### **2.4.4 Cash Conversion Period and Liquidity**

Cash management is a process of planning and controlling cash flows into and out of business, cash flows within business, and cash balances held by a business at a given time (Aldubhani, 2022). Net operating cycle is also referred to as cash conversion cycle though some scholars argue that depreciation and profit should be excluded while computing cash conversion cycle since a firm's concern is cash flows associated with conversion at cost considering that it is accounts receivables conversion period plus inventory conversion period less accounts payables deferred period (Anyanzwa,2018).Cash management as a process of ensuring that enough cash is available to meet the running expenses of a business aims at reducing the cost of holding cash and there is a need for careful planning and monitoring of cash flows over time for determining optimal cash to hold (Aldubhani, 2022).

One vital decision that firms should make is conformity of their allocation of total assets to cash and securities. This decision is on conformity to high relation to the working capital investment decisions within a firm and also regarded to be linked towards company's risk posture (Maness & Zietlow, 2005). One could be questioned why a company would hold big amounts of cash when they instead could invest in short-term securities that pay interest. One reason for this preference of holding cash over securities is to have liquid assets ready to pay bills that come to due and holding securities which you would need to sell every time a payment comes to due can incur high transaction costs. Proper management of cash is something that the financial manager will have to approach in similar fashion to management of inventory. According to Afrifa and Tingbani (2018), it becomes a trade-off in weighing opportunity cost in lost interest of holding cost compared with the short-term securities. In the study by Afrifa *et al.*, (2018) on liquidity management, what mainly separates these different approaches towards cash management is the risk/return trade-off that relates to firms' preferences and risk averseness. However, results

found about liquidity management reflected a response that even though sometimes there are liquidity levels that are desirable for firms, sometimes firms will have unavoidable levels of liquidity. His study finds evidence that unnecessary costs and losses of companies can be attributable by the firms holding excessive liquidity.

In the study by Sterenczak, Zaremba and Umar on cash management, short term investments are investments which are done temporary in marketable securities with cash that otherwise would be idle. Such investments are normally highly liquid and hence companies expect to convert items in this account into cash within 12 months after the date on the balance sheet. Even though this might not be the case every time they are classified as current assets as companies have the intention to convert them to cash if needed. Short term investments include any kind of notes, bonds and stocks that can be readily sold. Considerably management will have to make two decisions; first how much of their total assets should be allocated to cash and short-term investment accounts, hence decisions made by management should be closely linked together with working capital investment decisions. Secondly management will have to decide on how they are going to allocate their most liquid assets between cash and short-term securities (Kang, Khaksari & Nam, 2018). In order to be able to meet the current liabilities that become due, companies need liquid assets. Cash being most liquid assets there is an opportunity cost associated to it in form of forgone investment interest income or increased interest expense. On other hand there will be transaction costs associated with securities purchases, sales and related funds transfers. As mentioned in the section about cash management, concerned company will have to set a target mix of ideal mix of cash and securities (Abdulazeez, 2018).

Changing any component of working capital management will definitely affect cash conversion cycle (Le, 2019). Management should understand process of credit policy, inventory control systems, inventory levels, business relationships, payables period and delays in payment (Mathuva, 2015). In the study by Boloupremo (2020) on working capital management practices of small firms in Ghana, setting up of a cash balance policy ensures prudent cash budgeting and investment of surplus cash, reducing time cash is tied up in operating cycle improves a business's liquidity and

market value; hence, this further supports the significance of efficient cash management practices in improving business performance. In the study by Ahmed and Mwangi (2021) on inventory management practice and business performance for small scale enterprises in Kenya, financial performance was positively related to efficiency of cash management that enhanced liquidity. In the study by Ndirangu (2019) on effects of working capital management has on profitability in Kenya, proper results from cash conversion cycle can be found when the management employs systems to control cash management. Among models emphasized were Baumol's cash management model and Miller-Orr cash management model.

Baumol's Cash Management Model was designed to lower sum of opportunity cost related to holding cash and trading costs associated with conversion to cash. Involving process was same as Economic Quantity Model for inventory control, though it dealt with different variables. Assumption a firm was for holding a portfolio of marketable securities which could easily be converted into cash. In the study by Baumol (1952) on cash management, assumption of a model was that, cash start from replenishment level  $C$  and then declines smoothly to a value Zero. When cash declines to zero, it could be replenished by selling another  $C$  worth of marketable securities, for which a firm has to pay a trading cost of  $F$ .

Under the Baumol model, manager of funds was to make a decision on repartitioning of liquid funds among the cash and marketable securities. Repartitioning lead to tradeoff that was related to opportunity cost of holding cash which increase along with the cash level and the trading costs which has to be incurred with every transaction and which decrease when cash level increases. Opportunity cost implicates interest forgone for funds which are held in cash instead of being invested. In the study by Le (2019) on financial management, trading costs represent fixed costs which are incurred as a company decides to either buy or sell marketable securities. If a company decides to maintain a low cash level it will have to carry out many transactions leading to high trading costs but low opportunity costs because there are little idle cash funds. If it maintains a high level of cash, the firm's opportunity costs will be higher due to relatively large amount of un-invested cash

but trading costs will decrease since only a few transactions will be necessary. Assumptions under the model are that firms use cash at a steady predictable rate, Cash Flows from operations occur at a steady state as well as Net Cash Flows. The model is expressed as follows:

$C=2TF/I$ , Where C is optimal cash replenishment, T is annual demand for cash, F is trading cost per transaction and I is interest rate on marketable securities. Using the formula a firm determines optimal cash replenishment level. Model weakness is that assumptions are not realistic as well the model does not allow for any safety stock of extra cash to buffer a firm against unexpectedly high demand for cash (Cornett & Nofsinger, 2009).

Miller-Orr Cash Management model was derived by Miller and Orr with an objective of producing more realistic approach to cash management over the Baumol's model. Model assumes net cash flows are uniformly distributed with uniform Zero value of mean and standard deviation. On deriving of mathematical formula, lower limit being first L, Secondly, trading cost for marketable securities per transaction F and Third standard deviation in net daily cash flows  $\sigma$  and finally daily interest rate on marketable securities, i per day. The model is given by pair of mathematical notion:

$$Z^* = \sqrt[3]{3\sigma^2/4i \text{ days}} + L$$

$$H^* = 3Z^* - 2L$$

Management of the firm determines L, and then can set it to a non-Zero number to recognize use of the stock.  $Z^*$  is optimal cash return point and is replenishment level to which cash is replenished when cash level hits L.  $H^*$  is upper limit for cash balances and cash balances are brought down to  $Z^*$  when cash balance hits  $H^*$ . Procedurally a company sets lower limit as per its requirements of maintaining cash balance and upper limit as control limit as well as its return point. When the cash limit reaches upper limit, a firm buys sufficient securities to return cash balance to a

normal level called return point (chauchan & Banerjee, 2017). Adequacy of cash and current assets handling virtually determines survival or demise of an organization.

Abubakar (2017) carried out a study and examined the relationship between working capital management and firm profitability. Results revealed that reducing cash conversion period resulted to increase in profitability. To create shareholders value, firm managers should be concerned with shortening Cash Conversion Cycle until optimal level is achieved.

Muhammed and Umar (2017) empirically examined the relationship between profitability and liquidity, as measured by current ratio and cash gap (Cash Conversion Cycle) on companies in Saudi Arabia. Using correlation and regression analysis, the study found significant negative relationship between the firm's profitability and its liquidity level, as measured by current ratio. This relationship is more pronounced for firms with high current ratios and long cash conversion cycles. At the industry level, however, he found that the Cash Conversion Cycle or the Cash Gap is of more importance as a measure of liquidity than current ratio that affects profitability. The firm size variable was also found to have significant effect on profitability at the industry level.

Long Cash Conversion Period leads to an increase in inventories and receivables which causes working capital to increase (Audax, 2018). Hence in this case, accruals/ payables, interest-bearing debt, and equity are used to fund receivables and inventories. More so, expensive external sources reduce profitability due to high interest cost and tied-up funds which would otherwise be invested in profitable areas. It is vital to emphasize that small firms may differ from large firms in many dimensions of performance (Delima, 2020). Scholars; (Osman & Ayuma, 2018; Kiptoo, 2017; Botoc & Anton, 2017; Orugo, 2020; Matar & Eneizan, 2018) gives a reflection that bigger firms have better opportunities to get external financing and they are not as financially constraint as small firms. This means that impact of Cash Conversion Period on liquidity might be different for firms with different sizes. Parallel to this, Abdulazeez, Baba, Fatima and Abdurrahman (2018) embraced that



size differences should be considered, while dealing with Cash Conversion Period-liquidity relationship in order to see whether the observed relationship is affected by size. This means that, the impact of Cash Conversion Period on liquidity is expected to be influenced by firm size. The reason that some research shows conflicting results on the relationship between Cash Conversion Period and profitability as well as liquidity may be due to impact of firm size. Based on these considerations, we expect that the Cash Conversion Period- liquidity relationship may be moderated by firm size.

The issue of a cash conversion cycle was initially presented by Hager (1976). More so Richards and Laughlin (1980) suggested that a cash conversion cycle analysis should be used to supplement traditional but static liquidity ratio analysis because it provides dynamic insights. Hence, Hager (1976) introduced a cash cycle analysis, based on the asset conversion cycle and the liability cycle he then developed a weighted cash conversion cycle and defined weighted cash conversion cycle as a measure of weighted number of days funds were tied up in receivables, inventory and payables, less the weighted number of days cash payments are deferred to suppliers. Current scholars among them; (Masinde & Elly, 2017; Nguyen, 2020; Delima, 2020) concluded that weighted cash conversion cycle can be considered as a more refined liquidity measure. Ajayi, Olutokunbo, Obayefemi, and Araoye (2021) argues that the traditional definition of working capital can be improved by using the working capital leverage ratio, the ratio of current liabilities to working capital; the ratio of current liabilities to current assets; and the ratio of working capital to current assets.

Oruko (2020) point out those current and quick ratios provide good information from a liquidation perspective, but not from a dynamic perspective of the firm's liquidity position. They present a new liquidity indicator, the net liquid balance, liquid financial assets minus all liquid financial obligations. Their work indicated that the relationship between net liquid balance to total assets ratio and the current and quick ratio is positive and generally all the ratios give consistent information about the liquidity position of the company. Kiptoo (2017) describes characteristics that are

required of a good liquidity measure, reviews and evaluates traditional ratios with respect to those characteristics. He suggests a new liquidity measure, is a ratio of cash flow resources to potential cash flow requirements. Larger the value of a ratio, higher the liquidity value of a firm.

Nguyen (2020) evaluated empirically interrelationships among working capital accounts and cash conversion cycle, firm's industry classification and rate of inflation; hence, it was found that cash conversion cycle was most correlated with average age of inventory and least correlated with the age of spontaneous credit. Cash conversion cycle and its components for examination period differed from industry to industry, but did not vary from year to year. Finally, authors found that there was no significant correlation between the value of cash conversion period and the rate of inflation. Audax (2020) examined trends of cash conversion cycle and its components, for those lines of businesses for which Quarterly Financial Report for Manufacturing, Mining and Trade Corporations data exists. This scholar found that retailing and whole selling firms both had cash conversion cycles shorter than those of manufacturing firms. More so, mining firms had shortest cash conversion cycle because this type of industry had longest payment deferral period of all major business types.

Matar and Enezan (2018) tested a theoretical model of fifteen equations that try to explain the relationships among the different short-term and long-term financial sources available to small firms. The results indicated that; Cash cannot be modelled effectively for the small firms, Sales and the company's credit policies are important determinants of accounts receivable, the growth of fixed assets depended on the retained earnings and notes payable; and lastly small firms employed bank and trade credit, with the latter being more significant, and whereby higher levels of short-term credit are associated with higher sales. Cash conversion cycle is normally calculated by considering other components of working capital; Average Collection Period, Average Inventories in Days and Average Payable Period.

#### **2.4.5 Firm Size and Stock Liquidity**

Size of the firm was a controlling variable of the study, reason being that firms have different levels of assets. Total market values of assets were used to determine size of a firm as a measure since the firms were listed. More so natural logarithms were applied on the total assets before initiated in the regressions of the study. Most of researchers, among them Mathuva (2015) used natural log of total assets on the study of relation between working capital management and profitability. According to Mathuva (2015), firm size referred to as how the shareholders and creditors are attenuated, since smaller firms suffer more severe asymmetric information between the insiders who provide the information from the firm internally and outsiders who provide the information of the firm externally, hence, less public information is available for them for investors to use for decision making. With the support of Banos-Cabellero (2009), large firms have high bargaining power about their stock liquidity on the securities market.

In the study by Shafana, Rimziya and Jariya (2013) on relationship between stock returns and firm size and book-to-market equity; empirical evidence from selected companies listed on Milanka price index in Colombo stock exchange, financial interested parties such as investors, stock market analysts, policy makers, governments and stock market regulators gave more attention to size of a firm as a macroeconomic factor to determine liquidity of stocks and returns. Conclusion of the scholars' study was that there is positive relationship between the firm size and stock returns; hence stock liquidity was significant with the stocks of large firms. Drew and Veeraraghavan (2002) presented evidence of size and value premium for the case of Malaysia using multifactor model approach and concluded size better explained liquidity variation in stocks in Malaysia. Kumar (2009) employed MacBeth (1973) cross-sectional regression model in selected Indian industries to examine behavior of firm size respect to liquidity of equity stock and concluded with negative relationship results.

In the study by Wahome, Memba and Muturi (2015) on effects of firm size and risk on capital structure decisions of insurance industry in Kenya, large firms do not consider the bankruptcy in managerial operations since such firms have the capabilities of diversification to remain a float on securities market and improve on stock liquidity of securities. Scholars further emphasize that there is positive relationship between the size of the firm and equity financing. According to Bhowmik (2013), size of a firm can be regarded as a proxy for information asymmetry between firm insiders and capital markets. More so, Uno and Kamiyama (2012) emphasize that large firms are more closely observed by analysts and should be more capable of issuing information that is sensitive as concerns equity, hence justifying effects of firm size on liquidity at securities exchange.

In the study by Ramesh, Hammed and Umar (2017) on effects of size (log of total assets) on firm performance, simple growth rate of assets, leverage, current ratio, inventory turnover ratio, operating expenses to sales ratio, fixed assets turnover ratio, vertical integration and ratio of depreciation to gross fixed assets on profitability. Profitability was expressed as return on total assets and profit margin on sales, which is a measure of operational efficiency of a firm. Using ordinary least square regression technique results showed that ratio of depreciation to gross fixed assets appeared to be strongest determinant of profitability followed by operating expenses to sales ratio, leverage, fixed assets turnover ratio, inventory turnover ratio, size, current ratio, growth rate and vertical integration. Size, operating expenses to sales ratio, and fixed assets turnover ratio had negative contributions while other variables had positive contributions to the variations in profit rates in the industries. Current ratio was found insignificant in explaining profitability. Results of two profitability models were found to be similar.

#### **2.4.6 Stock Liquidity of Securities**

Globally liquidity of securities has been dealt with by many researchers and the final conclusion of their findings and definition of the same, have been; liquidity is ease of trading a security that just makes it one of the vital elements upon which the investor

will decide whether or not to invest (Amihud *et al.*, 2015). Natural measure of liquidity is spread between Bid and Ask price. On developed capital markets, market makers as companies or individuals quote buy or sell price trying to gain profit on Bid-Ask spread. If market makers set prices too high, they will accumulate stocks and if they set prices too low there will be shortage of stocks and hence Spread must be large enough to cover costs and provide a reasonable profit to market maker (Chen, Hung, Sun, Yao and Yu (2020). In the study by Acharya and Pederson (2019) on illiquidity and stock returns, best measure of liquidity is Bid-Ask spread (quoted or effective) and consist of comparing spreads across firms with different market structures with a purpose of collecting information about liquidity. In the study by Lakhan (2019) on quantifying fluctuations in liquidity at market place, statistical features of the Bid-Ask spread offers the possibility of understanding some aspects of market liquidity.

In the study by Kumar and Misra (2015) on closer view at securities market, liquidity is multi-dimensional and can be captured in different ways. In current market environment changes in market structure and behavior of market participants need to be considered when interpreting liquidity measures such as Bid-Ask spread and dimensions of liquidity being immediacy, depth, breadth, tightness and multi-dimensional. Most scholars, among them; Liu, Liu and Ma (2017) found Amihud (2002) measure of illiquidity being better than other measures while using depth dimension. A model is good at capturing liquidity as well as robust to regime changes such as change in minimum tick size to decimals. On consideration of illiquidity, daily data for every share provides the estimation while considering the impact of each share weighted by free float rate and market capitalization.

In the study by Amihud *et al.* (2015) on illiquidity and stock returns, market depth is a large flow of trading orders on both buying and selling side on frequent basis as determined by constant interest and willingness to trade. Large orders in both directions increases trading volumes and price effects of larger trades becomes lower, creating lower volatility and resiliency. In the study by Stahel (2003) on whether there is a global liquidity factor, depth measure also distinguishes between

aggregate trading volumes and turnover based measures, which capture volume traded per security. Measures involved consist of dealers' inventory holdings, price impact of volume measures, turnover measures, and intra-day volatility. In the study by Kyle (1985) on continuous auction and insider trading, depth of a market is defined as ability of market to absorb large transactions without causing an appreciable change in price. In the study by Porter (2003) on measuring market liquidity, depth is measured basing on average price impact per unit of trading volume.

In the study by Amihud *et al.* (2015) on illiquidity and securities return, when market depth is low, price concessions required from market makers are larger per unit of volume than when market depth is high and measures daily price impact of the order flow, which is exactly concept of illiquidity, since it quantifies price/return response to a given size of trade, the higher the measure, the larger the price impact and therefore the more the illiquid market. Wanzala (2018) emphasized on how liquidity should be understood and hence embraced that determinants liquidity is categorized into firm specific factors and macro-economic factors. Among the scholars who did study in order to establish liquidity determinants were; Acharya and Pederson (2019) who examined the relationship between institutional investors, liquidity and liquidity risk and found out that institutional ownership generally predicted larger stock liquidity. More so stocks with concentrated institution ownership especially hedge fund ownership tend to have low returns with high market illiquidity which gives an indication of crowded trading strategies detrimental impact on returns where markets are less liquid.

Adrian, Fleming, Shachar and Vogt (2017) concluded that the concept of commonality is a phenomenon in which individual stock liquidity is at least partly determined by market-wide factors and high degree of commonality indicates high degree of systematic risk resulting into higher liquidity premium for holding the assets. Musyoki (2017) stated, empirically understanding the common liquidity movements assists the regulators on improving market liquidity by changing market

designs. Further, Kondor and Vayanos (2019) stipulated that designing of the diversified portfolios becomes difficult because of the presence of commonality.

#### **2.4.6.1 Determinants of Stock Liquidity**

Globally a market is considered liquid when generally a large quantity is traded without any delay at lower transaction costs with minimum price impact for smooth transaction effects at the securities market (Diaz & Escibano, 2020). Literature on liquidity proposes four main characteristics, namely; trading quantity, execution time, transaction cost, and price impact. Reviewed research give a reflection of measuring liquidity on the securities market by using a variety of liquidity measures that could fairly capture the key market liquidity characteristics; depth (volume or quantity measure), breadth (price impact measure), immediacy (time or speed measure), and transaction costs (spread or transaction cost measure), moreover, such measures could be computed either based on intraday (high-frequency) data or daily, weekly, monthly, quarterly, yearly (low-frequency) data(Lee, 2015). According to Zhang and Su (2017) assert measures based on high-frequency data have been mainly in use, however, still it was evidenced low-frequency measures can be fairly used over high-frequency ones to measure liquidity; hence, measures based on low-frequency data enable in studying liquidity over a long period and across different market structures.

Analysis of literature on liquidity, scholars tested and proposed best performing measures of liquidity under different market systems. Kumar and Misra (2015) assert spread and volume-related liquidity measures were used; hence, evidenced that both the measures are negatively correlated and give similar information about market liquidity and could be applied as complementary to the other. Liquidity at the securities market in developing markets, Gao, Jiang and Zhang (2019) embraced Gibbs, Amihud, and Amivest measures prove to be effective measures, whereas in an emerging market, however some scholars among them; Bedowska-Sojka and Echaust (2020) notes, Closing Quoted Spread measure based on daily data was the best performing liquidity measure during the periods of extreme liquidity. More so,

Bedowska- Sojka (2018) expressed and compared the different liquidity measures and finalized that the Amihud illiquidity ratio evolves as the best transactional cost measure, however, zero return measure could be a very strong and reliable measure for determining the timing of liquidating the trading positions.

Li *et al.* (2018) applies two bid-ask spread estimators based on daily high and low prices; hence, gave evidence of their efficiency in accurate estimation of transaction costs across varied markets and periods. Kang and Zhang (2014) had a new version of the Amihud Illiquidity measure that could be used exclusively in emerging markets. Darolles *et al.* (2015) had a consideration of taking trading volume measure namely, Mixture of Distribution Hypothesis (MDH) model because they were of the view that trading volume may not always provide accurate inferences about liquidity during high volatility; hence, MDH model facilitates in extracting that part of the volume which is exclusively affected by liquidity levels during high volatility.

Chen, Hu, Yu and Zhao (2019) embraced different measures of liquidity have been used and noted in the literature with a conclusion that there is no best measure that can be used to measure the market liquidity because every type of measure captures different aspects of market liquidity in different market systems and conditions; hence a researcher should choose a liquidity measure depending on the objective of his study. Kumar and Mishra (2018) suggest quite a number of studies have even documented significant intraday behavior patterns and relationships between liquidity measures, namely; used spread, volume, depth, and composite liquidity measures in the Indian stock market and found that demand for liquidity is high at the beginning, however, at the end of the trading session even though spread measures indicated higher transaction costs. Thus, study evidenced a positive relationship between volume and spread measures which was contradictory to an order-driven market but lacked empirical support. Kumar *et al.*, (2018) applied depth and spread liquidity measures in the Indian securities exchange market and observed a strong relationship between liquidity measures of individual firm stocks and aggregate market which was attributed to a higher commonality among them.



Determination of factors that influence liquidity have been difficult for many scholars. Studies have shown a vital interest in analyzing the effect of different factors influencing liquidity of individual securities and of the overall securities market at large; hence, the researchers have revealed a significant influence of regulatory policy announcements on liquidity, expansionary monetary announcements effectively influenced securities market liquidity of small sized securities (Chowdhury et al., 2018).

Dinh (2017) assert that the introduction of financial transaction tax improved market liquidity, whereas it's actual implementation increased transaction cost and thereby lowered the liquidity levels. Concerning the emerging market, Kumar *et al.*, (2018) studied and noted the Indian stock market liquidity is highly influenced by the policies announced by its government and financial institutions. Ekinici *at al.*, (2019) mentioned, emerging market is very sensitive to the announcements made by developed economies; hence, the study reflected announcements relating to monetary policy, interest rates, and gross domestic product (GDP) of the U.S. economy strongly determined liquidity of the Turkish stock market under study.

Zheng and Su (2017) considered a study on macroeconomic variables; money supply, government expenditure, private borrowing, bank rate, short-term interest rate, and government borrowing, the key results reflected that the variables were determinants of market liquidity across different sectors of the securities market; this was observed from global oil demand shocks that caused a significant negative effect on the liquidity of the Chinese stock market.

Ramos and Righi (2020) did a study and suggested market volatility has been identified as a strong determinant of securities liquidity. Chen, Hu, Yu and Zhao (2019) embraced another determining factor from the evaluation and pointed a trading activity by different types of investors determines the influence of liquidity; hence, higher investor diversity results in a higher improvement in market liquidity. It is evident that the trading activity of institutional investors ensures stabilization in the economy during major catastrophic events. Dang, Moshiran and Zhang

(2019) suggested institutional investor's trading in shock sensitive securities has resulted in high illiquidity during the crisis of 2008. However, Siikanen, Kannianen and Valli (2017) opined trading by institutional investors generates more stock liquidity as compared with the retail investors because they are well informed about the future trend of the market and use firm-specific information while taking trading decisions. More so, Gao, Jiang and Zhang (2019) asserted that large buying by both domestic and foreign institutional traders result in higher market liquidity as compared with that of retail traders; hence, support from Debata, Dash, Mahakud (2018) evidence extensive participation by retail traders on account of low price efficiency improves market liquidity.

Debata et al., (2018) gave a suggestion of a positive effect of foreign investor's input on the liquidity of emerging markets. Lee and Chung (2018) noted similar result of foreign investors being instrumental on the liquidity of equity securities; hence, foster transparency in the working of firms and thereby positively influence liquidity. Anagnostidis and Fontaine (2020) stipulated the market liquidity of securities improves over a short period after the merger between the securities exchanges, the scholar also noted technological up-gradation and transparent order system at the securities exchange improves securities liquidity.

Siikanen et al. (2017) examined on corporate announcements and disclosures and found that there is enhancement of transparency about the prospects of the firm and thus contribute to improving stock liquidity, the researcher documented in support of scheduled announcements even non-scheduled announcements significantly improve stock liquidity on account of information leakages during the pre-announcement period. Alves et al. (2015) opined stock liquidity improved on account of announcements relating to share buybacks and evidenced that companies mainly formulate the buyback policies in confirmation with the liquidity levels for its securities in the market. Besides, disclosures relating to intangible assets and the adoption of relevant international reporting practices also contribute to accelerating stock liquidity, this was supported by (Gao et al., 2019; Labidi & Gajewski, 2019).

Studies' literature has also evaluated the importance of corporate governance in determining stock market liquidity, hence it was obtained there was a strong effect of corporate governance practices on boosting the liquidity of the Australian market, this could be caused by transparent firms consistently have higher liquidity for their stocks even during the crisis. It was found that predominance by independent directors on the Board ensures transparent functioning of an enterprise and thus improves stock liquidity (Ali, 2017).

Company-specific factors also have shown a significant effect on stock liquidity. Company size and return on assets improved stock liquidity, whereas financial leverage harmed the stock liquidity, evidenced a significant impact of financial performance indicators like profitability, investment intensity, and price-to-book ratio in upgrading market liquidity (Dang & Nguyen, 2020).

#### **2.4.6.2 Market Microstructures**

According to Amihud et al. (2015) variations in liquidity along with costs involved in trading could be better understood by studying the behavior pattern of various liquidity proxies. Acharya and Petersen (2019) supported the same sentiments and emphasized that such approach will help various agents in selecting stock exchanges in terms of liquidity. Zhang and Su (2017) embraced studying patterns since it could assist regulators particularly in emerging markets that believe to be less liquid in designing an efficient and transparent trading system. More so an argument was that with capital market liberalization in emerging economies, liquidity may have a greater impact.

In the study by Kumar *et al.*, (2018) on intraday patterns of various liquidity proxies on Istanbul stock exchange using limit order book, results reflected spreads having L- shaped pattern, whereas returns, number of trades and volume reflected a U- shaped pattern. More so wide spreads were accompanied by low depths indicated traders using spreads and depth simultaneously to carry out their strategies. Gao, Jiang and Zhang (2019) examined the intraday pattern of trading activity, liquidity and return volatility of the stocks listed on Tunisia Stock Exchange. The majority of

studies reflected trading volume, return volatility and liquidity profile embracing U-shaped patterns.

According to Ekinci *et al.*, (2019) empirical market micro-structure research has shifted from studying individual stock liquidity to examining commonality. Commonality was defined as the co-movement between variations in individual stock liquidity and variations in the market and industry-wide liquidity. More so, the scholar opens up and embraces inter-temporal changes in liquidity being supported by the theory of inventory risk and theory of asymmetric information. However, Sensoy (2016) did not find support for commonality on Securities Exchange and argued that commonality in liquidity may be attributed to marketing designs.

Market microstructure literature states that asset prices emerge from dual functions of stock markets, liquidity and price discovery, and if there is symmetric information market participants learn from equilibrium prices (Dinh, 2017). In such a context, prices represent information and do not simply enable brokerage to take place. Innovations to this basic model are reflected difference between informed and uninformed traders while maintaining symmetric information (Chen *et al.*, 2019).

#### **2.4.6.3 Stock Liquidity and Returns**

Altay and Calgici (2019) embraced and noted any change in market liquidity has an effect on stock returns. Dinh (2017) found that any change in liquidity levels of stock results in a huge impact on stock returns; hence the study concluded that liquidity is the most important factor influencing stock returns even after controlling other determinants of stock returns. A positive effect of lower liquidity was evidenced on expected securities returns (Chen, Hu, Yu & Zhao, 2019). Similar results were obtained by Zhang and Su (2017) while evaluating the liquidity of securities across different sizes and by Gao, Jiang & Zhang (2019) during the pre-crisis period. Furthermore, Lee and Chung (2018) found that market liquidity plays an important role in determining stock returns mainly in less competitive stock markets as these markets are characterized to have a high cost of equity.

Effect of liquidity reaction during selling stock was found to be more on expected stock returns than the one during purchasing a stock Siikinen, Kanninen & Valli (2017). Kumar et al.,(2018) found a positive influence of both present and past illiquidity on expected stock returns where in the return of small size stocks was highly affected by illiquidity over some time. Sensoy (2016) found the presence of institutional ownership determines positive relationship between liquidity and stock returns. Lee and Chung (2018) proved that liquidity influences the expected returns since it crucially determines the relationship between expected returns and expected volatility. Sterenczak *et al.*, (2020) developed and tested various asset pricing models to effectively obtain the relationship between liquidity and stock returns; hence, in frontier markets, the study observed that liquidity does not affect returns because they are less globally integrated.

#### **2.4.6.4 Stock Liquidity and Asset Pricing**

In the study by Acharya and Pederson (2019) on liquidity and asset pricing, the scholar embraced liquidity as a driver in affecting price of the stocks while making investment portfolios; hence, the study provided an asset pricing model incorporating economic significance of liquidity risk, results indicated liquidity-adjusted Capital Asset Pricing Model explained data better than standard Capital Asset Pricing Model. More so, weak evidence is reported about the importance of liquidity risk over market risk and level of liquidity. However, the model failed to explain book-to-market effect but it is a good fit for portfolios sorted by liquidity, liquidity variation, and size.

Using Liquidity-adjusted Capital Asset Pricing Model developed by Acharya and Pedersen (2019). Results indicated strong evidence of co-movements (a) between individual stock illiquidity and market illiquidity, (b) between stock returns and market illiquidity and (c) between stock illiquidity and market returns. Overall, the net value of these liquidity co-movements was significantly priced in Australia.

Hagströmer *et al.* (2013) examined relation between illiquidity level, illiquidity risk, size, and value and momentum anomalies for United States stocks. In contrast to

statistical factors both illiquidity level and illiquidity risk have a theoretical foundation in liquidity adjusted capital asset pricing model Liquidity Capital Asset Pricing Model. Liquidity Capital Asset Pricing Model outperforms the Capital Asset Pricing Model in terms of ability to explain risk premiums of size and value sorted test portfolios. Results reflected a very strong correlation between Fama-French size betas and illiquidity level betas and a fairly strong correlation between Fama-French value betas and illiquidity risk betas while Carhart's momentum beta has high negative correlation with betas both for illiquidity level and risk. Premiums related to size could to a large extent be explained as a compensation for illiquidity level.

Chowdhury (2018) examined seasonal behaviour of the liquidity premium in asset pricing. Liquidity premium was reliably positive only during the month of January. However, for the non-January months, a positive liquidity premium could not be detected. In contrast to Amihud *et al.*, (2015), results show evidence that size effect is significant, even after controlling for spreads. Ellington (2018) tested relationship between asset prices and liquidity on London Stock Exchange (LSE) taking three models; Capital Asset Pricing Model, Capital Asset Pricing Model with a liquidity factor and Capital Asset Pricing Model with a liquidity factor along with the Fama-French factors. Size and Liquidity sorted portfolio returns were regressed against liquidity in each model. Results indicated positive relationship between liquidity and asset prices.

#### **2.4.6.5 Stock Liquidity and Corporate Finance**

In the study by Li, Lambe and Adegbite (2018) on relationship between stock liquidity and the firm value on securities market, focus was on market microstructure consideration on whether liquidity affects firm value. The researcher employed panel data regressions to show that more liquid firms have higher operating profits as measured by Tobin's Q, operating income-to-price ratio, leverage, operating income on assets.

Dang et al. (2019) expressed positive impact of stock liquidity on corporate valuation on a broad sample. Results indicated robust response to various stock liquidity

measures, host of firm-specific control variables, and different sub periods. Stock liquidity promotes the informed trading, which in turn gives rise to an informative securities price. Skjeltop and Ødegaard (2015) examined reasons of incurring cost of improving stock liquidity by the firms. Reasons indicated either firms were to raise capital in the near future or they were planning to repurchase their own shares. As per study, firms which hire a market maker resulted into significant reduction in liquidity risk and hence cost of capital.

In the study by Chowdhury *et al.*, (2018) on role of institutional investors in corporate finance, results indicated institutional investors reduce information asymmetries between firms and (other) investors, which lead to enhanced liquidity of the firm's share. Gao *et al.*, (2019) reported that liquidity is enhanced after a stock split which is attributed to reduction in information asymmetries due to disclosure of private information to the public. Ekinici *et al.*, (2019) emphasized on firms reducing the cost of raising capital by improving the market liquidity of their stock. Employing large sample of firms, results indicated fees charged by the investment banking firms are lower for the firms having liquid stock. Bundgaard and Ahm (2012) expressed secondary market liquidity being a key factor in predicting combined cost of issuing securities under Follow on Public Offer. Firms with more liquid shares were able to issue fresh shares at reduced

Costs, compared to firms having fewer liquid shares. Such a phenomenon closely falls in line with the study of Amihud *et al.*, (2015) with an impression of illiquidity being priced on Stock market, hence making illiquid assets trade at a discount. Therefore, greater market liquidity of stocks was in greater interests of the firms.

Altay and Galgici (2019) examined relationship between dividend policy and liquidity of firm's share. Investors demand for cash dividends was higher in illiquid markets. Chen *et al.*, (2019) examined the impact of securities market liquidity on pay- out decisions of firm's securities listed on securities market, results of the study confirmed higher market liquidity encourages use of repurchases over dividends. In the study by Labidi and Gajewski (2019) on firms with more liquid shares, firms

encouraged lower leverage and prefer equity financing when raising capital. Enhanced liquidity reduced required return on equity and cost of capital. Therefore, firms make efforts in order to increase liquidity and hence equity in their capital structures. Siikanen, Kannianen, Valli (2017) examined firms with greater stock liquidity and embraced that such firms rely more on equity-based compensation and less on cash-based compensation as part of annual contracts, the study further expressed that firms with greater stock liquidity had reliance on stock prices in designing executive compensation. Hillert and Obernberger (2015) studied the relationship between stock repurchases and liquidity on United States of America markets hence expressed smaller repurchases consume liquidity, whereas larger repurchases provide liquidity. Repurchases tend to provide liquidity if they contain more information. The results of the study are interpreted context of recent research in market microstructure on limit order markets which says that, informed traders do make use of limit orders and provide liquidity to the market.

Liquidity is vital for provision of price discovery in stock exchange markets and transaction costs that results are reflected in a premium in pricing models (Amihud *et al.*, 2015); hence, liquidity is informational risk to uninformed traders that cannot be diversified, however an effective measure is bid–ask spread, but again in an African context this is not satisfactory as markets quotes are infrequent.

In the past decade, several empirically based measures have been developed that reflect various aspects of indirect trading costs, such as depth and resiliency, although there is little consensus regarding relative value of these proxies in capturing liquidity. Liquidity measure horse race comparisons in terms of their efficacy and robustness have been undertaken by various scholars but wide informational results have ever been given without one particular answer (Zhang & Su, 2017). However, from past literature, most of liquidity information was being taken from United States of American Markets in that results could not be representative especially for developing emerging worlds. Further evidence of the importance of liquidity in asset pricing was reported by Fama and French (1993) who included liquidity and firm size in a three-factor framework and more recently Pastor



and Stambaugh (2003) who noted that investors require higher expected returns for holding assets that are difficult to sell when aggregate liquidity is low. Other examples of this literature are a single country study by Martinez *et al.* (2005) on the Spanish stock market and cross-country studies (Black, 1986). However, such studies ignore markets in Africa that are most likely to be considered as investment opportunities for overseas fund managers.

In the study by Dinh (2017) on stock prices, this particular study embraced that stock prices change when new information arrives. Therefore, if trading volume is linked to information flow entering a market, it also implies existence of a significant relationship between volume and stock prices. Sequential information arrival models earlier literature of Copeland (1976) suggests a positive contemporaneous relation between volume and absolute value of a price change, and a positive causal relationship in either direction. According to Chen *et al.*, (2019) on asymmetric information models, new information that reaches market is not disseminated to all participants simultaneously, but to one trader at a time. The sequential information hypothesis supports several intermediate equilibria, such that only when all traders have received new information is final market equilibrium established. Therefore, due to the sequential information flow, lagged trading volume provides information on current absolute stock returns, and lagged absolute returns contain information on current trading volume.

In the study by Debata *et al.*, (2018) on models of interpretation on volume of trading as a proxy for the speed of information, which is regarded as a latent common factor, explained the observed positive correlation between variance of price changes and volume. In expressed model, there was no causal relationship from volume to returns, conversely, Li (2018) used volume to measure disagreement among traders, because traders revise their reservation prices when the new information flows. The level of trading volume is therefore expected to increase as a result of greater disagreement among investors. A positive causality from volume to absolute stock returns is predicted in their model.

In the study by Chen *et al.* (2019) on examination of dynamic relation between returns, volume, and volatility of stock indices for nine countries, results indicated mixed results. Scholars demonstrated that returns do cause volume to change in some countries but it doesn't affect in other countries; the scholar also demonstrated that returns cause trading volume in the United States of America and Japanese markets to change, but not in UK markets. They, however, show that trading volume does not cause stock market returns in the stock exchanges of the United States, Japan, and the United Kingdom. In the study by Lee and Chung (2018) on volume trading, results indicated that market wide trading volume in United States of America is related to past market returns. Scholars found that market wide-trading activity in New York Securities Exchanges shares is positively correlated to past shocks in market return.

Sterenczak (2020) advocated for automation and they observed that execution process of trades becomes faster and less costly under computerized trading systems. Hence, automated systems therefore, should attract more investors, improve trading volume and liquidity, and improve the price discovery process. In the study by Li *et al.*, (2018) provide evidence from stock markets that indicates markets with advanced trading technology have, especially greater efficiency; hence, critics of automation argue that electronic trading could lead to less efficient prices precisely because judgmental aspects of trade execution are eliminated with automation, which could be particularly important in times of rapid market price movements. According to this view, liquidity and efficiency of a stock market depend on the rules governing the handling and execution of trades. In other words, if these rules do not change, efficiency is not expected to change.

## **2.5 Empirical Review**

Zheng and Su (2017) examined commonality on two stock exchange markets in China comprising of 82 million transactions, four hypotheses related to commonality were examined; first was market wide stock liquidity variable influences liquidity of individual stocks, second size of the firm is not a determinant of commonality on

Chinese stock exchanges, third sector specific liquidity has a greater influence on liquidity of individual stocks of firm in comparison to market wide liquidity. Results indicated commonality being stronger during bear and bull period since investors get concerned of macroeconomic news in comparison to firms' performance.

Pukthuanthong-le and Visaltanachoti (2019) examined commonality of stocks listed on stock exchange of Thailand using eight-year tick data and results reflected empirical evidence in favor of market-wide commonality across various liquidity proxies, as well it was found that industry commonality was strong than market-wide commonality.

Zheng and Zhang (2018) examined the degree at which stock liquidity was driven by common underlying factors in China that adopted an order driven trading system. Scholars' study found the influences of size, industry, up and down markets effects in determining common trend in liquidity.

Kumar and Misra (2015) stated that stock liquidity is the life blood of stock markets and it has prominent implications for traders, regulators, stock exchanges and the listed firms. Commonality and intraday behavior of liquidity in various markets is under the umbrella of market structures. The ability to trade large volume of stock with least price impact is termed as liquidity of the firm. As per Kumar and Misra (2015) liquidity is hard to define, but easy to feel it. Under liquidity there exist multi-dimension characteristics namely Tightness, Immediacy, Depth, Breadth and Resiliency that cannot be captured in a single measure. Hence globally acceptable measure of stock liquidity that can represent most of the characteristics continues to be an area of research. According to Amihud, Hamad, Kang and Zhang (2015) higher level of illiquidity pose the risk of higher losses for the investors along with higher gains in comparison to the liquid markets because of price volatility as concerns the information from firms and the outside. In illiquid markets investors are uncertain about executing a large transaction as it may cause significant price change resulting into losses. Therefore, the stock market development is impeded as higher illiquidity lower down the capital inflows. As well the firms can reduce cost of

capital by increasing the liquidity of their respective stocks. Fund managers should be able to design strategies if they understand the liquidity dynamics.

Irungu (2019) explored the impact of stock liquidity on financial performance of quoted firms in NSE and discovered that there is a positive and huge connection among liquidity and non-financial listed firm financial performance. Liquidity assumes a critical role in the fruitful working of a business firm. Stock liquidity not just assists with guaranteeing that an individual or business consistently has a dependable stockpile of cash close within reach, however it is an amazing asset with regards to deciding the financial strength of future investment too.

In literature of working capital management and liquidity, various past analyses recorded an inverse correlation between working capital management and company profitability (Botoc & Anton, 2017). In an evaluation by Botoc and Anton (2017) on huge Belgian non-financial firms involving the era 1992–1996. The scholar noticed an inverse linear relationship between cash conversion period and operational performance determined by aggregate working revenue in which a negative relationship between working capital management and profitability is partly established for listed firms.

Althaqafi (2020) had a study on the effects of working capital management on firm's profitability, results reflected a significant negative relationship existing between profitability and number of Accounts receivable components and Cash Conversion period. However, insignificant positive correlation was indicated by inventory conversion period and Accounts Payable conversion period. Other significant moderating variables observed were financial leverage, sales growth, current ratio and firm size which had an effect on the business's profitability.

Arogo (2017) had a study on how stock market liquidity impacts economic growth in Kenya. This study focused on the macroeconomic variables and how they are affected by the stock market liquidity of individual firms. From survey of relevant literature, it has been found that the study focused on economic growth in Kenya but not the performance of the securities exchange. The current study therefore intended

to fill these pertinent gaps in literature by assessing the effect of stock market liquidity on the performance of stocks in the Nairobi Securities Exchange.

Panigrahi, Jena, Tandon, Meher and Mishra (2021) had a study on the effect of inventory management and performance of manufacturing firms. The study reflected consistent management and control of inventory is critical to ensuring the soundness of the firm. The findings showed that concludes that inventory management practices have significant impact on firm performance. The study however was conducted in India and only focused on inventory management and did not review other working capital management practices that were adopted in this survey.

In the study by Afrifa and Padachi, (2016) on working capital policies, a firm can manage its short-term finances in at least two ways; managing the size of the firm's investment in current assets and managing financing of its current assets. These researchers explained that if two policies are managed together then a flexible working capital management policy would have a large investment in current assets and investment would be financed with less short-term debt. With a flexible policy, firm maintains a higher overall level of liquidity. Afrifa et al., (2016) stipulates liquidity is how quickly an asset can be converted to cash without loss of value. According to Acharya and Pederson (2019) liquidity is very important for a company, hence, if the company is more liquid then there is a smaller chance that it will suffer from financial distress.

Ajayi, Olutokunbo, Obafemi and Araoye (2021) conducted research on the effective inventory management practice on firm performance: Evidence from Nigerian consumable goods firms. The findings implied that a positive and non- significant relationship between return on investment and effective inventory management practice. The study was however did not focus on the listed firms in Kenya.

Marriott, Tan and Marriot (2015) did a study on measuring stock market performance of the Nairobi Securities exchange. The research showed the key variables that are observed at when evaluating the performance of a securities exchange like share turnover and investor returns and investor confidence but his

study failed to show the role played by market liquidity and price volatility in the performance of securities exchanges. Considerably, Market liquidity and price volatility go hand in hand determining investor behavior and the overall performance of the securities exchange. From the above summarized literature reviews there are only few researchers who have done on the effect market liquidity on the performance of Nairobi Securities Exchange. The current study addressed the gaps by showing how stock market performance is affected by stock liquidity, measured by profitability and stock liquidity as well as the value of the share on the market.

Osman and Ayuma (2018) had a study of the impact of accounts receivable management on the financial performance of Small and Medium Firms in Mogadishu-Somalia. The target populations had one hundred and two SMEs from three sectors conducted a study to determine. The study applied both probability and non-probability sampling procedures and obtained eighty-one samples based on the Slovene formula. Inferential statistics such as Pearson correlation coefficient and coefficient correlation were used to analyze quantitative data, and descriptive statistics are employed for variables of the study. It was concluded that cash flow management and other independent variables (debt management, credit policy management, and inventory management) have a significant positive impact on financial performance at a 5% significance level.

Chen, Hu, Yu and Zhao (2019) embraced different measures of stock liquidity have been used and noted in the literature with a conclusion that there is no best measure that can be used to measure the market liquidity because every type of measure captures different aspects of market liquidity in different market systems and conditions; hence a researcher should choose a liquidity measure depending on the objective of his study.

Kiptoo (2017) determined the link between working capital management practices and the profitability of tea processing firms in Kenya; hence the study applied a descriptive research design that sampled fifty-four tea processing firms, descriptive and inferential statistics were executed. Findings indicated that working capital

management components significantly impact profitability among tea processing firms. Receivables and inventory management practices have a negative and significant impact on profitability among tea processing firms, with cash management having a positive and significant effect. The study's focus on tea processing firms makes its findings inadmissible in the current study, which focuses on the profitability of listed agricultural organizations in Kenya.

Oruko (2020) assessed the influence of financial risk management on returns among listed agricultural firms in Kenya. The research employed a longitudinal research design and used secondary research data reported between 2009 and 2018. The study results indicated significant negative relationship between financial performance and financial leverage risk. Recommendations were for the agricultural firms to source less costly credit sources and negotiate longer credit terms in terms of interest rate and repayment terms. The study did not assess firm characteristics.

Chauhan and Banerjee (2017) in their study of working capital management on profitability also used the firm's size as a moderating variable where they understood the size of the firm as the natural logarithm of the firm's total assets, as the value of the large assets may disturb the analysis. The researcher defined size as the natural logarithm of total assets as reported in the most recent published financial statements; the results implicated firm size had moderation effect on the relationship between working capital components and profitability

Muchaendepi, Mbohwa, Hamandishe and Kanyepe (2019) had a study to test whether a firm with sound and effective management of the inventory have high chances of reducing inventory to a suspected optimum level which pose no negative effect on the performance and sales unlike the poor and ineffective inventory management which have adverse and negative impact on sales and hamper the long-term profitability of the firm.

Mburugu (2020) had a study with a focus on examination of the effect of inventory management on financial performance of commercial and service firms listed at the Nairobi Securities Exchange. The analysis showed that inventory management,

liquidity and management efficiency have a positive and statistically substantial influence on performance of the NSE listed commercial and service firms

Muhindi and Ngaba (2018) had a study on how firm size influences profit generation among Kenyan commercial banks. The study relied on secondary data of the forty-two commercial banks operating in Kenya between 2012 and 2016. The study utilized regression analysis, and the findings indicated that the firm's size accounts for 58.5% of the variations in commercial banks' returns in Kenya. The study did not consider the level of firm assets as a proxy of the firm size, which this study employed. Furthermore, the current examination was limited to listed firms in the agricultural segment of the NSE.

## **2.6 Critique of the Existing Literature**

Several examinations have been undertaken to ascertain relationship between working capital management and liquidity in different parts of the world. However, they contain a number of weaknesses as discussed below:

Considering working capital management being very important to all firm size operating in any given economy, it is of particular vitality to the firms operating in emerging and developing markets (Ngari & Kamau, 2021). However, in quite a number of studies, researches taken up on working capital management have given a higher concentration on influence of working capital management on firms profitability and liquidity at the firm level leaning on tradition accounting principles as supported by various scholars, namely; (Ahmed & Mwangi, 2021; Afrifa & Tingbani, 2018; Mathuva, 2015; Narwal & Jindal, 2018; Estifanos, 2017) and others, but these scholars never focused on what happens to investors that provide funds channeling through the securities exchange market a part from managing the working capital. Management's consideration of Stock Liquidity at securities exchange market and Working Capital Management is vital in corporate finance and direct concern of shareholders is wealth maximization and company value which comes as a result favorable trading transactions of stock liquid securities at the securities exchange market (Estifanos, 2017).



In the study by Le (2019) on time to review credit policy, there were four reasons why organizations have credit policies. First and foremost, undertaking of managing receivables is a serious responsibility, since it involves limiting bad debts and improving cash flow. Outstanding receivables become a major asset of a firm hence requires a reasoned and structured approach. Second, a credit policy reflects a degree of consistency among departments. Third, by writing down what is expected, aims of a company will realize having a common set of goals. Fourth, it provides for a consistent approach among customers. Decision making becomes a logical function based on pre-determined parameters. However, the study did not zero on liquidity at the securities market as concerns the listed companies.

Althaqafi (2020) had a study on the effects of working capital management on firm's profitability, results reflected a significant negative relationship existing between profitability and number of Accounts receivable components and Cash Conversion period. However, insignificant positive correlation was indicated by inventory conversion period and Accounts Payable conversion period. Other significant moderating variables observed were financial leverage, sales growth, current ratio and firm size which had an effect on the business's profitability.

Kiptoo (2017) determined the link between working capital management practices and the profitability of tea processing firms in Kenya; hence the study applied a descriptive research design that sampled fifty-four tea processing firms, descriptive and inferential statistics were executed. Findings indicated that working capital management components significantly impact profitability among tea processing firms. Receivables and inventory management practices have a negative and significant impact on profitability among tea processing firms, with cash management having a positive and significant effect. The study's focus on tea processing firms makes its findings inadmissible in the current study, which focuses on the profitability of listed agricultural organizations in Kenya. The study had little to do with liquidity which is equally important for trading purposes.

Chauhan and Banerjee (2017) in their study of working capital management on profitability also used the firm's size as a moderating variable where they understood the size of the firm as the natural logarithm of the firm's total assets, as the value of the large assets may disturb the analysis. The researcher defined size as the natural logarithm of total assets as reported in the most recent published financial statements; the results implicated firm size had moderation effect on the relationship between working capital components and profitability. This study had little to do with liquidity at the securities exchange market considering the firms are listed.

## **2.7 Research Gap**

While there have been numerous studies on working capital management and liquidity, little has been written about relationship between working capital management and liquidity of equity securities of companies at securities exchange. Findings of a few available studies are inconclusive in nature and such scholars recommended for further study for example among them; Le (2019) who underscored on the current securities exchange in developing economies and more so most of the firms are listed, internal and external information is relevant for operations of such firms; hence, one reason that might have led to such inconclusiveness is that most of studies consider relationship of variables that have been generated from published audited financial statements and such information is much vital to internal stakeholders of individual companies.

Since companies are listed, information from securities exchange about stock liquidity of securities provides more information to interested external stakeholders so that they can make investment decisions (Lee et al., 2018).

Zimon and Tarighi, (2021) found that Working Capital Management is very vital for the profitability of the firms though little emphasis on traditional accounting liquidity and the stock liquidity of securities at securities exchange market during the COVID-19 period. However, the conclusion was working capital components had a connection with the profitability of the firm.

Estifanos (2017) had a study to examine the effects of working capital management on profitability of sugar manufacturing companies in Ethiopia. The study used secondary data collected from 3 sugar manufacturing companies covering the period from 2002–2013. The study used explanatory research design. The dependent variables used in the study were Return on asset (ROA) and while the independent variables were Cash conversion period (CCP), Account receivable period (ARP), Account payable period (APP), Inventory collection period (ICP), and the control variables are Current ratio (CR), Quick ratio (QR), Debit ratio (DR), Firm size (FS) and Firm growth rate (FGR). The data was analyzed using SPSS (version 20.0) and STATA (version 12), estimation equation by both correlation analysis and pooled panel data regression models of cross-sectional and time series data were used for analysis. Using panel data methodology, the study found that account payable period and firm size have a significantly negative relationship with profitability while Accounts receivables and firm size had a significant positive relationship with profitability though the study had little to do liquidity of listed firms at securities market.

Studies such as Abdulazeez et al. (2019) found that creditor's payment period is negatively related to performance. This observation implies the presence of an ideal duration for collecting trade receivables that maximizes profitability. An overly aggressive approach to extending payment periods can strain relationships with suppliers. Suppliers may become reluctant to provide goods or services on favorable terms, leading to potential disruptions in the supply chain or loss of key partnerships. Also, extending payment periods might cause a company to miss out on early payment discounts offered by suppliers. An excessively high payable turnover ratio might distort certain financial ratios affecting its ability to meet short-term obligations.

Bashir et al. (2018) on the study of Working Capital Management attributes to Profitability, they employed ex-facto research involving trend analysis and used purposive sampling techniques and multivariate analyses to test the hypotheses and concluded that each working capital component affected the profitability and hence

liquidity at varying rates. The study leaned more on working capital and profitability with little to do with traditional liquidity and liquidity at securities exchange market. The study established that there is close connection of working capital management and profitability, however, traditional accounting liquidity, firm size responded positively well.

Panigrahi, Jena, Tandon, Meher and Mishra (2021) had a study on the effect of inventory management and performance of manufacturing firms. The study reflected consistent management and control of inventory is critical to ensuring the soundness of the firm. The findings showed that concludes that inventory management practices have significant impact on firm performance. The study however was conducted in India and only focused on inventory management and did not review other working capital management practices that were adopted in this survey.

Most of the manufacturing firms that were researched on, among the scholars (Chen et al., 2019; Li et al., 2018) used various measurements for performance. The performance was measured by profit accounting indicators like Return on Equity, Return on Investment and Net Operating Profit and did not stress out the stock liquidity indicators at the Stock Market that equally show the performance of the firms through value of shares at the market by use Depth, Resiliency, Breadth and Immediacy concept stock liquidity dimensions.

Althaqafi (2020) had a study on the effects of working capital management on firm's profitability, results reflected a significant negative relationship existing between profitability and number of Accounts receivable components and Cash Conversion period. However, insignificant positive correlation was indicated by inventory conversion period and Accounts Payable conversion period. Other significant moderating variables observed were financial leverage, sales growth, current ratio and firm size which had an effect on the business's profitability. The study however did not lean on the liquidity at the securities market which is equally necessary for the trading capabilities of the firm.

In the study by Le (2019) on time to review credit policy, there were four reasons why organizations have credit policies. First and foremost, undertaking of managing receivables is a serious responsibility, since it involves limiting bad debts and improving cash flow. Outstanding receivables become a major asset of a firm hence requires a reasoned and structured approach. Second, a credit policy reflects a degree of consistency among departments. Third, by writing down what is expected, aims of a company will realize having a common set of goals. Fourth, it provides for a consistent approach among customers. Decision making becomes a logical function based on pre-determined parameters.

Apart from the general view of understanding of working capital management on profitability in Kenya, there are other factors that affect the results of output of the Companies for example change in technology and market conditions that gives difference of the study that is recent than previous ones. Corporate Ethical Governance Codes are stricter currently for the companies listed at Nairobi Securities Exchange and hence information availed by companies should be reliable and affectionate to the companies (Ngari & Kamau, 2021).

**Table 2.1: Summary of Research Gaps**

	<b>Study</b>	<b>Researchers</b>	<b>Working Capital</b>	<b>Working Capital</b>	<b>Institutional investors</b>	<b>Literature Review</b>
Research gap	The study zeroed on the effect of inventory on profitability of the firms, however other components of working capital management were not dealt with. No stock liquidity information was mentioned in the study	The researchers solely focused on profitability and accounts receivables and cash conversion period; however, the study did not capture any information on stock liquidity of firms at the securities market.	Dealt with working capital components and traditional accounting liquidity with little expression on liquidity at the NSE	The study leaned more on working capital and profitability with little to do with traditional liquidity and securities exchange market	Leaned on institutional investors being influential for liquidity at the securities market and not working capital components	The study applied literature review for results; hence no application of descriptive and inferential statistics
Author/year	Panigrahi, Jene, Tandon Meher & Mishra (2021)	Althagafi (2020)	Zimon and Tarighi(2021)	Bashir et.al., (2018)	Chen et al., (2019)	Ngari & Kamau (2021)
Study focus	Effect of inventory on profitability of companies listed at Indian stock exchange	Effect of working capital management on profitability	Working capital management policies with liquidity during COVID-19	Working capital management attributes to firm's profitability	Catastrophic risk and institutional investors, evidence from institution trading ground	Working capital management cycle and profitability of household supermarkets
Findings	Inventory had correlation with profitability.	There was negative relationship existing between profitability and the accounts receivables and cash conversion period.	Findings were there was positive connection of working capital management policies on profitability and liquidity	The study established that there is close connection of working capital management and profitability, however, liquidity, firm size responded well.	Institutional investors influenced liquidity at the securities exchange market.	The result indicated connection of cash conversion cycle on profitability and those firms who applied working capital components ended up profitably

## **2.8 Summary**

Review of literature has shown that for past decades subject of working capital management and liquidity has attracted significant interest among finance scholars. This attraction has led to many working capital management and liquidity theories that seek to explain how investment decisions affect companies. As pointed out earlier, this reflects level of importance placed at financing factor at firm level. It can also be deduced that majority of empirical studies have generally investigated influence of working capital management, based on performance variables such as profitability, firm value, liquidity and stock returns but such measures are not leaning the securities exchange market where liquidity of securities is vital for firms to raise funds externally. However, these studies have provided conflicting results; with implication that effect of working capital management on liquidity as a performance indicator is unclear. By using liquidity computed basing on financial statements to study effect of working capital management on the firm is narrow in approach as information will suit internal individual companies' stakeholders. This study will address this gap by adopting liquidity of securities of companies at securities exchange as a dependent variable.

Liquidity at securities exchange composes of conditions that are environmentally external and enables both internal and external stakeholders to make investment decisions considering the company and the surrounding environment. Literature also shows that there exist numerous approaches to measurement of liquidity. Depending on nature of variables and computation methods used to estimate models, traditionally liquidity indicators arise from information that exists from financial statements of firms. However, liquidity at securities market is multi-dimensional; considering immediacy, depth, width, tightness and resilience.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter provides a description of methods and approaches adopted in carrying out this study. It covers research design, target population, sampling frame, census, data collection and analysis techniques as well as methods of testing suitability of data used by the study. The chapter also specifies the empirical models estimated by the study and provides the techniques of estimating and analyzing the model.

#### **3.2 Research Design**

Research design is a plan, structured examination conceived so as to obtain answers to research questions and to control variance; hence, research design stipulates arrangement of conditions for collection and analysis of data in a manner that seek to put together relevance to research objectives with an economy in procedure (Sekeran & Bougie,2016). It is an overall plan on how researchers will answer their research question and meet objectives (Bryman, 2016). In the study by Rahi (2017) on business research methodology, research design is a comprehensive plan of sequence of operations that a researcher intends to carry out to achieve the objectives of a research study.

In the study by Thomas, Oenning and Goulant (2018) on survey of research methods, choosing an appropriate research design depends on nature of research questions and hypotheses, variables, sample of participants, research settings, data collection methods and data analysis methods. Thus, a research design is a structure, or blueprint, of research that guides a process of research from formulation of research questions and hypotheses to reporting research findings. In designing any research study, a researcher should be familiar with the basic steps of the research process that guide all types of research designs. Also, a researcher should be familiar with a wide



range of research designs in order to choose most appropriate design to answer research questions and hypotheses of interest.

This study adopted a descriptive survey research design since data involved was quantitative in nature and more so descriptive study focuses on explaining situations. This study tested different variables relationship with descriptive statistics in order to establish variables relationships. According to Bryman (2016), quantitative method mainly focuses on collection of numerical data and testing theories and hence an approach was deductive. In the study by Patten and Newhart (2017) on research methods for graduate business and social science students, descriptive research is often used as a pre-cursor to more quantitative research designs with general overview giving some variable pointers as to what variables are worth testing. Survey was useful because it enabled to get a lot of data that was accurate and cost effective in a relatively short space of time. In the study by Ngumi (2013) on effect of Bank innovation on financial performance of commercial banks in Kenya, in a descriptive study researchers observe, count, delineate and classify. The study's research strategy applied was longitudinal study as it involved studies' changes and developments overtime since time frame was 10 years.

### **3.3 Research Philosophy**

According to Hadi and Chatterjee (2015) choosing appropriate research philosophy is a vital part when conducting research. The term of research philosophy relates to the development of knowledge and the nature of that knowledge. As regards research philosophy it is vital to state assumptions on philosophical views under confirmation of epistemology and ontology understanding. In the study by Bryman (2016) on epistemology, scholars referred the terminology as an assumption in regards to what constitutes acceptable knowledge in research. Epistemology is divided into two contradicting views upon what is regarded as acceptable knowledge. Main features that differentiate these two approaches are if social sciences can be studied similar to the principles of studying natural science. Hence relates to a view a researcher has upon emotions and feelings and whether this can be seen as a social phenomenon

with an external reality or not. According to Rahi (2017), emotions can be regarded as acceptable knowledge or only observable factors. The two main contradicting aspects within epistemological assumption are positivism and interpretivism and apart from these two main aspects, there are also realism and axiology perspectives within epistemology.

Realism is not widespread within epistemology; however, this approach is similar to positivism in a sense that, it assumes a scientific approach towards development of knowledge (Rahi, 2017). Furthermore, scholars emphasize that realism doctrine shares some traits with interpretivist approach in a sense that it has the belief that social entities can exist external to the social actors. Main feature of realism is that it wants to portray the world in a genuine way as possible hence it also includes factors that are disregarded within the positivistic approach. Axiology is another branch of this philosophy that emphasizes important personal values which can play within the research. This suggests that a researcher should personally decide and formulate his or her own personal values as these are affecting whole research process from choice of subject, data collection to research strategy and interpretations of results. Hence by giving a reader an understanding of a researcher's personal values being reflected into the research.

Bryman (2016) embraced epistemology having two features. First main feature of epistemology was positivistic approach towards knowledge which possess view upon reality as something external and independent to social actors. Knowledge is acceptable when it can be studied like that of natural sciences and when it can be confirmed by senses. This is done in a value-free way. The researcher takes an objective position with the aim to minimize influential factors that can affect generalizable results. Rahi (2017) emphasizes positivistic stance towards research as advantageous because it excludes researchers' personal opinions. Scholar accepts observable objects as knowledge and has a focus upon causality. For generation of research strategy for data collection, it is likely to use existing theory and develop hypotheses which in turn will be tested.

Second main feature, conforms to interpretivist approach. Hence has a more subjective view towards understanding relations between social entities and social actors. Such a view contrary to positivistic approach does not believe that you can study social reality according to the same methods as that of the natural sciences. Bryman (2016), furthermore embraced that knowledge in positivism is disregarded like for example feelings and attitudes in order to find meaning behind actions. Focus within this approach is instead upon finding subjective meaning behind social action. It becomes researcher's objective to understand a basis behind human actions and understanding underlying common sense thinking of people and understand as well interpret their actions and their social world from their point of view.

According to Bryman (2016) scholars emphasized that Ontology raises concerns about reality, it enables a researcher to ask questions about assumptions it will have towards the way the world operates and commitments held to particular views. It describes the role of social actors in the formation of social entities and deals with existence of relationships between these different social actors which is between people, society and world in general. Within ontology there exist two contradicting main aspects; First aspect is objectivism and second is subjectivism or constructionism as it is often referred to. Bryman and Bell (2011) expressed on two aspects providing two different views upon perspectives of existence and relationship between social entities and social actors. Objectivistic approach is centered on belief that social entities exist in a reality external to social actors. This implies that objectivistic stance views social reality where social actors are independent and cannot affect social reality. Opposite ontological view is subjectivism or term constructionism as it sometimes is referred to. Rahi (2017) indicated constructionism as derived from interpretivist philosophy since it is more concerned with finding subjective meaning motivating actions of social actors in order for it to be understood. It views reality as being socially constructed and then in contrary to objectivistic standpoint views social actors as dependent on social reality.

This study employed an ontological research philosophy paradigm with positivist epistemological assumption since positivism advocates for application of methods of

natural science to study social reality and beyond without adding value to its outcome. In the study by Mathuva (2015) on determinants of disclosure level by deposit taking saving and credit cooperative societies in Kenya, ontology is viewed as science or study of being. It deals with studying nature of reality, which can be measured. There are two important aspects of ontology: objectivism (or positivism) and subjectivism. Positivism advocates for application of methods of natural science to study social reality and beyond (Bryman, 2016). Sekeran and Bougie (2016) viewed positivism as a research paradigm that is likened to an objective analyst who interprets data without adding value to its outcome. According to Patten and Newhart (2017) emphasis within positivism lied upon quantifiable observations which can be done by statistical analysis. Hence this study fits well into this philosophical stance.

In the study by Bryman (2016) on business research methods, objectivism asserted social phenomena and its meaning has an existence which is independent of social actors. In this study, positivism was adopted to guide the study. According to positivist approach, a deterministic view of nature was adopted and a nomothetic methodology applied. A nomothetic methodology enables a researcher to apply statistical techniques to test hypotheses and analyze research data collected using quantitative research techniques, such as surveys. A positivist - inductive reasoning will be applied to make conclusions from analysis performed.

### **3.4 Study Population**

Population is a collection of elements on which a scholar can make some inference; hence, population is referred as all items in any field of inquiry as well-known as a universe (Sekeran & Bougie, 2016). Population refers to an entire group of individuals, events or objects having common characteristics that conform to a given specification (Mugenda & Mugenda, 2003). For purpose of the study, Population refers to all companies listed at Nairobi Securities Exchange at June 30<sup>th</sup> 2023. In total, there were 65 companies listed at Nairobi Securities Exchange as at that date, though only 52 companies had all what had been required for analysis under the study as in the Appendix iii.

### **3.5 Sampling Frame and Technique**

Sampling frame is a list of elements from which a sample is actually drawn; hence sampling frame is a list containing items from which a sample is drawn (Sekeran & Bougie, 2016). In the study by Mugenda and Mugenda (2003), sampling frame is a list that contains names of all elements in a universe. In the study by Bryman (2016) on survey research methods, sampling frame is a list of target population from which a sample is selected and that for descriptive survey designs, a sampling frame usually consists of a finite population; hence this study used census technique method, the method involved an exhaustive enumeration of units constituting target population. Since a population comprised of 65 companies listed at Nairobi Securities Exchange, census of all companies was conducted. This study took a whole population of 61 companies at Nairobi Securities Exchange on 30<sup>th</sup> June, 2023. See appendix II. According to Bryman (2016), a census is preferred where population is small and manageable. Further, census method enhances validity of collected data by eliminating errors associated with sampling secondary data.

### **3.6 Data Collection Instruments**

This study used secondary data extracted from audited financial statements and annual reports of individual companies for 10-year period inclusive 2013- 2023; hence it enabled to find out relationship between independent variables and dependent variable. Collection of data was accomplished by means of secondary data collection instrument specified in Appendix III. The instrument aided in collection of accounting data necessary to compute accounts receivable conversion period, accounts payable conversion period, inventory conversion period, cash conversion period and stock liquidity of securities of companies at Nairobi securities exchange.

In this research, establishment of measurement validity and reliability of instruments was done by firstly establishing of face validity from peers, supervisors and experts in finance field. Furthermore, regarding measurement validity this study used construct validity in a way that study hypotheses and tests were based upon theory relevance for concept measure. Among scholars, Bratland and Hornbrinck (2013) on

empirical study of relationship between working capital policies and stock performance in Sweden, face validity and construct validity were applied. Muigai (2016) on examination of effect of capital structure on financial distress of non-financial companies listed at Nairobi Securities Exchange applied pre-designed instrument by help of financial experts for validity purpose and as well Hoyle and Ingram (1991) shared same sentiments.

### **3.7 Data Collection Procedure**

Since this study used panel data technique for ten-year period (2013-2023) to determine influence of accounts receivables conversion period, accounts payables conversion period, inventory conversion period, cash conversion period and firm size on relationship between working capital management and liquidity of equity securities at Nairobi Securities Exchange, data collection was availed from downloading of published financial statements of listed companies. Using record survey sheet which was data collection instrument, information on specific components was keyed in for each firm for every year of concern, information was transferred to excel program for computation of required data that was used for analysis. The study employed E-views software for purpose of interpreting regression coefficients. More so, for ensuring that sufficient degrees of freedom in models to be estimated were available, year by year data covering ten years was collected.

In the study by Sekeran and Bougie (2016) on research methods for businesses, after obtaining data from secondary sources there was need to edit, code and blank responses dealt with. In order to verify authenticity of collected data, same was cross-checked by using hand book summaries obtained at Nairobi Securities Exchange website and records for period of study. Where differences were noted, data obtained from published financial statements was given preference considering that same had been published for public consumption.

### **3.6.1 Justification of Use of Panel Data**

In the study by Peseran and Shin (2003) on testing for unit roots in heterogeneous panels, Panel data is pooled data due to availability of time series and cross section data characteristics in it. In the study by Levin and Lin (1993) on panel data, impression was panel data could be called longitudinal or cross-sectional time series data that could be derived from a (usually small) observations overtime on a (usually large) number of cross-sectional units like individuals, firms or governments. In study disciplines like Statistics and Econometrics, panel data refers to multi-dimension data that generally involves measurement over some period of time. Hence panel data consists of a researcher's observations of numerous phenomena that could have been collected over several time periods for the same group of units or entities.

According to Maddala and Kim (2002), panel data comprise of several advantages hence factoring in relationship of individual firms' data overtime and for such reason chances of heterogeneity in units exist. In the study by Kristian (2005) on cross sectional dependency and size distortion in small sample homogeneous panel data unit root tests, advantage arises on use of panel data, in that regression controls heterogeneity of cross-section units by enabling individual specific variables. More so focusing on time series of cross section exposures panel data technique avails better comparison results, informative, more variable, less collinearity, and as well degree of freedom increases for efficiency purpose. Lastly, by availing information from several units, combined data takes into account all cross-section units as heterogeneous for unbiased estimations of time invariant and emphasizes on conditional invariant variables observed or not.

In the study by Maddala-wu (1999), panel data allows one to control for variables, especially where one cannot observe or measure like cultural factors or differences in business practices across companies or variables that change over time but not across entities hence it accounts for individual heterogeneity. Kristian (2005) emphasized that panel data has advantages; including variables at different levels of analysis

suitable for mult-level or hierarchical modeling. Drawbacks of panel data include collection of data issues, non-response in case of micro-panels or cross-country dependency in case of macro- panels (correlation between countries).

### **3.7 Measurement of Study Variables**

The study adopted stock liquidity of securities of companies at Nairobi Securities Exchange as dependent variable, accounts payables conversion period, accounts receivables conversion period, cash conversion period, inventory conversion period and firm size constituted independent variables. This section provided details of how each of the study variables was measured and operationalized.

#### **3.7.1 Accounts Payables Conversion Period**

In the study by Bashir et al., (2018) accounts payable is amount of money promised by a recipient of goods to a supplier where a credit transaction is involved. Among scholars (Kiptoo, 2017; Altawalbeh, 2020), it is one of the major sources of unsecured short-term financing; hence, accounts payables conversion period is average time taken to pay suppliers (Kipng'etich, 2019). Accounts payable conversion period was computed as follows:

$$\text{Annual average payables} * 365 \text{ days} / (\text{costs of purchases})$$

#### **3.7.2 Accounts Receivables Conversion Period**

According to Ahmed and Mwangi (2021) when a firm sells its products or services and does not receive cash for it, a firm is said to have granted trade credit to its customers. Trade credit creates accounts receivables which a firm is expected to collect in future as a supplier offer terms that allow a buyer to delay payments. In the study by Bashir et al., (2018) accounts receivable conversion period is time taken for accounts receivables to be converted into cash. In the study by Afrifa and Padachi (2016) accounts receivables are executed by generating an invoice which is delivered to a customer, who in turn must pay within the agreed terms.



Computation of accounts receivables conversion period is as follows:

$$\text{Average receivables} * 365 / (\text{Annual sales})$$

### 3.7.3 Inventory Conversion Period

Inventory conversion period is the number of days taken to convert inventory into cash (Kiptoo, 2017). Inventory is classified into raw materials, work in progress, finished goods and spare parts. Raw materials are stocks that have been purchased and will be used in the process of production while work in progress represents partially finished goods (Ahmed & Mwangi, 2021). In the study by Sensini (2020), finished goods on the other hand, represent those items of stock that are ready to be monetized.

Under this study, computation of inventory conversion period would be computed as follows:

Inventory Conversion Period = RMCP + WIPCP - FGCP, Where RMCP is raw material conversion period, WIPCP is average time taken to convert material into work -in -process; RMCP depends on raw material consumption per day and raw material inventory. The raw material consumption per day is given by total raw material consumption divided by 365 days.

Raw Material Conversion Period (RMCP)

$$= \text{Raw material inventory} / (\text{Raw material consumption}) / 365 \text{ days, therefore RMCP} = (\text{RMI} * 365 \text{ days}) / \text{RMC}$$

Work in Process Conversion Period (WIPCP), it is mean time taken to complete the semi-finished work or work in process. Given by the following formula:

$$\text{WIPCP} = \text{Work in process inventory} / (\text{cost of production}) / 365 \text{ days}$$

$$= \text{WIPI} * 365 \text{ days} / \text{COP}$$

Finished Goods Conversion Period (FGCP), is average time taken to sell the finished goods, it can be calculated as, finished goods conversion period=

Average Finished goods inventory\*365 / (costs of goods sold)

FGCP= AFGI\*365days/CGS.

### **3.7.4 Cash Conversion Period**

Cash management is a process of planning and controlling cash flows into and out of business, cash flows within business, and cash balances held by a business at a point in time (Bashir et al., 2018). Cash conversion cycle means accounts receivables conversion period plus inventory conversion period less accounts payables deferred Period (Althaqafi, 2020). Cash management as a process of ensuring that enough cash is available to meet running expenses of a business aiming at reducing cost of holding cash and therefore a need for careful planning and monitoring of cash flows over time so as to determine optimal cash to hold (Zimon & Tarighi, 2021).

Computation of Cash Conversion Cycle is as follows:

Cash Conversion Cycle = Inventory conversion period + Accounts receivables period -Accounts Payables Deferred Period.

### **3.7.5 Controlling Variable (Firm Size)**

According to Tita (2016), firm size stipulates how small or large a firm is measured by its market value, sales, assets, profit or market capitalization that give information about its risk and opportunity to raise external financing. Total market values of individual companies were used to determine the size of the firm as a measure in monetary values at market consideration since the firms are listed on the securities market. More so natural logarithm was applied on the total assets before initiated in the regressions of the study because of large numbers. This was used as a controlling variable in the study since various listed firms had different capacities of wealth. Chauhan and Banerjee, (2017) in their study of working capital management on

profitability also used the firm's size as a controlling variable where they understood the size of the firm as the natural logarithm of the firm's total assets, as the value of the large assets may disturb the analysis.

### **3.7.6 Stock Liquidity**

The liquidity of a security is the relationship between the volume of trading and changes in market price, (Kang, Khaksari & Nam, 2018). Considerably high security liquidity is a desirable characteristic that any investor should consider when making investment decisions. The management of a firm should thus consider the means available at their disposal to enhance the securities liquidity. Securities liquidity facilitates the entry and exits of block holders into a market making it easier for investors who want to buy or opt out of an investment be able to do so; value creation (Amihudi *et al.*, 2015). The past empirical studies have not given the securities liquidity enough emphasis in relation to working capital management. However, the few kinds of research on securities liquidity are more aligned to the whole company investments. There are some that have found a positive correlation between company investments on securities liquidity with an improvement on the liquidity as more company investments are made by the firm, (Anyanzwa, 2019).

The study used the bid-ask spread as a measure of liquidity as based on the support of (Sarin, Shastri, & Shastri, 1996; Kothare, 1997) with an assumption that the market was information-ally efficient (Roll, 1984). The assumption of information efficiency means that the price changes in stock will be driven by unanticipated information for example zero trading costs (Roll, 1984).

**Table 3.1: Summary of Computation and Measurement of Variables**

<b>Abbreviation</b>	<b>Variable</b>	<b>Measurement</b>
L (Y)	Liquidity	Spread (bid price-ask price)
ARP (X <sub>1</sub> )	Accounts Payables Conversion Period	(Creditors/Purchases) *365 days.
APP (X <sub>2</sub> )	Accounts Receivables Conversion Period	(Receivables/Sales) *365 days.
ICP(X <sub>4</sub> )	Inventory Conversion Period	(Finished Goods Inventory/Cost of goods sold) * 365 days
CCP (X <sub>3</sub> )	Cash Conversion Period	(Gross Operating Cycle- Deferral Period) *365 days.
Z ((X <sub>5</sub> ))	Firm Size	Natural log (total market value of assets)
$\varepsilon_t$	Error term of the model	
A ( $\beta_0$ )	Intercept	

### 3.8 Data Analysis and Presentation

Data analysis included descriptive and inferential statistics and analyzed in accordance with objectives of study. Descriptive analysis was first step in analysis. Descriptive statistics was vital in establishing statistical properties of a model that was to enable selection of proper functional form of expected estimable model. Hence, the study was enabled for determination of dispersion of data which included computation of mean, maximum, minimum, standard deviation and standard error values of variables overtime. More so it involved finding correlation matrix to counter find which variables would be highly correlated in-order to avoid effects of multi-collinearity which is common in time series data. Inferential statistics on the other hand is a branch of statistics largely concerned with the analysis and interpretation of data obtained from the sample or population (Bryman, 2016).

### **3.9 Model Specification and Rationale of Variables**

The choice of a model depends on ultimate objective of analysis, hence considering respective exogeneity of explanatory variables (Sekeran & Bougie, 2016). This study embraced a panel data regression using Ordinary Least Squares method, where data was pooled into a panel data set and estimated using panel data regression. Regression analysis is a statistical tool for investigation of relationships between variables (Sekeran *et al.*, 2016). According to Creswell (2003), a researcher pools data on underlying variables of expectation and employs regression to estimate quantitative effect of causal variables upon variable that they influence. In the study by Maniagi (2018) on performance of panel unit root and stationery, multiple regression analysis consisted of pooling several predictor variables in a single regression equation that enabled for assessment of effects of multiple predictor variables on dependent measure and hence avoiding single predictor variable. A univariate analysis was employed and data converted to their natural logs for purpose of dealing with problem of large numbers and elimination of heteroscedasticity. Model specification estimation and rationale of variables involved testing for validity of fixed effects under consideration of Hausman test, testing for normality, multi-collineality, autocorrelation and homoscedasticity, and then followed by correlation and regression.

#### **3.9.1 Unit Root Test**

Examination by Frees (2004) on longitudinal and panel data analysis and application, a unit root is a stochastic trend in a time series sometimes called a random walk with a drift, if a time series has a unit root, then a Unit root test is a test for stationarity in a time series. A time series has stationarity if a shift in time doesn't cause a change in a shape of distribution and basic properties of distribution for example mean, variance and covariance are constant over time. Foundation of panel unit roots tests was established by Levin and Lin (1993), more so a few tests for panel unit roots have been proposed. Among those, the most common tests in practice were Levin-Lin (1993) (LL), Im-Pesaran-Shin (1997) (IPS) and Maddala-Wu (1999) (MW). In

the study by Im-Peseran-Shin (1997) on test comparison of proposed Im-Peseran-Shin test and Levin and Lin test under assumption of no cross-sectional correlation in panels by using Monte-carlo simulations, results indicated that Im-Peseran-Shin was more powerful than Levin and Lin test. However, Maddala-Wu (1996) as well did simulations to compare three tests: Levin and Lin, Im-Peseran-Shin and their own test Maddala-Wu. Scholars generated data with cross-sectional correlation, and variance-covariance matrix of cross-section error terms was randomly generated. Results reflected performance of Levin and Lin test to be the worst. Even though all three tests exhibit size distortion and low power under cross-sectional dependence, Maddala-Wu test generally performed better than Levin Lin and Im-Peseran-Shin tests.

Accordingly, O'Connell (1998) was first author to note that cross-sectional correlation in panel data could have negative effects on Levin and Lin panel unit root test, hence making a test under concern have substantial size distortion and low power. Considering Levin and Lin (1993) Paper, a Monte-Carlo simulation to study impact of cross-section correlation on size and power of Levin-Lin test was done and a proposal was to use General Least Square estimators instead of Ordinary Least Square estimators in Levin-Lin test to increase power. Kristian (2005) studied performance of the Levin-Lin test under cross-sectional correlation. On consideration of data group panel, the scholar-controlled magnitude of correlation, and found results similar to results of O'Connell (1998). More so the scholar also proposed to use the panel corrected standard error (PCSE) estimator instead of the Ordinary Least Square standard error in the Levin and Lin test, arguing that Panel Corrected Standard Error -based test has better size and more power when compared to the Levin and Lin test. Strauss (2003) did a Monte-Carlo simulation of the Im-Peseran-Shin test, and found that the magnitude of the contemporaneous correlation is important in the Im-Peseran-Shin test, and demeaning procedure across the panel that Im *et al* (2003) suggest does not eliminate the problem.

Of the three popular panels unit roots tests Levin and Lin, Im-Peseran-Shin and Maddala-Wu, Levin and Lin test is of limited use, because the null hypothesis and

the alternative hypothesis are so strict that it is not realistic in practice. Strauss (2003) embraced a comparison between the Im-Peseran-Shin or Maddala-Wu test and Levin and Lin test is not valid because the alternative hypotheses of these tests are different. However, Maddala-Wu and Im-Peseran-Shin tests are more directly comparable.

Despite of a fact that Im-Peseran-Shin and Maddala-Wu test can be tested with any unit-root test (for a single time series in each cross-section), it has been only used with the Dickey-Fuller (DF) or Augmented Dickey-Fuller (ADF) estimation equations until now. Being known that although often used ADF test (as well the Phillips-Perrons (PP) test) has substantial size distortion and lack of power in some environments. Maddala and Kim (2002) surveyed unit root tests other than the ADF and PP tests, including a weighted symmetric estimator test. According to Levin and Lin (1993), use of panel data unit root tests became more popular among researchers with access to panel data set. Commonly used unit root tests like Dickey- Fuller (DF), Augmented Dickey- Fuller (ADF) and Phillips-Perron (PP) tests lack power in distinguishing the unit root null from stationary alternatives and using panel data unit root test is one way of increasing power of unit root test. In the study by Caner and Kilan (2001) size distortion of null hypothesis of stationarity, many economic and financial time series exhibit trending behavior in mean and hence important econometric task is determining most appropriate form of trend in a given data and such data should be transformed to stationary form prior to analysis.

In the study by Dickey and Fuller (1981) on likelihood ratio statistics for autoregressive time series with a unit root, existence of unit roots can cause analysis of time series to have spurious regressions and may result into high r-squared values even if the data is uncorrelated. More so errant behaviors may result due to assumptions for analysis not being valid, for example, t-ratios will not follow a t-distribution. However, in the study of Dickey and Pantula (1987) on unit roots, scholars criticized unit root tests on consideration of inherent limitations that may lead to spurious results; there exist several root tests because of the nature of size and power of tests. Size refers to the level of significance, for example the probability of

committing type 1 error, power of tests refers the probability of rejecting null hypothesis when it is false, the power of attest is calculated by subtracting error of type 11 error from type 1 error. Type 11 error is the probability of accepting a false null hypothesis. More so, linking up of size test and Dickey-Fuller, the test is sensitive to the way it is conducted. Dickey-Fuller varieties of test are; pure random walk, a random walk with drift and a random walk with drift and trend, for example true model being true at pure random walk, but estimation is done at a random walk with drift and concluded that at 5 percent level time series is stationary, such a conclusion may be wrong because the level would be higher than a level of 5 percent and hence resulting into size distortion affecting results of moving averages.

On consideration of power tests by Dickey and Pantula (1987), most tests of Dickey-Fuller type have low power, in that they tend to accept the null of the unit root more frequently than is warranted. Hence these tests may a unit root even when none exists. More so there are several reasons; first, the power depends on time span of data, more than the mere size of the sample, for example a given sample size  $n$ , the power is greater when the span is large. Second, if Probability is equal to 1 but not exactly 1, unit root test may declare such a time series non-stationary. Third such types of tests assume a single unit root. Fourth, if there are structured breaks in a time series due to controls and limitations, unit root tests may not hold.

Commonly used panel unit root tests include; Phillips-Perron (2000), Levin, Lin and Chu (2002) and then Im-Peseran - Shin (2003). This study employed these tests arranged in groups of cross-sectional dependence and independence of homogenous or heterogeneous unit root tests as explained below;

### **3.9.1.1 Phillips-Perron (2002)**

Phillips-Perron test is a unit root test used in time series analysis to test the null hypothesis that a time series is integrated of order 1. It is a modification of Dickey-Fuller test of the null hypothesis. Phillips-Perron test addresses the issue that the process generating data for  $y_t$  might have high order of autocorrelation than is admitted in the test equation- making  $y_{t-1}$  endogenous and hence invalidating the



Dickey- Fuller t-test. Phillips- Perron test makes a non- parametric correction to the t-test statistic. More so a test is robust with respect to unspecified autocorrelation and heteroscedasticity in a disturbance process of test equation. Phillips- Perron does not require one to specify a model, nor to select the number of lags. Vital assumption of Dickey- Fuller test is that error terms  $u_t$  are independently and identically distributed. Augmented Dickey –Fuller test adjust Dickey-Fuller test to take care of possible serial correlation in error terms by adding lagged difference terms of the regressed. Phillips-Perron use non-parametric statistical methods to take care of serial correlation in error terms without adding lagged difference terms and hence the asymptotic distribution of Phillips-Perron test is the same as Augmented Dickey – Fuller test statistic.

Test regression for Phillips-Perron test is as follows:

$$Y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 t + \mu_t \quad (3.1)$$

$$t = 1, 2, \dots, T$$

Where  $\beta_0$  is a constant and  $t$  is a trend. If a series has a unit root, then  $\beta_1 = 0$  and Phillip-Perron test is a test of hypothesis that  $\beta_1 = 0$ , as well where,  $\mu_t = 1$  or  $0$  may be heteroscedastic.

### 3.9.1.2 The Im- Pesaran and Shin IPS (2003)

Im-Pesaran-Shin unit root test is based on heterogeneity of autoregressive parameter. A test involves a combination of different independent tests. There is no pooling of data involved. While using Im- Pesaran and Shin test, asymptotic results depend on  $N$  (cross-section units) going to infinity. Testing is for the significance of the results from  $N$  independent tests of a hypothesis. More so, Im-Pesaran and Shin test requires a balanced panel. Advantage of Im- Pesaran and Shin test is that it is easy to use because tables are easily available for computation purposes.

Im- Pesaran and Shin test is a way of combining evidence on unit root hypothesis from  $N$  unit root tests performed on  $N$  cross-section units. The test assumption is that

T is same for all cross-section units, hence mean ( $E(t_i, T)$ ) and standard deviation ( $V(t_i T)$ ) are same for all observations (i). Hence IPS test is applied for balanced data. In case of serial correlation, IPS proposes using Augmented Dickey- Fuller t-test for individual series, whereby mean and standard deviation will vary as lag length is included in Augmented Dickey-Fuller regressions for individual series.

Model for Im- Peseran and Shin is as follows;

$$Y_{it} = \beta_1 + \rho_i y_{i,t-1} + \varepsilon_{it}, \quad (3.2)$$

Where  $t = 1, 2, \dots, T$ , null and alternative hypotheses are defined as  $H_0: \rho_i = 1, i=1, 2, \dots, N$ , against the alternatives  $H_A: \rho_i < 1, i=1, 2, \dots, N; \rho_i = 1, i = N_1+1, N_1+2, \dots, N$ .

Im- Peseran and Shin uses separate unit root tests for the N cross –section units based on Augmented Dickey-Fuller statistics averaged a cross group, Augmented Dickey Fuller regression will be as follows;

$$\Delta Y_{it} = \alpha_i + \rho_i y_{i,t-1} + \sum_{j=0}^{p_i} \beta_{ij} \Delta y_{i,t-j} + \varepsilon_{it} \quad (3.3)$$

Where,  $i = 1 \dots N$  and  $t = 1 \dots T$

### 3.9.1.3 Levin Lin and Chu Test (2002)

Levin, Lin and Chu (2002) test suggest that individual unit root tests have limited power and power of a test is probability of rejecting null when it is false and null hypothesis is a unit root, hence following hypotheses were suggested;

$H_0$ : each time series contains a unit root

$H_1$ : each time series is stationary

Hence lag order  $p$  is permitted to vary a cross individual. A process will involve running Augmented Dickey Fuller for each cross section on its equation. Secondly running two auxiliary regressions;  $\Delta y_{it}$ , on  $\Delta y_{i,t-L}$  and  $d_{mt}$  to obtain the residuals  $\mu_{it}$ , and then  $y_{i,t-1}$  on  $\Delta y_{i,t-L}$  and  $d_{mt}$  to get residuals. Finally, the residuals will be standardized and OLS pooled regression will be run. However, in the study by Maniagi (2018) on influence of financial risk on financial performance of commercial banks in Kenya, scholar considers Levin, Lin and Chu test with the assumptions that stochastic term  $Y_{it}$  is produced by the following three models as shown below;

$$\text{Model 1: } Y_{it} = \rho_i y_{i,t-1} + \varepsilon_{i,t} \quad (3.4)$$

$$\text{Model 2: } Y_{it} = \beta_i + \rho_i y_{i,t-1} + \varepsilon_{i,t} \quad (3.5)$$

$$\text{Model 3: } Y_{it} = \beta_i + \beta_{it} + \rho_i y_{i,t-1} + \varepsilon_{i,t} \quad (3.6)$$

Where noise processes  $\varepsilon_{i,t}$  will be stationary, first order serial correlation coefficient  $\rho_i$ , and  $y_{i,t-1}$  will be lagged difference. Null and alternative hypothesis for model 1 may be written as  $H_{0\rho_i} = 1$ , and  $H_{0\rho_i} < 1$ . Null hypothesis will indicate that panel data contain unit root while alternate hypothesis panel is stationary. Assumption for model 2 and 3 will be that  $\beta_i = 0$  and error term distributed independently across individuals and stationery for each individual. Vital condition for Levin, Lin and Chu is  $\sqrt{N_T}/T \rightarrow 0$ , while sufficient condition is  $N_T/T \rightarrow 0$  and  $N_T/T \rightarrow K$ . where  $N_T$  will imply cross sectional dimension,  $N$  will be a monotonic function of time dimension  $T$ .

The magnitude of power relies on how large or small of value  $T$ . Limitation of Levin, Lin and Chu is that it relies on assumption of cross section independence and null hypothesis is very restrictive. A test does not allow intermediate case, where some individuals are subject to a unit root and some are not. Levin, Lin and Chu (2002) statistics work well when  $N$  lies between 10 -250 and  $T$  between 5 -250.

If individual unit root tests are Augmented Dickey-Fuller tests, then combined test performed is referred to as Fisher-ADF test. If individual tests are Phillips Perron test of unit root, then combined test performed is referred to as Fisher-Phillips Perron test in E-Views as in equation 3.7 (Maniagi, 2018).

$$\Delta Y_{it} = \beta_i + \rho_i y_{it} + \sum_{j=0}^p \beta_{ij} \Delta y_{i,t-j} + \varepsilon_{i,t} \quad (3.7)$$

Augmented Dickey Fuller test will be run for each cross-section regression then followed to obtain residues which will be standardized, before OLS regression undertaken. Phillips-Perron, Fisher- Augmented Dickey Fuller, Im- Peseran and Shin allow for individual unit root processes so that may vary across cross-sections. Pulling individual unit root tests together results into Panel- specific outcome. The regression analysis will be run using E-views data analysis software for secondary data as shown in regressions 3.7 to 3.9. Regression for secondary data will be done where constructs for each variable will be regressed on independent variable; those which will not be significant will be dropped while those which will be significant will be regressed in optimal equation with dependent variables.

There was one dependent variable(Y) which was liquidity of equity securities of companies at Nairobi Securities Exchange (L) and four independent variables (X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> & X<sub>4</sub>). X<sub>1</sub> being (accounts payables conversion period), X<sub>2</sub> (accounts receivables conversion period), X<sub>3</sub>(cash conversion period), X<sub>4</sub> (inventory conversion period) and X<sub>5</sub>(Total Assets),  $\beta_0$  implies Beta of the company at time t; i =1, 2....10 years,  $\beta_1$ ...  $\beta_5$  implied Coefficients of different independent variables for working capital management, of companies i at time t, t is Time = 1,2....., 10 Years,  $\varepsilon$  is an error term.

Hence regression equations including firm size was as follows;

Data analysis could be defined as the systematic and application of the statistical tools to process the raw data into something meaningful to the researcher Saunders et al (2009). The researcher used OLS regression analysis and panel data regression

analysis as supported by Afrifa (2016), Lyngstadaas & Berg (2016), Shin & Soenen (1998) and the modified dynamic panel data model by Banos-Caballero, Garcial-Teruel and Martinez-Salano (2014), as well as Mathuva (2015) for step-wise approach as indicated in the following regression models adopted was as follows;

The following generalized model for the study was adopted:

$$\text{Ln\_L}_{it} = \beta_0 + \beta_1 \text{Ln\_X}_{1it} + \beta_2 \text{Ln\_X}_{2it} + \beta_3 \text{Ln\_X}_{3it} + \beta_4 \text{Ln\_X}_{4it} + \beta_{ij} \sum_{t=1}^j \text{control} + \rho_{it} + \theta_t + \varepsilon_i$$

The above generalized model was further analyzed using step- wise regression as supported by Banos-Caballero, Garcial-Teruel and Martinez-Salano (2014) where each test variable was considered on its own alongside firm size which is the control variable to avoid multicollinearity, hence, the creation of the following five models;

$$\text{Model 1} \quad \text{Ln\_L}_{it} = \beta_0 + \beta_1 \text{Ln\_X}_{1it} + \beta_{ij} \sum_{t=1}^j \text{control} + \rho_{it} + \theta_t + \varepsilon_i$$

$$\text{Model 2} \quad \text{Ln\_L}_{it} = \beta_0 + \beta_2 \text{Ln\_X}_{2it} + \beta_{ij} \sum_{t=1}^j \text{control} + \rho_{it} + \theta_t + \varepsilon_i$$

$$\text{Model 3} \quad \text{Ln\_L}_{it} = \beta_0 + \beta_3 \text{Ln\_X}_{3it} + \beta_{ij} \sum_{t=1}^j \text{control} + \rho_{it} + \theta_t + \varepsilon_i$$

$$\text{Model 4} \quad \text{Ln\_L}_{it} = \beta_0 + \beta_4 \text{Ln\_X}_{4it} + \beta_{ij} \sum_{t=1}^j \text{control} + \rho_{it} + \theta_t + \varepsilon_i$$

$$\text{Model 5} \quad \text{Ln\_L}_{it} = \beta_0 + \beta_1 \text{Ln\_X}_{1it} + \beta_2 \text{Ln\_X}_{2it} + \beta_3 \text{Ln\_X}_{3it} + \beta_4 \text{Ln\_X}_{4it} + \beta_{ij} \sum_{t=1}^j \text{control} + \rho_{it} + \theta_t + \varepsilon_i$$

$\ln$  - Natural logs of the variables

$L$  – Stock liquidity of securities of companies at securities exchange

$\beta_0$  – Intercept of the model

$\beta_1, \beta_2, \beta_3, \beta_4$  - regression coefficients

$X_1$  - accounts payables conversion period

$X_2$  – accounts receivables conversion period

$X_3$  – cash conversion period

$X_4$  – inventory conversion period

Controlling variable – firm size (market value)

$\rho, \theta$  and  $\varepsilon$  capture firm-specific (cross sectional effects), firm-year effects and the error term respectively.

### **3.9.2 Diagnostic Tests for the Model;**

#### **3.9.2.1 Multi-Collinearity**

Multi-collinearity is one of the key assumptions made on the OLS regression analysis, the reason is to check whether the independent variables are not correlated with each other. Multi-collinearity exists when two or more independent variables in a model are highly correlated. Multiple regression equation, used in this study, required that the independent variables used in the models; account receivables conversion period (ARCP), inventory conversion period (ICP), account payables conversion period (APCP) and the cash conversion period (CCP) together with the control variables ( $Z$ ) are not correlated, for the model to maintain its explanatory power. A multiple regression equation was used to analyze the variability of the dependent variable Stock Liquidity ( $L$ ) using the information from the independent

variables. According to Garson (2012) existence of multi-collinearity in a multiple regression reduces the explanatory power of the independent variables thus threatens the statistical and inferential interpretation of these variables.

### **3.9.2.2 Autocorrelation**

Autocorrelation refers to a condition that exists when the set of data is correlated with itself; hence there exist a degree of similarity between a given time series and its lag over a period of time. It is also referred to as serial correlation. A serial correlation of zero means that there is no correlation between the variables; hence, the variables are independent of each other. A correlation tending towards one means that the data set is serially correlated with its past values. The researcher used the Durbin-Watson test to test whether there is a serial correlation on the regression equation.

### **3.9.2.3 Heteroscedasticity**

Heteroscedasticity refers to a condition that is illustrated by a systematic change of the error term or residuals over a range of values. Key assumption of regression analysis is that the error terms in the model have not related to each other; hence the term homoscedasticity. The existence of heteroscedasticity tends to produce too small p-values than they are not real; hence reflecting the correlation among the error terms (Gill & Biger, 2013). The researcher used the natural logs to deal with existence of heteroscedasticity.

### **3.9.2.4 Fixed-Effects and Random Effects**

The fixed effects in a variable mean it is fixed or constant across the individuals while the random effects mean that this constant is not fixed, they vary across individuals. Random effects could arise when the observations are drawn from a sample as opposed to a population. The researcher used the Durbin-Wu- Hausman test for the existence of the fixed effects in the regression equations.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSIONS

#### 4.1 Introduction

This chapter presents details of empirical findings and discussion of results of relationship between Working Capital Management and Stock Liquidity of firms at Nairobi Securities Exchange in Kenya by use of techniques and variables presented in chapter three. Data Analysis in line with specific objectives was interpreted and implications of the study findings reflected thereof.

#### 4.2 Response Rate

The study was based on a total number of 65 companies listed at Nairobi Securities Exchange as per published report of 30<sup>th</sup> June 2023 for a period of 10 years from year 2013- to 2023. Criterion of study was to have secondary data reports of quoted companies for a period of 10 years. 52 companies consisting of 80% embraced criterion and remaining 13 companies that consisted of 20% neither had complete records for 10 years as shown in table 4.1. According to Mugenda and Mugenda (2003), recommendation was that 50% response rate was adequate, 60% good and above 70% was very good. Likewise, Kothari (2004) emphasized on response of 50% and above being adequate for descriptive study. More so Cooper and Schindler (2003) emphasized on general characteristic of response and concluded that response rate exceeding 30% can be generally be applied. The study had a response of 80% which was equally very good as mentioned above with scholars.

**Table 4.1: Response Rate**

	<b>Number</b>	<b>percentage</b>
Listed firms at NSE	65	100%
Firms with complete data	52	80%
Firms with incomplete data	13	20%



### 4.3 Descriptive Statistics

Concerning this study, data was converted to their natural logs to deal with problem of large numbers and hence to eliminate heteroscedasticity. Computation of mean, median, standard deviations, Kurtosis, skewness and Jarque-Bera tests were employed as indicated on table 4.2. Natural logarithm of stock liquidity of firms had mean of -0.09 and standard deviation 0.021. Natural logarithms of accounts payable conversion period (days), accounts receivables conversion period (days), cash conversion period (days), inventory conversion period (days) and firm size, had mean of 4.28, 4.21, 4.56, 4.48 and 23.33 respectively, while standard deviation of similar variables were 0.91, 0.77, 1.23, 1.29 and 2.0 respectively as reflected on table 4.1 below. Mean on liquidity reflects negative results and positive standard deviation. All independent variables; accounts payables conversion period, accounts receivable conversion period, inventory conversion period, cash conversion period and firm size reflected significant positive means as well as standard deviations that show the affiliation of variables on stock liquidity of firms at Nairobi Securities Exchange.

**Table 4.2: Descriptive Statistics Table**

	<b>Ln_L</b>	<b>Ln_APCP</b>	<b>Ln_ARCP</b>	<b>Ln_ICP</b>	<b>Ln_CCP</b>	<b>Ln_Z</b>
Mean	-0.089932	4.278968	4.209364	4.479832	4.457580	23.32577
Median	-0.092883	4.394440	4.268389	4.692544	4.596079	23.37815
Maximum	-0.046987	6.654651	6.695694	6.696082	6.605568	27.11223
Minimum	-0.121264	0.144175	0.863232	-0.742840	-1.580158	17.57587
Std. Dev.	0.020803	0.904626	0.774368	1.291921	1.230362	2.000531
Skewness	0.553055	-1.601032	-0.515338	-1.369549	-1.277066	-0.233895
Kurtosis	2.716180	4.560603	5.603133	5.417393	5.192894	2.423580
Jarque-Bera	20.75587	494.2492	124.7643	212.4310	266.0975	8.771474
Probability	0.000031	0.000000	0.000000	0.000000	0.000000	0.012454
Sum	-34.35391	1634.566	1607.977	1711.296	1702.795	8910.445
Sum Sq. Dev.	0.164877	311.7903	228.4649	635.9120	576.7544	1524.810
Observations	382	382	382	382	382	382

The study employed three statistical methods to test normality; skewness, Kurtosis and Jarque - Bera. Skewness was used to measure asymmetry of distribution of data whereby result expected from distribution could conform to skewness being Zero for normality. Table 4.2 reflected skewness being, Ln\_ L (L) was positively skewed and rest of variables, Ln \_ APCP (X<sub>1</sub>), Ln \_ ARCP (X<sub>2</sub>), Ln \_ CCP (X<sub>3</sub>), Ln \_ ICP (X<sub>4</sub>) and Ln \_ Z (X<sub>5</sub>) being negatively skewed. On simulation by use of Monte-Carlo for normality, skewness value should be less than 2. According to results all variables were normally distributed since values are less than 2. More so Kurtosis was as well employed to measure peaked-ness of distribution, whereby for normality result should be equal to Zero, however variables reflected positive results with Ln\_ L (L) indicating 2.72 and Ln \_ APCP (X<sub>1</sub>), Ln\_ ARCP (X<sub>2</sub>), Ln \_ CCP (X<sub>3</sub>), Ln \_ ICP (X<sub>4</sub>) and Ln \_ Z (X<sub>5</sub>) respectively reflecting 4.56, 5.6, 5.19, 5.42 and 2.42. According to Sekran and Bougie (2016), when using monte-carlo simulation, kurtosis values should be less than 6 for normal distribution hence all variables justified criterion of normality.

The study employed Jarque – Bera test which is based on sample skewness and sample kurtosis. More so, simulation was employed to determine critical values for sample sizes less than 2000. Jarque- Bera value for LN\_L was 20.76 and for LN\_APCP, LN\_ARCP, LN\_CCP, LN\_IP and LN\_Z; reflected 494, 124.8, 266.1, 212.4 and 8.8 respectively, all associated result values were positive. Since probability values were less than 0.05 ( $P < 0.05$ ), indication of data distribution was normally distributed and was accepted at 5% significance level. Awad and Al-Ewesat (2012) applied Jarque-Bera on examination of working capital indicators with stock prices on Palestinian securities exchange market and established that the results conformed with probability  $P < 0.05$  on testing normality and hence there was normal distribution of data.

#### **4.4 Panel Unit Root Test**

In the study by Levin, Lin and Chu (2002) on unit root tests in panel data, impression was that a unit root is a stochastic trend in a time series. A time series has stationarity

if a shift in time does not cause a change in a shape of distribution, for example mean, variance and covariance have to be constant over time. This study employed multiple unit root tests for evaluation of variables stationarity, Levin Lin and Chu test (2002), IM- Peseran and Shin (2003), Augmented Dickie Fuller (1981) and Phillips-Peron (2002) on panels that were not balanced. Study results on unit root tests were reflected in tables 4.2, 4.3, 4.4, 4.5 and 4.6 respectively for liquidity, accounts payables conversion period (days), accounts receivables conversion period (days), cash conversion period (days), inventory conversion period (days) and firm size. Unit root tests were done at intercept and level I (0), as well from tables mentioned herein, p-value in parentheses, \*\* and \* gives a reflection of rejection of null hypothesis at 1% and 5% significance level respectively.

#### 4.4.1 Stock Liquidity

Table 4.3 show results for stationarity test of Liquidity as a dependent variable. Liquidity was found to be stationary at intercept and level I (0) because the Levin, Lin & Chu  $t^*$  statistic had a probability value of 0.0000 which is significant at 1% level of significance. Therefore, we reject null hypothesis that Liquidity has a unit root. More so, Im- Peseran and Shin, Augmented Dickie Fuller- Fisher Chi-square and Phillips-Peron Fisher Chi-square had probability values of 0.0 at significant levels of 1% **indicating no unit root**.

**Table 4.3: Unit Root Test**

Method	Statistic	Prob.**	Sections	Cross- Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	-43.4080	0.0000	54	432
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-20.5151	0.0000	54	432
ADF - Fisher Chi-square	584.072	0.0000	54	432
PP - Fisher Chi-square	690.848	0.0000	54	486

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

#### 4.4.2 Accounts Payables Conversion Period (days)

Table 4.4 shows the results of stationarity test for Accounts Payable Conversion Period, an independent variable. Levin, Lin and Chu (2002)  $t^*$  statistic for Accounts Payable Conversion Period had a probability value of 0.0000 which was significant at 1% level of significance. Therefore, we reject null hypothesis that accounts payables Conversion Period has a unit root. Likewise, Im- Peseran and Shin (2003), Augmented Dickie Fuller- Fisher Chi-square and Phillips-Peron Fisher Chi-square (2002) had probability values of 0.0 at significant levels of 1% indicating no unit root.

**Table 4.4: Unit Root Test**

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	-12.0844	0.0000	54	473
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.74947	0.0001	54	473
ADF - Fisher Chi-square	175.554	0.0000	54	473
PP - Fisher Chi-square	174.083	0.0001	54	486

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

#### 4.4.3 Accounts Receivables Conversion Period (days)

Table 4.5 reflects results of stationarity of accounts receivables conversion period an independent variable at intercept and level I (0). Levin, Lin and Chu (2002)  $t^*$  statistic had a probability value of 0.0000 which is significant at 1% level of significance. Therefore, we reject null hypothesis that accounts receivables conversion period has a unit root. Considering other tests; Im- Peseran and Shin (2003), Augmented Dickie Fuller- Fisher Chi-square and Phillips-Peron Fisher Chi-square (2002) had probability values of 0.0 at significant levels of 1% indicating no unit root.

**Table 4.5: Unit Root Test**

<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>	<b>Cross-Sections</b>	<b>Obs</b>
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-18.1982	0.0000	54	471
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.34195	0.0000	54	471
ADF - Fisher Chi-square	259.305	0.0000	54	471
PP - Fisher Chi-square	259.190	0.0000	54	486

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

#### 4.3.4 Inventory Conversion Period (days)

Table 4.6 represents results of stationarity of inventory conversion period at intercept and level I (0). Levin, Lin & Chu (2002) t\* statistic had a probability value of 0.0000 which is significant at 1% level of significance. Therefore, we reject null hypothesis that inventory conversion has a unit root. Considering other tests, Im-Peseran and Shin (2003), Augmented Dickie Fuller- Fisher Chi-square and Phillips-Peron Fisher Chi-square (2002) had probability values of 0.0 at significant levels of 1% indicating no unit root.

**Table 4.6: Unit Root Test**

<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>	<b>Cross-Sections</b>	<b>Obs</b>
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-15.1058	0.0000	54	473
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.86071	0.0000	54	473
ADF - Fisher Chi-square	224.194	0.0000	54	473
PP - Fisher Chi-square	220.463	0.0000	54	486

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

### 4.3.5 Cash Conversion Period (days)

Table 4.7 indicates stationarity test results for Cash Conversion Period. Levin, Lin and Chu (2002)  $t^*$  statistic for cash conversion period had a probability value of 0.0000 which is significant at 1% level of significance. Therefore, we reject null hypothesis that cash conversion has a unit root. Other tests; Im-Peseran and Shin (2003), Augmented Dickie Fuller- Fisher Chi-square and Phillips-Peron Fisher Chi-square (2002) had probability values of 0.0 at significant levels of 1% indicating no unit root.

**Table 4.7: Unit Root Test**

<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>	<b>Cross-Sections</b>	<b>Obs</b>
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	-10.0505	0.0000	40	291
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.63693	0.0042	40	291
ADF - Fisher Chi-square	119.644	0.0027	40	291
PP - Fisher Chi-square	125.263	0.0009	40	298

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

### 4.3.6 Firm Size

Table 4.8 shows results of stationarity test for firm size at intercept and level I (0). Levin, Lin & Chu (2002)  $t^*$  statistic for Firm Size had a probability value of 0.0000 which is significant at 1% level of significance. Therefore, we reject null hypothesis that firm size has a unit root. Considering other tests; Im-Peseran and Shin (2003), Augmented Dickie Fuller- Fisher Chi-square and Phillips-Peron Fisher Chi-square (2002) had probability values of 0.0 at significant levels of 1% indicating no unit root.

**Table 4.8: Unit Root Test**

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-9.84507	0.0000	54	471
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.35719	0.0074	54	471
ADF - Fisher Chi-square	145.567	0.0093	54	471
PP - Fisher Chi-square	215.777	0.0000	54	486

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi square distribution. All other tests assume asymptotic normality.

#### 4.5 Correlation Results

Table 4.9 shows reflection of correlation findings of variables of the study. Correlation coefficients of accounts payable conversion period, accounts receivable conversion period and cash conversions period then inventory conversion were -0.0997, -0.0551, -0.0264 and -0.0238 respectively signifying negative correlations with stock liquidity. Correlation coefficient of firm size was 0.034 which signified a positive correlation with stock liquidity. On examining of correlation coefficients, it helps in accepting or rejecting the null hypothesis that there is no correlation between the explanatory study variables. More so degree of linear relationship between two variables under concern should have correlation ranging between +1 and -1, implying +1 reflects a positive linear relationship between variables and -1 reflects a negative stance of correlation. In the study by Sekran and Bougie (2016), when the correlation coefficient is less than 0.9 thresholds then there is no alarm of multicollinearity.

**Table 4.9: Correlation of Stock Liquidity with Independent Variables**

	Ln_L	Ln_APCP	Ln_ARCP	Ln_ICP	Ln_CCP	Ln_Z
Ln_L	1.000000	-0.099679	-0.055121	-0.023859	-0.026438	0.034158
Ln_APCP	-0.099679	1.000000	0.255679	0.293173	-0.027013	0.041539
Ln_ARCP	-0.055121	0.255679	1.000000	-0.176240	0.261422	-0.069046
Ln_CCP	-0.026438	-0.027013	0.261422	0.506109	1.000000	0.091511
Ln_ICP	-0.023859	0.293173	-0.176240	1.000000	0.506109	0.252614
Ln_Z	0.034158	0.041539	-0.069046	0.252614	0.091511	1.000000

**Notations**

Ln_L	–Stock Liquidity
Ln_APCP	_ Accounts Payables Conversion Period (days)
Ln_ARCP	_ Accounts Receivables Conversion Period (days)
Ln_CCP	_ Cash Conversion Period (days)
Ln_ICP	_ Inventory Conversion Period (days)
Ln_Z	_ Firm Size
Ln	_ Natural log of

According to Garson (2012) it was embraced that, when correlation between independent variables and dependent variable is below 0.9, then results found would show no multi-. collinearity since correlation values are below 0.9, hence multi-collinearity did not exist.

**4.6 Multivariate Results**

This section details results for multiple regression analysis of dependent variable (stock liquidity) with respective independent variables, accounts receivable conversion period (days), accounts payable conversion period (days), inventory conversion period (days), cash conversion period (days) and firm size (market value of assets). In a process of multiple regression analysis, natural logarithm of total market values indicating size of individual companies was used as a moderating variable. In the study natural logarithm of employed variables were used to deal with existence of large numbers of variables and reducing of Heteroscedasticity as it was sorted out by using e-views software. Hausman test was employed to determine



whether to use random effects or fixed effects model on addressing objectives of the study.

In the first regression model (model 1), accounts payables period was regressed against stock liquidity putting in consideration of the firm size. In the second regression model (model 2), accounts receivables conversion period was regressed against the stock liquidity while considering firm size. The third regression model (model 3) involved regressing Inventory conversion period against the stock liquidity while considering firm size. The fourth model (model 4) involved regressing the Cash conversion period against the stock liquidity while considering firm size and the final model involved regressing the accounts payables period, accounts receivables period and inventory conversion period against the stock liquidity. All the models considered the controlling variable (firm size). The cash conversion cycle was not included in the final model 5 due to the possibility of multi-collinearity, hence the use of step-wise procedure for each variable with the effect of firm size as a controlling variable as explained in the case Banos Caballero et al., (2014) as well as Mathuva (2014), otherwise multi-collinearity could result among the variables; accounts payables conversion period, account receivable conversion period and the inventory conversion period.

#### **4.6.1 Model (1)**

##### **Accounts Payables Conversion Period, Firm Size and Stock Liquidity**

##### **Hausman Test**

The Chi-square test statistic was 6.197772 with a significant probability value of 0.0451 which is significant at 5 percent level of significance as shown in table 4.10. This therefore meant that the null hypothesis was rejected in favor of the fixed effects model. Therefore, we accept the fixed effects model as suitable for this equation.

**Table 4.10: Correlated Fixed Effects - Hausman Test**

Equation: Untitled  
 Test cross-section fixed effects

<b>Test Summary</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
Cross-section fixed	6.197772	2	0.0451

**Table 4.11: Fixed Effects Model Applied**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
LN_APCP	-0.209009	0.083101	-2.515120	0.0270
LN_Z	0.029500	0.016204	1.820538	0.0198
C	-0.145108	0.038719	-3.747720	0.0002
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.184044	Mean dependent var		-0.090307
Adjusted R-squared	0.170907	S.D. dependent var		0.020357
S.E. of regression	0.021284	Durbin-Watson stat		2.418989
Sum squared residuals	0.219250			
F-statistic	0.165353			
Prob(F-statistic)	0.002000			

From the analysis in table 4.11 above, R-squared of 0.184044 implies 18.4% the variation in stock liquidity is explained by independent variables, while the remaining 81.6% is explained by other factors not within the study. Accounts payable conversion period had a coefficient of -0.209009 and a probability value of 0.027 which was significant at 5 percent level of significance. Firm size had a coefficient of 0.02950 with a significant probability of 0.0198 at 5 percent level. This means that firm size had controlling effect on the relationship between stock liquidity and accounts payable.

Firms are deemed to have many previous financing transactions with the lenders and as such information asymmetry reduced with the time taken to advance to them credit compared to the young firms; hence affects transactions of an individual firm at the securities market (Chauhan & Banerjee, 2017).

Phuong and Hung (2020) investigated the effect of managing working capital on firms' liquidity in Vietnam. Generalized Least Squares (GLS) regression method was applied using a sample of 5,295 firms (observations) listed on stock market in Vietnam from 2009 to 2018. The study found accounts payables conversion period had negative impacts on the firm's stock liquidity at the securities exchange market.

The regression of model 1 is follows;

$$Y = -0.145108 - 0.209009X_1 + 0.029500Z$$

Where; Y – Stock Liquidity,

X<sub>1</sub> - accounts payables conversion period

Z – Firm size

## **Model 2 Accounts Receivables Conversion Period, Firm Size and Stock Liquidity**

### **Hausman Test**

The Chi-square test statistic was 8.476245 with a significant probability value of 0.0144 which is significant at 5 percent level of significance as shown in table 4.12. This therefore meant that the null hypothesis was rejected in favor of the fixed effects model. Therefore, we accept the fixed effects model as suitable for this equation.

**Table 4.12: Correlated Fixed Effects - Hausman Test**

Equation: Untitled  
 Test cross-section fixed effects

<b>Test Summary</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
Cross-section fixed	8.476245	2	0.0144

**Table 4.13: Fixed Effects Model**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
LN_ARCP	-0.393000	0.076605	-5.130213	0.0101
LN_Z	0.039505	0.016303	2.423173	0.0158
C	-0.164401	0.037501	-4.383907	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.219033	Mean dependent var		-0.090307
Adjusted R-squared	0.192121	S.D. dependent var		0.020357
S.E. of regression	0.021246	Durbin-Watson stat		2.355120
Sum squared residuals	0.218470			
F-statistic	11.107339			
Prob(F-statistic)	0.002000			

From the analysis in table 4.13, R-squared of 0.219033 implies 21.9% in variation of stock liquidity is explained by independent variables while remaining 78.1% is explained by other factors beyond the study. Accounts receivables had a coefficient of -0.393 and a probability value of 0.0101 which was significant at 5 percent level of significance. Firm size had a coefficient of 0.039505 and probability of 0.0158 which was significant at 5% level. This means that firm size had controlling effects on the relationship between stock liquidity and accounts receivable conversion period.

Mazreku, Morina and Zegai (2020) investigated the effect of working capital on the stock liquidity of commercial banks in Kosovo. The study adopted trend analysis on

secondary data for period of five years using banks' size. The results of the study revealed that bank size has a positive impact on the stock liquidity of the firms at the securities exchange market of commercial banks in Kosovo.

Phuong and Hung (2020) investigated the effect of managing working capital on firms' liquidity in Vietnam; Generalized Least Squares (GLS) regression method using a sample of 5,295 firms (observations) was use on data for listed companies on stock market in Vietnam from 2009 to 2018. The study found that accounts receivables conversion period had negative impacts on the firm's stock liquidity of firms at the securities exchange market.

The regression for model 2 is as follows;

$$Y = - 0.16441 - 0.393X_2 + 0.039505Z$$

Where;

Y –Stock Liquidity,

X<sub>2</sub> - accounts receivables conversion period

Z – Firm size

### **Model 3 Inventory Conversion Period, Firm Size and Stock Liquidity**

The Chi-square test statistic was 6.856732 with a significant probability value of 0.0454 which is insignificant at 5 percent level of significance as shown in table 4.16. This therefore meant that the null hypothesis was rejected in favor of the fixed effects model. Therefore, we accept the fixed effects model as suitable for this equation.

**Table 4.14: Correlated Fixed Effects - Hausman Test**

Equation: Untitled  
 Test cross-section fixed effects

<b>Test Summary</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
Cross-section Fixed	6.856732	2	0.0454

**Table 4.15: Fixed Effects Model**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
LN_ICP	-0.120260	0.073601	-1.633945	0.0189
LN_Z	0.022909	0.047007	0.487353	0.0013
C	-0.046206	0.011506	-4.015817	0.0000
Weighted Statistics				
R-squared	0.210908	Mean dependent var		-0.090307
Adjusted R-squared	0.201813	S.D. dependent var		0.020357
S.E. of regression	0.020386	Durbin-Watson stat		2.396441
Sum squared residuals	0.223167			
F-statistic	11.074537			
Prob(F-statistic)	0.014000			

From the above table 4.15 R-squared 0.210908 implies 21% variation in stock liquidity is explained by independent variables, while 79% of the variation is explained by other factors beyond the study. Inventory conversion period had a coefficient of -0.120260 and a probability value of 0.0189 which was significant at 5 percent level of significance. Firm size had a coefficient of 0.022909 and a significant probability of .0013. This means that firm size did have controlling effects on the relationship between stock liquidity and inventory conversion period. Phuong and Hung (2020) investigated the effect of managing working capital on firms' liquidity in Vietnam; the study found that inventory conversion period, had negative impacts on the firm stock liquidity of firms at the securities exchange market.

Nguyen et al. (2020) had a study on the effect of working capital management practices on the firms' stock liquidity using 119 non-financial listed companies on Vietnam stock market over a period of 9 years from 2010 to 2018. Ordinary least squares and fixed effects model were applied to address econometric issues and to improve the accuracy of the regression coefficients. The empirical results showed negative and significant impacts of the inventory conversion period on stock liquidity of firms at the securities exchange market.

#### **Model 4 Cash Conversion Period, Firm Size and Stock Liquidity**

##### **Hausman Test**

The Chi-square test statistic was 7.294066 with a significant probability value of 0.0261 which is significant at 5 percent level of significance. This therefore meant that the null hypothesis was rejected in favor of the fixed effects model. Therefore, we accept the fixed effects model as suitable for this equation as shown in table 4.16.

**Table 4.16: Correlated Fixed Effects - Hausman Test**

Equation: Untitled  
Test cross-section fixed effects

<b>Test Summary</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
Cross-section fixed	7.294066	2	0.0261

**Table 4.17: Fixed Effects Model**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_CCC	-0.107005	0.074800	-1.430548	0.0100
LN_Z	0.204102	0.043401	4.702702	0.0105
C	-0.231089	0.053904	-4.287047	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.220408	Mean dependent var		-0.090307
Adjusted R-squared	0.214177	S.D. dependent var		0.020357
S.E. of regression	0.021593	Durbin-Watson stat		2.127836
Sum squared residuals	0.152938			
F-statistic	11.183089			
Prob (F-statistic)	0.015003			

From the table 4.17, R-squared of 0.220408 implies 22.04% of variation in liquidity is explained by the independent variables, while the balance 77.96% is explained by the other factors beyond this study. Cash conversions had a coefficient of -0.107005 and a probability value of 0.0100 which was significant at 5 percent level of significance. Firm size had a coefficient of 0.204102 and a significant probability of .0105. This means that firm size did have controlling effects on the relationship between stock liquidity and cash conversions period. Elangkumaran and Nimalathan (2016), observed that cash conversion cycle had a significant impact on stock liquidity of listed manufacturing companies in Sri Lanka. Some scholars among them; Afrifa and Tingbani (2018) had a study on the relationship of cash conversion period and firm size on stock liquidity, hence found that there existed effective relationship of independent variables on stock liquidity of firms.

In a study by Althaqafi (2020) on the effects of working capital management on firm's liquidity of securities at the securities exchange, they established that a significant relationship exists between liquidity and cash conversion cycle.



In the study by Soukhakian and Khodakarami (2019) on working capital management, the scholar employed ordinary least squares with robust standard errors to analyze panel data for the period 2010–2016; to investigate impact of managing working capital on firm performance among listed Iranian manufacturing firms, focusing on the direct and controlling roles of firm size, inflation and GDP variables. The study showed that cash conversion cycle (CCC) is negatively related to return on assets and to refined economic value added (REVA).

The regression for model 3 is as follows;

$$Y = -0.231089 - 0.017005X_3 + 0.204102Z$$

Where;

Y – Stock Liquidity,

X<sub>3</sub> - cash conversion period

Z – Firm size

### **Model 5 Accounts Payables Conversion Period, Accounts Receivables Conversion Period, Inventory Conversion Period, Firm Size and Stock Liquidity**

#### **Hausman Test**

The Chi-square test statistic was 8.192419 with a significant probability value of 0.0245 which is significant at 5 percent level of significance. This therefore meant that the null hypothesis was rejected in favor of the fixed effects model. Therefore, we accept the fixed effects model as suitable for this equation as shown in table 4.18.

**Table 4.18: Correlated Fixed Effects - Hausman Test**

Equation: Untitled  
 Test cross-section fixed effects

<b>Test Summary</b>	<b>Chi-Sq. Statistic</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
Cross-section fixed	8.192419	4	0.0245

**Table 4.19: Fixed Effects Model**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
LN_APCP	-0.208815	0.100120	-2.085647	0.0196
LN_ARCP	-0.402706	0.101193	-3.979583	0.0227
LN_ICP	-0.119223	0.071452	-1.668574	0.0111
LN_Z	0.020253	0.041273	0.490708	0.0102
C	-0.085902	0.021323	-4.028607	0.0000
Weighted Statistics				
R-squared	0.222107	Mean dependent var		-0.090307
Adjusted R-squared	0.211902	S.D. dependent var		0.020357
S.E. of regression	0.020349	Durbin-Watson stat		2.290282
Sum squared resid	0.221536			
F-statistic	11.026009			
Prob (F-statistic)	0.012000			

From the above table 4.19 R-squared 0.222107 implies 22.2% variation in stock liquidity is explained by independent variables, while the remaining 77.8% of the variation is explained by other factors beyond this study. Accounts payables conversion period had a coefficient of -0.208815 and probability that was significant 0.0196 at 5 percent level, accounts receivables conversion period had a coefficient of -0.402706 and probability that was significant 0.0227 and Inventory conversion period had a coefficient of -0.119223 and probability of 0.0111 and firm size had a coefficient of 0.020253 and probability of 0.0102 at significant level 5 percent. This

means that firm size had a controlling effect on the relationship between working capital management practices and stock liquidity of firms at Nairobi Securities Exchange.

Accordingly, working capital management practices have been emphasized by various scholars in their literature reviews and empirical studies as the key determinant of firm's stock liquidity at the securities exchange market and by a great extent the financial performance of a firm as at large (Ngari & Kamau, 2021).

Stock liquidity of a firm's securities rises when the business is in a position to finance its debtors through increasing stock measure to meet the required firm satisfactions that is ultimately reflected at the securities exchange market. Therefore, well managed working capital of a company lead to effective financial performance of a firm at the securities market (Kulo, Joshua, & Obeng, 2020).

In the attempt of justifying the effect of working capital management on firm productivity, past research papers used moderating variables mainly firm size, where much of the previous papers found a negative relationship between working capital management practices and liquidity (Botoc & Anton, 2017). Organizations fail to maintain liquidity while conducting its day-to-day operations; hence the ultimate result is normally a case of solvency. "Risk can be minimized by maintaining adequate plans on cash, inventory, payables and debtors so that fewer problems are witnessed while considering the size of the firm. The working capital management practices had negative relationship with liquidity (Khan, 2016).

Lyngstadaas and Berg (2016) examined a large sample of 21,075 SMEs in Norway for the period 2010 to 2013. They confirmed a negative relationship of liquidity with all working capital management practices; accounts payables conversion period, accounts receivable conversion period, inventory conversion period and cash conversion period while consideration of individual's firm size as a moderating variable.

Phuong and Hung (2020) investigated the effect of managing working capital on firms' liquidity in Vietnam. The study used the Generalized Least Squares (GLS) regression method using a sample of 5,295 firms (observations) listed on stock market in Vietnam from 2009 to 2018. The study found that inventory conversion period, accounts receivables conversion period, accounts payables conversion period, cash conversion period had negative impacts on the liquidity of the equity securities.

In the study by Akomeah and Frimpong (2019) on effect of working capital management practices on profitability of listed manufacturing companies in Ghana, applied data collected from seven (7) listed manufacturing firms in Ghana for a period of ten years. Working capital determined by accounts receivables conversion period, inventory conversion period, accounts payables conversion period and cash conversion cycle were employed as independent variables, firm size measured by logarithm of sales was used as moderating variable. Data was analyzed using the Fixed-Effects model of the Panel data regression the ultimate regression results reflected inventory conversion period (ICP) and account receivables period (ARP) had a statistically significant negative effect on profitability whereas account payables period (APP) days had insignificant positive effects on the profitability. The study, on the other hand revealed that cash conversion cycle (CCC), firm size (LOS) had a significant positive effect on profitability. The study recommended that manufacturing firms should adopt efficient and effective ways of managing these components of working capital. However, this study focused on only seven manufacturing firms in Ghana, whose findings could not be easily generalized to all manufacturing firms in Ghana.

The regression equation is as follows;

$$Y = -0.085902 - 0.208815X_1 - 0.402706X_2 - 0.119223X_3 + 0.020253Z$$

Where;

Y – Stock Liquidity,

X1-accounts payables conversion period

X2-accounts receivables conversion period

X<sub>3</sub> – inventory conversion period

Z – Firm size (Controlling variable)

#### **4.7 Hypotheses**

This study had four hypotheses to test; one of the hypotheses was not confirmed from the results obtained from the regression analysis carried out due to elimination of multi-collinearity among the variables.

##### **4.7.1 Hypothesis 1: Accounts Payables Conversion Period and Stock Liquidity**

H<sub>01</sub>: accounts payable conversion period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

Accounts payables conversion period on stock liquidity had a negative beta coefficient of -0.209, and a p-value of 0.0270 which implies that accounts payables conversion period is a significant determinant of liquidity. The effect was firm size was felt since the probability was significant with less than 0.05 value. The null hypothesis was thus not rejected. The findings are consistent with those Nguyen et al., (2020) as well as for Lyngstadaas and Berg (2016).

Mazlan and Leng (2018) had a study on working capital management and firm size having controlling role on the relationship between the main determinants of working capital and firm performance among 282 public-listed manufacturing firms in Malaysia for the period of 2010 to 2014. The result of the study demonstrates that the relationship between critical determinants of working capital and firm performance is controlled by both working capital requirement and net liquid balance.

#### **4.7.2 Hypothesis 2: Accounts Receivables Conversion Period and Stock Liquidity**

H<sub>02</sub>: accounts receivable conversion period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

Accounts receivables conversion period on stock liquidity had a negative beta coefficient of -0.393, and a p-value of 0.0158 which implies that accounts receivables conversion period is a significant determinant of stock liquidity. Considering firm size effect, the result was favorable since the probability of firm size was less than 0.05 value. The null hypothesis was thus not rejected. The findings are consistent with those Nguyen et al. (2020) as well as for Lyngstadaas and Berg (2016).

#### **4.7.3 Hypothesis 3: Inventory Conversion Period and Stock Liquidity**

H<sub>03</sub>: Inventory conversion period has no significant effect on stock liquidity of firms at Nairobi Securities Exchange.

Inventory conversion period on stock liquidity had a negative beta coefficient of -0.120, 260 and a p-value of 0.0189 which implies that inventory conversion period is a significant determinant of stock liquidity. The null hypothesis was thus not rejected. The findings are consistent with those Nguyen et al., (2020) as well as for Lyngstadaas and Berg (2016).

Oseifuah and Gyekye (2017) had a study which resulted into a significant positive relationship between firm value and inventory conversion period, accounts payable deferral period, receivables conversion period and firm size; positive but insignificant relationship between the firm value and cash conversion cycle; statistically significant negative relationship between Inventory conversion period and firm value and the associated stock liquidity.

#### **4.7.4 Hypothesis 4: Accounts payables Conversion Period, Accounts Receivables Conversion Period, Inventory Conversion Period, Firm Size and Stock Liquidity**

H<sub>05</sub>: Firm size has no significant effect on the relationship between working capital management and stock liquidity of firms at Nairobi Securities Exchange.

The findings from the model revealed inventory conversion period was significant in explaining the stock liquidity of listed firms; (beta = -0.209, p value =0.0196), while account receivables conversion period (beta = -0.403 p value =0.0227) and inventory conversion period (beta =-0.119 p value =0.0111) and firm size as a controlling variable had a beta of 0.0203, probability of 0.0102 and as well had effects of controlling on the independent variables; hence null hypothesis was not rejected. The independent variables were significant in the model 5 at 5% significance level. This means that a decrease in accounts payables conversion period, accounts receivables conversion period and inventory conversion period lead to an increase in stock liquidity of firms at Nairobi Securities Exchange. The results concur with those of Nguyen et al., (2020) as well as for (Lyngstadaas & Berg, 2016).

Firm size is an important characteristic to gain performance. Large firms have more resources and capacity to undertake more product lines and higher production capacity together with organizational resources. This enables the firm to improve their financial performance since they can mitigate risks (Afrifa & Tingbani, 2018). Although smaller firms may be more flexible, it can be argued that larger firms have better prerequisites for behavior compared to their smaller counterparts. This is because larger firms may be better equipped to engage in inter-firm networking. On firm size and financial performance of the firm, indebtedness can enhance the realization of the potential benefits of a larger firm size. Contrary to expectations, these results reveal that, there is a relationship between firm size and financial performance (Acharya & Pederson, 2019).

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

The Main objective of this chapter provides precise brief information about the study and hence objectively avails a conclusion and makes necessary recommendations based on quantitative analysis presented in chapter four. General objective of this study was to determine the effects on the study of Working Capital Management, Firm Size and Stock Liquidity of firms listed at Nairobi Securities Exchange. Available theoretical literature and empirical information provided a summary of results. Conclusion of this study correlates directly to specific objectives namely; accounts payables conversion period, accounts receivables conversion period, cash conversion period, inventory conversion period and lastly the firm size effect on the relation of working capital management practices and stock liquidity of firms listed at Nairobi Securities Exchange. Recommendations are based from conclusions and discussions of findings. Hence this chapter entails three sections, summary of findings, conclusions and recommendations.

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

The essence of study was to determine significant influence of Working Capital Management practices of firms on Stock Liquidity of Securities at Nairobi Securities Exchange. The study took into consideration relevant theoretical and empirical literature correlated on dependent and independent variables. Understanding variables lead to inception of construction of conceptual framework that conceptualized independent and dependent variables. Quantitative analytical relationship among variables was found by employing E-views software.

Individual hypotheses that construed independent and dependent variables were tested empirically focusing on specific objectives, determining accounts payable conversion period effect on stock liquidity of securities at Nairobi securities



exchange, establishing accounts receivable period effect on stock liquidity of securities at Nairobi securities exchange, establishing cash conversion period effect on stock liquidity of securities at Nairobi securities exchange, ascertain inventory conversion period effect on stock liquidity of securities at Nairobi securities exchange, ascertaining firm size effect on the relationship between working capital management components and stock liquidity of securities at Nairobi securities exchange(controlling variable). Relationship among variables was conceptualized in frame work as in chapter two of this study.

Considering objectives of the study, research relied on secondary data information in achieving what was required in the study. Ten years Panel data of individual firms was obtained from financial statements of listed companies and supported by information from Nairobi securities exchange especially data regarding Stock Liquidity of Securities for the period 2013 to 2023. Performance indicators for independent variables were days and for dependent variable was spread determined by the difference between buy and ask price. Data for individual variables was converted into natural log to enhance capability of handling large numbers and eliminate heteroscedasticity.

Hausman test was employed for finding stationarity of data under study, hence multiple unit root tests were performed to find out whether fixed or random effects model should be applied by this study for meaningful results. Fixed effects model was recommended after Hausman test on consideration of independent variables inclusive controlling variable. However fixed effect model was adopted for optimal model since independent and dependent variables had significant effects on this study inclusive firm size as a controlling variable. Inception of Linear regression considered significant variables retained to test combined effect of independent variables and moderating variable on dependent variable. According to Garson (2012), when variables experience no multi- co linearity, and more so there is no autocorrelation of data residuals then all variables can be justified to fit in regression.

### **5.2.1 Accounts Payables Conversion Period on Stock Liquidity of Securities**

First objective of this study was to determine accounts payables conversion period effect on Stock Liquidity of Securities at Nairobi securities exchange. Findings of panel data correlation results had to show there was correlation between accounts payables conversion period and stock liquidity; there was no multi-collinearity in the data. However, as observed from the analysis, accounts payables conversion period had a negative coefficient and more so, there was a significant probability which meant that a decrease in accounts payables conversion period lead to an increase in stock liquidity of securities at Nairobi securities exchange when other factors were left unvaried. Analysis of observation of the controlling effect reflected firm size having an impact on the relation of accounts payables conversion period and stock liquidity of the securities at securities exchange market.

### **5.2.2 Accounts Receivables Conversion Period on Stock Liquidity of Securities**

Second objective of this study was to determine influence of accounts receivables conversion period on liquidity of equity securities at Nairobi securities market. Findings of panel data correlation results had to show an indication of weak correlation of accounts receivables conversion period to liquidity; hence no multi-collinearity in data was witnessed. However, accounts receivables conversion period had a negative coefficient and more so, there was a significant probability value which meant that a decrease in accounts receivables conversion period had a significant effect on the liquidity of equity securities at Nairobi securities exchange when other factors were left unvaried.

### **5.2.3 Cash Conversion Period Influence on Stock Liquidity of Securities**

Third objective of this study was to determine influence of cash conversion period on stock liquidity of securities at Nairobi securities market. Findings of panel data correlation results had to show there was correlation between cash conversion period and stock liquidity, though was avoided in the final model 5 analysis in order to avoid autocorrelation. However, cash conversion period had a negative significant

coefficient and more so, there was a significant probability value which meant that a decrease in cash conversion period had a significant effect on stock liquidity of securities at Nairobi securities exchange when other factors were left unvaried.

#### **5.2.4 Inventory Conversion Period on Stock Liquidity of Securities**

Fourth objective of this study was to determine influence of inventory conversion period on stock liquidity of securities at Nairobi securities market. Findings of panel data correlation results had to show there was correlation between inventory conversion period to stock liquidity; hence there was no multi-collinearity in data. However, Inventory Conversion Period had a negative coefficient and significant probability value which meant that inventory conversion period had a significant effect on stock liquidity of securities at Nairobi securities exchange when other factors were left unvaried. Firm size had controlling effect on the relation between inventory conversion period and stock liquidity since it a significant probability that was less 0.05.

#### **5.2.5 Firm Size (Controlling Effects) on the Relation between Working Capital Management and Stock Liquidity of Securities**

Fifth objective of this study was to determine the influence of firm size on the relation between working capital management and stock liquidity of securities at Nairobi Securities Market. Findings of panel data correlation results indicated there exist correlation between firm size and stock liquidity, though no multi-collinearity in the data. However, firm size had a positive coefficient and a significant probability value which implies controlling effects, more so, which meant that a decrease or increase in firm size had an effect on the relationship between working capital management components and stock liquidity of securities at Nairobi securities exchange when other factors were left unvaried.

### **5.3 Conclusion**

Based on the empirical evidence, a number of logical conclusions can be made as follows in the sections 5.3.1 to 5.3.5 below:

#### **5.3.1 Accounts Payables Conversion Period on Stock Liquidity**

Accounts Payables Conversion Period implies how long it takes for payables to be converted into cash within short-term range of time for an organization to run smoothly. A company having a good management system of accounts payables will always have a good reputation that encourages investors to work with. Securities as products of company would have high probability of being liquidated on securities market than those companies with poor management system of Accounts Payables. According to this study decrease in Accounts Payables Conversion Period meant an increase in stock liquidity of Securities at Nairobi Securities Exchange.

#### **5.3.2 Accounts Receivable Conversion Period on Stock Liquidity of Securities**

Accounts Receivables Conversion Period stipulated length of time it takes for a company to convert Accounts receivables into cash. It requires proper Working Capital Management skills to find proper level of Accounts Receivables for a company to run smoothly. Proper management of Accounts Receivables leads to average internal tradition liquidity of companies but implies less or more investments in short-term securities at securities market depending on cash held in the firm instead of investments at securities market. According to this study, an increase or decrease in Accounts Receivables had no significant effect on stock liquidity of securities at Nairobi Securities Exchange. Reason for insignificance is that when companies get short time conversion period of debts then less or nothing is invested in short term securities, like wise when conversion period is lengthy still nothing is invested in securities at securities market, similarly a company may be concerned much more with traditional internal liquidity but not external Liquidity at securities market.

### **5.3.3 Cash Conversion Period on Stock Liquidity**

Cash conversion period meant cash conversion cycle which included all components of working capital management periods, accounts payables conversion period, accounts receivables conversion period and inventory conversion period. Management requires skills to balance out periods of conversion. Cash conversion cycle refers to inventory conversion period plus accounts receivables period less accounts payables conversion period. Effect on any variable affects cash conversion cycle hence working capital management as a function of a company. According to this study cash conversion period had a negative significant effect on stock liquidity of securities at Nairobi securities exchange. It meant that a decrease in cash conversion period led to an increase in stock liquidity of securities at Nairobi securities exchange. Hence less cash was held by companies for short-term investments at securities exchange due to improved stock liquidity at securities market.

### **5.3.4 Inventory Conversion Period on Stock Liquidity**

Inventory conversion period implied duration of time taken to convert inventory into cash. Inventory conversion period is one of the components cash conversion cycles. The more the period is shorter the more the cash is realized for investment into securities. Investors would always be encouraged by working capital management of companies. Stock liquidity of securities at securities exchange market is controlled by reputation of companies on trading capabilities by both the insiders and outsiders on working capital components and liquidity at the securities exchange market. Management of companies should maintain good inventory control system to avoid under- stocking or over-stocking by use of Just in Time (JIT) or Economic Order Quantity (EOQ) techniques in order to maintain allowable levels of stock to encourage inflows of cash that could be invested into short-term equity securities. According to this study, increase in inventory conversion period led to an increase in stock liquidity of securities at Nairobi securities exchange, reason being, more time

is taken before short-term investments are converted into cash, more so it means that there exist fewer idling cash and heavy consideration is on short-term investments.

### **5.3.5 Firm Size (Controlling Effects) on the Relationship between Working Capital Management and Stock Liquidity**

Firm size meant market value of individual firms quoted at securities exchange market. Nairobi securities exchange market comprises of small, medium and large companies. Huge companies are known to command-and-control market by involving trading in block and large transactions. Hence this study found that firm size had a positive significant influence on stock liquidity of firms at Nairobi securities exchange. Firm size determines the levels of working capital components considering the reason that with more transactions, a given firm could command securities market and hence with such a volume of equity securities on market, liquidity at securities market is enhanced. Movement of information on large blocks of securities moves faster among investors and hence liquidity of securities.

## **5.4 Recommendations**

### **(i) Policy recommendations**

The findings of the study would assist the Government in formulation of economic policies as concerns investments of the listed companies. The level of gross domestic product and employment capability of an economy depends on how the companies are performing financially. The Government would rely on performance of liquidity indicators at Nairobi Securities Exchange to determine the kind of policies that should be applied in the economy in order to achieve her goals.

The results of the study indicated that working capital management has an effect on liquidity of equity securities at the securities exchange market. Improvement on working capital management practices could lead to improved liquidity of the securities implying the easiness of purchase and selling of the securities at the securities market could be witnessed, hence raising of funds for an individual firm becomes easy and flexible.

The study will assist securities investors gain knowledge on determining whether working capital policy of firms is related to the risk-return trade-off of their stock performance. Managers of securities portfolios would use the information to enlighten investors on risks associated on different working capital management policies from results of analysis of beta of stocks.

Stock Analysts would benefit from results of the study while considering today's complex financial markets and volatility in stock prices. This research would give practical contribution in helping to establish if the working capital policy of the firm is an important financial indicator to look at when trying to predict stock prices and performance. This knowledge is of importance for stock analysts and securities investors since stock price is directly linked to liquidity of securities.

#### (ii) **Managerial Recommendations**

Organizations should hire professional bodies who should understand the traditional accounting liquidity and liquidity that exists at the securities exchange market. Since, the conditions of liquidity in the firm is determined by use working capital component ratios while liquidity at securities exchange market requires one to understand characteristics associated to liquidity, more so measures of liquidity, namely; spread, depth, immediacy, breadth and resiliency. It is better to hire a person who understand both situations at organization level as well as at securities exchange market.

The reputation of organizations is very vital for investment purposes, poor reputation affects negatively the output of the organization. When the working capital components are not managed well the overall result would be failure in short term decisions that leads to failure in long term decisions that at the affects the transactions at the liquidity at the securities market. Conserving reputation requires understanding of both short-term decisions emanating from working capital management and linking it to liquidity of assets invested.

The study finds it necessary for the individual organizations to embrace professional management; following up and adhering to capital market authority regulations for

listing of firms and why the firms should be delisted. Working capital management is key for listed companies, hence keenness is required for the firms to compete and improve on their market value of the securities. The more the securities are liquid the more the attraction of investors to the firm.

Findings of the study would help the chief finance officers of listed firms on improving their performance. Liquidity of equity securities would determine whether the company is attractive or not, when the company is attractive it is easier for raising capital for investment through selling securities and as well the management gets motivation of improving performance to stay afloat by setting proper operational standards of managing working capital.

Research scholars would use findings of the study to understand further about influence of management of working capital on liquidity of equity securities at securities market and enable them find research gaps. This will provide an opportunity for improving of future studies associated with working capital management skills and liquidity.

### **(iii) Areas for Further Research**

The study investigated relationship between Working Capital Management and Liquidity of Equity Securities at Nairobi Securities Exchange. However, believing that this relationship could be investigated in different ways, through confirming the study results, possible presenting of different results of similar study. Hence this study presents few suggestions for what future researchers could investigate.

It could be interesting and appreciative if same population could be investigated using different statistical tests to see whether results are same or not. Furthermore, population taken included all listed companies at Nairobi Securities Exchange, researchers should have tests done under different functional classification of companies and not taking all companies grouped together.



It could also be interesting to conduct a quantitative study around Working Capital Management policies and various performance indicators at Nairobi Securities Exchange as well have in depth interviews with management of companies. This could help increasing knowledge about working capital management and liquidity of Equity Securities at securities market. As well this could assist contributors of funds, investors, analysts and managers of various companies have more knowledge about company management and securities markets.

## REFERENCES

- Abdulazeez, D. A., Baba, N. A., Fatima, K. R., & Abdulrahaman, Y. (2019). Working Capital management and financial performance of listed conglomerate companies in Nigeria. *Journal of Accounting, Finance and Auditing Studies*, 4(2).
- Abubakar, A. (2017). Financial leverage and financial performance of quoted industrial Goods firms in Nigeria. KASU. *Journal of Management Science*. 89-108.
- Abubakar, Y., Jagongo, A., Almadi, O. & Muktar, B., (2014). Effects of 2008 Global liquidity crisis on performance of banks' shares traded in Nigeria stock exchange market. *African journal of Business Management*, 8(23), 1094-1100
- Abuzayed, B., (2011). Working Capital Management and Firm's Performance in Emerging Markets, *International Journal of Managerial Finance*, 8(2), 155-179
- Acharya, V. V., & Pedersen, L. H. (2019). Economics with Market Liquidity Risk. *Critical Finance Review, special issue on "Liquidity: Replications, Extensions, and Critique"*, Forthcoming, NYU Stern School of Business.
- Acharya, V.V. & Pederson, L.H. (2019). Asset pricing with liquidity risk. *Journal of Financial Economics*, 77, 375–410.
- Adrian, T., Fleming, M., Shachar, O., & Vogt, E. (2017). Market liquidity after the financial Crisis. *Annual Review of Financial Economics*, 9(1), 43-83.
- Afrifa, G. A., & Padachi, K. (2016). Working capital level influence on SME Profitability. *Journal of Small Business and Enterprise Development*, 23(1), 44–63

- Afrifa, G. A., & Tingbani, I. (2018). Working capital management, cash flow and SMEs' Performance. *International Journal of Banking, Accounting and Finance*, 9(1), 19-43.
- Ahmed, A. Y., & Mwangi, L. W. (2021). Working Capital Management and Financial Performance of Small and. *International Journal of Current Aspects in Finance, Banking and*, 4(1), 56-71.
- Ajayi, E. O., Olutokunbo, T., Obafemi, F., & Araoye, E. (2021). Effective inventory Management practice and firm performance: Evidence from Nigerian consumable goods firms. *American International Journal of Business Management*, 4(5), 65-76.
- Akenga, G., (2015). "Effect of liquidity on financial performance of firms listed at the Nairobi Securities Exchange, Kenya" *International Journal of Science and Research (IJRC)* 2319-7064.
- Ali, S., Liu, B., & Su, J. J. (2017). Corporate governance and stock liquidity dimensions: Panel evidence from pure order-driven Australian market. *International Review of Economics & Finance*, 50, 275–304
- Altawalbeh M.A.F. (2020). Impact of working capital management on financial Performance: evidence from Jodern. *International Journal of Academic Research in Accounting, Finance, and Management Sciences*, 10 (1), 308-315.
- Althaqafi, T. (2020). Effect of inventory management on financial performance; evidence from the. *European Journal of Accounting, Auditing, and Finance Research*, 8(10), 13-26.
- Althaqafi, T. (2020). Effect of inventory management on financial performance: evidence from the. *European Journal of Accounting, Auditing, and Finance Research*, 8(10), 13-26.

- Amihud, Y. & Mendelson, H. (1986). Asset pricing and the bid-ask spread. *Journal of Financial Economics*, (17), 223–249.
- Amihud, Y., Hameed, A., Kang, W., & Zhang, H. (2015). Stock liquidity and the cost of Equity capital in global markets. *Journal of Applied Corporate Finance*, 27(4), 68-74.
- Anagnostidis, P., & Fontaine, P. (2020). Liquidity commonality and high frequency Trading: Evidence from the French stock market. *International Review of Financial Analysis*, 69, 101428.
- Ann, M. (2015). *Extreme risk and the performance of firms listed in the Nairobi Securities Exchange*, Unpublished MBA Thesis, Nairobi : University of Nairobi.
- Anton, S. G. & Nucu, A. E. (2021). The impact of working capital management on firm profitability: empirical evidence from the Polish listed firms, *Journal of Risk and Financial Management*, (14) 9. <https://dx.doi.org/10.3390/jrfm14010009>
- Anyanzwa, J. (2019). Troubled NSE-listed firms now put on watch list, risk suspension from trading. Retrieved from: [https://www.african-markets.com/en/stock-markets/nse/troubled-nse-listed-firms now-put-on-watch list-risk-suspension-from-trading](https://www.african-markets.com/en/stock-markets/nse/troubled-nse-listed-firms-now-put-on-watch-list-risk-suspension-from-trading)
- Arogo, P. (2017). *The relationship between stock market liquidity and economic growth in Kenya* Unpublished MBA Thesis, Nairobi: University of Nairobi.
- Asensio, A. (2017). Insights on endogenous money and the liquidity preference theory of interest. *Journal of Post Keynesian Economics and Social Development*, 40(3), 327348.

- Audax, A. (2018). *Factors Affecting Financial Performance of Manufacturing Firms Listed In Nairobi Securities Exchange Kenya*. Unpublished PhD dissertation, Nairobi: United States International University-Africa
- Bala, S. A. R., & Hassan, A. (2018). Exchange rate and stock market interactions: Evidence from Nigeria. *Arabian Journal of Business and Management Review*, 8(1), 334.
- Bashir, Z., Arshad, M. U., Ghazali, A., Haider, A., Fazal, S., & Aizaz -Goraya. (2018). An Empirical Analysis of Working Capital Management Attributes and Firm's Profitability Evidence from the Textile Sector of Pakistan. *Journal of Commerce, Accounting and Finance Management*, 1(2), 1-22.
- Basu, P. & Gupta, R. (2005). Is India vulnerable to financial crisis? Lessons from the Asian experience. *Paper presented at the 18th Australian Finance and Banking Conference 2005, Sydney, December, 14-16, 2005*.
- Baumol, W., (1952). The transactions demand for cash: An inventory theoretic approach. *Quarterly Journal of Economics*, 66(1), 545-556.
- Będowska-Sójka, B. (2018). The coherence of liquidity measures. The evidence from the Emerging market. *Finance Research Letters*, 27, 118–123.
- Będowska-Sójka, B., & Echaust, K. (2020). What is the best proxy for liquidity in the Presence of extreme illiquidity? *Emerging Markets Review*, 43, 100695.
- Boisjolya, R. P., Conine, J. R., & Donald, T. E. (2020). Working capital management: Financial and valuation. *Journal of Business Research*, 1-8.

- Boloupremo, T. (2020). Stock Market Liquidity and Firm Performance in the Nigerian Stock Exchange. *International Journal of Commerce and Finance*, 6(1), 31-40.
- Bryman, A. & Bell, C., (2011). Quantitative data analysis with IBM SPSS Statistics 17, 18 and 19: *A guide for social scientists*, Oxford: Psychological Press.
- Bryman, A., (2015). *Social Research Methods*, Oxford: Oxford University Press.
- Calomiris, C. W., & Jaremski, M. (2016). Deposit Insurance: Theories and Facts. *Annual Review of Financial Economics*, 8(1), 97–120.
- Chauhan, G. S., & Banerjee, P. (2017). Financial constraints and optimal working capital – Evidence from an emerging market. *International Journal of Managerial Finance*, 14(1), 37-53.
- Chen Y., Hu G., Yu D. B., & Zhao J. (2019). Catastrophic risk and institutional investors: Evidence from institutional trading around 9/11. *Pacific Basin Finance Journal*, 56, 211-233
- Chiang, T. C. & Zheng, D. (2015). Liquidity and stock returns: Evidence from international Markets. *Global Finance Journal*, 27, 73–97.
- Chowdhury A., Uddin M., & Anderson K. (2018). Liquidity and macroeconomic Management in emerging markets. *Emerging Markets Review*, 34, 1–24.
- Cornett, M. & Nofsinger, J., (2009). *Finance Applications and Theory*, New York: McGraw- Hill / Irwin.
- Dang, T. L., & Nguyen, T. M. H. (2020). Liquidity risk and stock performance during the financial crisis. *Research in International Business and Finance*, 52, 101165.

- Dang, T. L., Moshirian, F., & Zhang, B. (2019). Liquidity shocks and institutional Investors. *North American Journal of Economics and Finance*, 47, 184–209.
- Darolles S., Fol G., & Le Mero G. (2015). Measuring the liquidity part of Volume. *Journal of Banking & Finance*, 50, 92–105
- Debata, B., Dash, S. R., & Mahakud, J. (2018). Investor sentiment and emerging stock Market liquidity. *Finance Research Letters*, 26, 15–31
- Díaz, A., & Escribano, A. (2020). Measuring the multi-faceted dimension of liquidity in financial markets: A literature review. *Research in International Business and Finance*, 51, 101079
- Dickey, D., & Fuller, W., (1999). Likelihood ratio statistics for autoregressive time Series with a unit root. *Econometrica*, 49, 1057–1072.
- Dickey. D.A., & Pantula. S. (1987). Determining the order of differencing in Autogressive Process, *Journal of Business and Economic statistics*, 5, 455-461.
- Dinh, M. T. H. (2017). The returns, risk and liquidity relationship in high frequency Trading: Evidence from the Oslo stock market. *Research in International Business and Finance*, 39, 30–40.
- Dirie, A., & Ayuma, C. (2018). Effect of Accounts Receivables Management on Financial Performance in Small and Medium firms in Mogadishu, Somalia. *International Journal of Management and Commerce Innovations*, 6(1)
- Ekinci, C., Akyildirim, E., & Corbet, S. (2019). Analysing the dynamic influence of US Macro-economic news releases on Turkish stock markets. *Finance Research*

- Elangkumaran, P., & Nimalathasan, B. (2016). The Impact of Working Capital Management on Corporate Profitability: Evidence from Listed Manufacturing Company of the Colombo Stock Exchange in Sri Lanka. *Accounting Governance*
- Elliot. L., (2023). *Silicon Valley Bank's collapse will not be a one-off – a banking crisis was long overdue.*
- Gao, P., Jiang, X., & Zhang, G. (2019). Firm value and market liquidity around the adoption of common accounting standards. *Journal of Accounting & Economics*, 68(1)
- Garcia-Teruel, PJ, & Martinez-Solano, P.M., (2014). Effects of working capital management on SME profitability, *International Journal of Managerial Finance*, 3, 164-177.
- Garson, D. G., (2012). *Testing Statistical Assumptions*, Asheboro: Statistical Associates Publishing Blue Book Series.
- Grant, C., & Osanloo, A. (2016). Understanding, selecting, and integrating a theoretical Framework in dissertation research: Creating the blueprint for your“house” *.Administrative issues journal: connecting education, practice, and research*, 4(2), 7.
- Gweyi, M., O., Olweny, T., & Oloko, M. (2018) Effect of Liquidity Risk on Financial Performance of Deposit Taking Savings and Credit Societies in Kenya; *International Journal of Economics, Commerce and Management*, 6(1), 259-283.
- Hillert, A., Maug, E. & Obernberger, S. (2015). *Stock Repurchases and Market Liquidity*,
- Im, Pesaran, K. & Shin, Y., (2003). Testing for unit roots in hetero- generous panels. *Journal of Econometrics*, 115, 53-74.



- Iqbal, Z., Hussain, M., Khalique, M., & Tabassum, A. (2020). New Insight in Working Capital Determinants Making Sensitivity Analysis for Non-financial Listed firm's Evidence from Pakistan. *Journal of Managerial Sciences, Volume XI Number 04*, 1-22.
- Irungu, A., M., (2019) Effect of Liquidity on Financial Performance of Listed Firms in The Nairobi Securities Exchange. *African Journal of Emerging Issues. 1(5)*, 74-93.
- John, E. I. (2019). Effect of macroeconomic variables on stock market performance in Nigeria. *Journal of Economics, Management and Trade, 22(6)*, 1-14.
- Kaddumi, T. A. & Ramadan, I. Z. (2012). Profitability and Working Capital Management: The Jordan Case. *International Journal of Economics and Finance, 4(4)*, 217-226.
- Kang, M., Khaksari, S., & Nam, K. (2018). Corporate investment, short-term return Reversal, and stock liquidity. *Journal of Financial Markets, 39*, 68–83.
- Kanji, J. N. (2017). Effects of Working Capital on Financial Performance of Service Firms Listed at the Nairobi Securities Exchange. Unpublished MSC Project. Nairobi: University of Nairobi.
- Karkowska, R. (2015). Global liquidity determinants across emerging and advanced Countries. *Journal of banking and financial economics, 1(3)*, 152-170.
- Keynes, J. M., (1930). *A treatise On Money*, London: Macmillan.
- Kipkemoi, P. K. (2018). Effect of inventory and cash conversion cycles on financial Performance of listed commercial and service firms in nairobi securities exchange Kenya. *Scholars Journal of Economics, Business and Management, 5(11)*, 997-1002.

- Kipngetch, R. M. (2019). *Effect of Liquidity Management on the Financial Performance of Insurance Companies in Kenya*, Unpublished dissertation, Nairobi: University of Nairobi.
- Kiptoo, I. K. (2017). *Working capital management practices and financial performance of Tea processing firms in Kenya*. Unpublished PhD dissertation, Embu; University of Embu.
- Kogdenko, V.G., (2015), *corporate financial policy*. Moscow, UNITI-DANA
- Kondor, P., & Vayanos, D. (2019). Liquidity risk and the dynamics of arbitrage capital. *The Journal of Finance*, 74(3), 1139-1173
- Kothari, C. K., (2004). *Research Methodology, Methods and Technique*, New Delhi: New Age International Limited Publishers.
- Kulo, I. I., Joshua, A., & Obeng, A. R. (2020). Effect of Working Capital Management on the viability of the company: A review in Sri Lanka on Listed Companies. *International Journal of Empirical Finance and Management Science*, 02(3), 32-42.
- Kumar, G. & Misra, A., (2015). Closer view at the stock market liquidity, *Asian Journal of Finance and Accounting*, 7(2)
- Kyle, A. S., (1985). Continuous Auctions and Insider Trading. *Econometrica*, 53, 1315-1335.
- Labidi, M., & Gajewski, J. F. (2019). Does increased disclosure of intangible assets Enhance liquidity around new equity offerings? *Research in International Business and Finance*, 48, 426–437.
- Lakhani, S. A. (2019). *Effect of macro-economic factors on the stock market performance Of NSE 20 constituent companies in Kenya*, Unpublished PhD dissertation, United States International University-Africa.

- Lavrakas, P., (2008). *Encyclopedia of survey research methods*, Los Angeles: Sage Publications,
- Lazaridis, I., & Tryforidis, D., (2006). Relationship between Working Management and Profitability of Listed Companies in the Athens Stock Exchange; *Journal of Financial Management and Analysis*, 19(1), 26-35.
- Le, B. (2019). Working capital management and firm's valuation, profitability and risk: Evidence from a developing market. *International Journal of Managerial Finance*, 15(2), 191–204
- Lee, J., & Chung, K. H. (2018). Foreign ownership and stock market liquidity. *International Review of Economics & Finance*, 54, 311–325
- Leirvik, T., Fiskerstrand, S. R., & Fjellvikås, A. B. (2017). Market liquidity and stock Returns in the Norwegian stock market. *Finance Research Letters*, 21(May), 272-276.
- Levin, A., Lin, C., & Chu C., (2002). Unit root tests in panel data: Asymptotic and finite-Sample properties. *Journal of Econometrics*, 108, 1-24.
- Li, Z., Lambe, B., & Adegbite, E. (2018). New bid-ask spread estimators from daily high and Low prices. *International Review of Financial Analysis*, 60, 69–86.
- Liu, X., Liu, Y., & Ma, S. (2017, May). Liquidity, Stock Return and Trading Volume: Measuring Causality at Multiple Horizons. In *Proceedings of the 2017 International Conference on Data Mining, Communications and Information Technology* (1-5).
- Lyngstadaas, H, & Terje, B. (2016). Working capital management: Evidence from Norway. *International Journal of Managerial Finance* 12, 295–313.

- Maddala, G. S. & Wu, S. (1999). 'Cross-country Growth Regressions; Problems of Heterogeneity, Stability and Interpretation', *Applied Economics*, 32(5), 635-642.
- Makori, D. M. & Jagongo, A. (2013). Working Capital Management and Firm Profitability: Empirical Evidence from Manufacturing and Construction Firms Listed on Nairobi Securities Exchange, Kenya. *International Journal of Accounting and Taxation*, 1(1), 1-14.
- Marriott, P., Tan, S. M., & Marriott, N. (2015). Experiential learning—A case study of the Use of computerized stock market trading simulation in finance education. *Accounting Education*, 24(6), 480-497
- Masinde, S. P., & Elly, D. (2017). Effects Of Working Capital Management on Financial Performance Of Energy and Petroleum Companies Listed at Nairobi Securities Exchange. *African Development Finance Journal* 1(1).
- Matar, A., & Eneizan, B. M. (2018). Determinants of financial performance in the Industrial firms: Evidence from Jordan. *Asian Journal of Agricultural Extension, Economics & Sociology*, 1-10.
- Mathuva, D. M., (2010). Influence of working capital management components on corporate profitability: A survey on Kenyan listed firms. *Research Journal of Business Management*, 3(1), 1-11.
- Mathuva, D., (2015). *Determinants of disclosure level by deposit taking savings and credit Cooperative societies in Kenya*. . Unpublished PhD thesis, Juja: JKUAT.
- Mattes, J., (2012). *Volatility dynamics in African equity markets during financial Crisis*. Unpublished PhD thesis, Johannesburg: University of Johannesburg.

- Mazreku, I, Morina, F & Zegaji, F, (2020). Working Capital Management Effect on Return on Equity evidence From Listed Manufacturing Firms on Ghana Stock Exchange (Gse), *European Journal of Sustainable Development* 9(1)
- Mbawuni, J., Mbawuni, H. M. & Nimako. G. S., (2016). Impact of Working Capital Management on profitability of petroleum retail firms. *International journal of Economics and finance*, (8), 6.
- Mburugu, V. (2020). *Effect of Inventory Management on Financial Performance of Commercial and Service Firms Listed at the Nairobi Securities Exchange*. Unpublished dissertation, Nairobi: University of Nairobi.
- Mesa, J. N. (2016). Sampling: how to select participants in my research study? *Anais brasileiros de dermatologia*, 91(3), 326-330.  
<https://www.scielo.br/scielo.php>
- Muchaendepi, W., Mbohwa, C., Hamandishe, T., & Kanyepe, J. (2019). Inventory Management and performance of SMEs in the manufacturing sector of Harare. *Procedia Manufacturing*, 33, 454-461.
- Mudanya, L., E., & Muturi, W., (2018) Effects of Financial Risk on Profitability of Commercial Banks Listed in the Nairobi Securities Exchange. *Int Journal of Social Sciences Management and Entrepreneurship*. 2(1), 75-93
- Mugenda, M. O. & Mugenda, A. G., (2004). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: ACTS Press.
- Muhammad Hassani (2014), Survey of the effect of working capital policies on Profitability risk. *Cogent Economics & Finance*, 3(1), 30-36
- Muhammad, B. A., & Umair, A. A. (2017). Inverted U-Shaped Relation of Working Capital and Profitability Role of Cash Holdings; Whole Dilemma via

Comparative Study of Pakistani Firms. *Asian Journal of Business and Management*, 190-193.

Muhindi, K. A., & Ngaba, D. (2018). Effect of firm size on financial performance on Banks: Case of commercial banks in Kenya. *International Academic Journal of Economics and Finance*, 3(1), 175-190.

Munene, F., & Tibbs, C. Y. (2018). *Accounts receivable management and financial Performance of Embu Water and Sanitation Company Limited, Embu County, Kenya*. Unpublished PhD dissertation, Kenyatta University.

Musyoki, J. (2017). *Effect of exchange rate volatility on stock market returns at the Nairobi Securities Exchange*. Unpublished MBA thesis, Nairobi: University of Nairobi.

Mutulis, M.V. (2018). The Effect of fiscal policy on the performance of the Nairobi Securities exchange in Kenya. *International Journal of Economics, Commerce and Management*, 6(6), 294-311

Nadarajah S., Ali S., Liu B., Huang A. (2018). Stock liquidity, corporate governance and leverage: New panel evidence. *Pacific Basin Finance Journal*, 50, 216–234

Nairobi Securities Exchange (2018). NSE Integrated Report and Financial Statements. *of Research and Innovation in Social Science (IJRISS)*, v (viii), 711-714

Nairobi Securities Exchange (2023). *NSE Integrated Report and Financial Statements*. Nairobi: NSE.

Narayan, P.K. & Zheng, X. (2011). The relationship between liquidity and returns on the Chinese stock market. *Journal of Asian Economies*, 22, 259-266.

- Ndirangu, K.J., (2015). *Effects of working capital management on profitability of manufacturing firms in Kenya*. Unpublished PhD thesis, Juja: JKUAT.
- Ngari, A. R., & Kamau, C. G. (2021). Working Capital Management Cycle and Profitability of Household Supermarkets in Kenya: A Literature Review. *International Journal* Nguyen, V. (2020). Human capital, capital structure choice and firm profitability in Developing countries: *An empirical study in Vietnam. Accounting*, 127-136.
- Nguyen, Anh Huu, Huong Thanh Pham, & Hang Thu Nguyen. (2020). Impact of working Capital management on firm's profitability: Empirical evidence from Vietnam. *Journal of Asian Finance, Economics and Business* 7, 115–25.
- Nyarige, N. C. & Olweny, T., (2014). Effect of working capital management on Performance of firms listed at the Nairobi Securities Exchange. *Economics and Finance Review*, 3(11), 01-14.
- Nyeadi, J. D., Sare, Y. A., & Aawaar, G. (2018). Determinants of working capital Requirement in listed firms: Empirical evidence using a dynamic system GMM. *Cogent Economics & Finance*, 6(1), 1558713.
- Odalo, S. K., Achoki, G., & Njuguna, A. (2016). Relating Company Size and Financial Performance in Agricultural Firms Listed in the Nairobi Securities Exchange in Kenya. *International Journal of Economics and Finance*, 8(9), 34-40.
- Oseifuah, E. K., & Gyekye, A. (2017). Cash Conversion Cycle Theory and Corporate Profitability: Evidence from Non-Financial Firms Listed on the Johannesburg Stock Exchange. *The Journal of Accounting and Management*, 6(3).
- Osman, A., & Ayuma, C. (2018). The impact of accounts receivable management on the financial performance of Small and Medium Firms in Mogadishu-

- Somalia. . *International Journal of Management and Commerce Innovations*, 6(1), 378-383.
- Panda, A. K., & Nanda, S. (2018). *Working capital financing and corporate profitability of Indian manufacturing firms*. . Management Decision.
- Panigrahi, R. R., Jena, D., Tandon, D., Meher, J. R., & Mishra, P. C. (2021). Inventory Management and performance of manufacturing firms. . *International Journal of Value Chain Management*, 12(2), 149-170.
- Pastor, L.& Stambaugh, R.F. (2003). Liquidity Risk and Expected Stock Returns. *Journal of Political Economy*, 111, 642-685.
- Phillips, P., & Perron, P., (2000). Testing for a unit root in time series regression. *Biometrika*, 75, 335–346.
- Phuong, N., & Hung, D. (2020). Impact of working capital management on firm Profitability: *Empirical study in Vietnam. Accounting*, 6(3), 259-266.
- Plerou, V., Gopikrishnan, P. & Stanley, H.E. (2005). Quantifying fluctuations in market Liquidity: Analysis of the bid-ask spread, *Physical Review* 71 (4), 1-8.
- Polit, D. & Beck, C., (2003). *Nursing Research: Principles and Methods*.7 Philadelphia: Lippincott, Williams & Wilkins.
- Popoola, O. R., Ejemeyovwi, O. J., Alege, O. P., Adu, O., & Onabote, A. A. (2017). Stock Market and economic growth in Nigeria. *International Journal of English Literature and Social Sciences (IJELS)*, 2(6), 97106.
- Porter, R. B. (2003, August). Measuring market liquidity. In *FMA Annual Meeting, Financial Management Association, August, 7-9*.



- Pukthuanthong-Le, K. & Visaltanachoti, N. (2009). Commonality in liquidity: Evidence on Stock Exchange of Thailand. *Pacific-Basin Finance Journal*, 17, 80–99.
- Ramesh, G., Hamad, A., & Tammam, A. (2017). Effects of working capital on the financial performance of manufacturing firms in Sultanate of Oman. *Innovative Journal of Business and Management*, 6(3), 38-42.
- Ramos H. P., Righi M. B. (2020). Liquidity, implied volatility and tail risk: A comparison Of liquidity measures. *International Review of Financial Analysis*, 69, 101463
- Rathirancee, Y. (2017). Working capital management and its impact on firms' financial Performance: An analysis of trading firms. *Journal of Financial Management and Analysis*, 19(1), 26-35.
- Roll, R. (1984). A Simple Implicit Measure of the Effective Bid-Ask Spread in an Efficient Market. *The Journal of Finance*, 39(4), 1127–1139. <https://doi.org/10.1111/j.1540-6261.1984.tb03897.x>
- Sarin, A., Shastri, K., & Shastri, K. (1996). Ownership Structure and Stock Market Liquidity SSRN Scholarly Paper No. ID 2652). Retrieved from <https://papers.ssrn.com/abstract=2652>
- Sarr, A. & Lybek, T., (2002). *Measuring liquidity in financial markets*. IMF Working Paper, WP/02/232.
- Saunders, M., Lewis, P. & Thornhill, A., (2009), *Research Methods for Business Students*. (Fifth Edition). Financial Times: Apprentice Hall.
- Sekaran, U., & Bougie, (2016). *Research Methods for Business: A Skill Building Approach* (6<sup>th</sup> Ed.). New York: John Wiley and Sons Inc.

- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building Approach*. New York: John Wiley & Sons.
- Sekaran, U., (2006). *Research Methods for Business: A Skill Building Approach*. New York: John Wiley & Sons, Inc.
- Sensini, L. (2020). Working capital management and performance: evidence Canadian. *Journal of Administrative Sciences*, 16(1), 53-57
- Sensoy, A. (2017). Firm size, ownership structure, and systematic liquidity risk: The case of an emerging market. *Journal of Financial Stability*, 31, 62–80.
- Shin, H.H. & Soenen, L. A., (1998). Efficiency of working capital management and corporate Profitability, *financial practice and education* 8(2), 37-45.
- Siikanen, M., Kannianen, J., & Valli, J. (2017). Limit order books and liquidity around Scheduled and non-scheduled announcements: Empirical evidence from NASDAQ Nordic. *Finance Research Letters*, 21, 264–271.
- Soukhakian, I., & Khodakarami, M. (2019). Working capital management, Firm Performance and macroeconomic factors: Evidence from Iran. *Cogent Business & Management*, 6(1)
- State Department for Trade. (2017). *Study on Kenya Retail Sector Prompt Payment*. Retrieved from Ministry of Industry, Trade and Cooperatives.
- Stereńczak, S., Zaremba, A., & Umar, Z. (2020). Is there an illiquidity premium in Frontier markets? *Emerging Markets Review*, 42, 100673.
- Sureshi, K. (2015). Design, data analysis and sampling techniques for clinical research. *Annals of the Indian Modern Academy of Neurology*, 14(4), 287-300.

- Taherdoost, H. (2016). Sampling methods in research methodology; how to choose a Sampling technique for research. *Electronic Trading and Process Journal*, 16(5), 1827.
- Tarza Sokpo, J., Iorember, P. T., & Usar, T. (2017). Inflation and Stock Market Returns Volatility: Evidence from the Nigerian Stock exchange 1995Q1-2016Q4, An EGARCH Approach. *International Journal of Econometrics and Financial Management*, 5(2), 69-76.
- Terreno, D. D., Pérez, J. O., & Sattler, A. S. (2020). Working Capital Management and Profitability: Evidence from an Emergent Economy. *International Journal of Advances in Management and Economics*, 11(1), 32-39.
- Tita, D. (2016). The Effect of Firm Size, Profitability, Tangibility, Non-Debt Tax Shield and Growth to Capital Structure on Banking Firms Listed in Indonesia Stock Exchange from 2007 – 2012. *South East Asia Journal of Contemporary Business, Economics and Law*, 10(1), 37-44.
- Tsai, H. C., & Tsai, I. (2018). Market depth in the UK housing market. *Economic Research Ekonomskaistraživanja*, 31(1), 406-427.
- Van-Horne, J.C. & Wachowitz, J.M. (2004), *Fundamental of Financial Management* (12<sup>th</sup> ed) New York: Prentice Hall Publishers.
- Wang, Y. J. (2002). Liquidity Management, Operating Performance, and Corporate Value: Evidence from Japan and Taiwan. *Journal of Multinational Financial Management*, 12(2), 159–169
- Wanzala, R. W. (2018). Estimation of market immediacy by coefficient of elasticity of Trading three approach. *The Journal of Finance and Data Science*, 4(3), 139-156.

- Waswa, C., W., Mukras, M., S., & Oima, D., (2018). Effect of Liquidity Performance of the Sugar Industry in Kenya. *International Journal of Education and Research*, 6, 2411-5681
- Watson, D. & Head, A. (1998). *Corporate Finance – Principles and Practice, Financial Times Management: 128*, London: Long Acre.
- Weinraub, H J., & Visscher, S. (1998). Industry Practice Relating to aggressive Conservative working capital policies. *Journal of Financial and Strategic Decision*, 11(2), 11-18.
- Wilner, B. (2000). The Exploitation of Relationships in Financial Distress: The Case of Trade Credit. *Journal of Finance*, 55(1), 153–178.
- Zheng, X. & Zhang, Z. (2016). Commonality in Liquidity in Emerging Markets: Evidence from Chinese Stock Market. Durham Working Paper in Economics and Finance, No.06/04
- Zheng, X., & Su, D. (2017). Impacts of oil price shocks on Chinese stock market Liquidity. *International Review of Economics & Finance*, 50, 136–174.
- Zimon, G., & Tarighi, H. (2021). Effects of the COVID-19 Global Crisis on the Working Capital. *Journal of Risk and Financial Management*, 1-18.

## APPENDICES

### Appendix I: Letter of Authorization

Date.....

Managing Director

Name of the Company.....

P.O. Box .....

NAIROBI

Dear Sir,

**RE: RESEARCH DATA ON WORKING CAPITAL MANAGEMENT, FIRM SIZE AND STOCK LIQUIDITY OF FIRMS AT NSE.**

I am a student pursuing a Doctorate Degree in Business Administration- Finance Option at Jomo Kenyatta University of Agriculture and Technology. I am required to undertake a research thesis as partial fulfillment for the award of this higher degree. My research topic is stated above and I kindly request for your assistance in making my research a success.

The purpose of this letter is therefore to request you to grant permission to collect relevant data from your organization from selected respondents among your management staff.

Yours Sincerely

Kadima Murunga John

HD433-C009-1560-2014

**Appendix II: Firms at the Nairobi Securities Exchange as on 30TH June, 2023**

---

1	B.O.C Kenya ltd	27	Standard Chartered Bank ltd
2	British American tobacco Kenya	28	Equity Bank ltd
3	Carbacid Investments ltd	29	Barclays Bank ltd
4	East African Breweries ltd	30	CFC Stanbic Holdings ltd
5	Mumias Sugar co.ltd	31	Diamond Trust Bank Kenya ltd
6	Unga Group ltd	32	I & M Holdings ltd
7	Eveready East Africa ltd	33	Housing Finance Company ltd
8	Williamson Tea Kenya ltd	34	Kenya Commercial Bank ltd
9	Olympia capital holdings ltd	35	National Bank of Kenya ltd
10	Home Africa	36	NIC Bank ltd
11	Jubilee holdings	37	Co-operative Bank of Kenya
12	Kenya Re-Insurance	38	Marshalls (E.A) ltd
13	Liberty Kenya Holdings	39	Car and General Kenya ltd
14	British American Insurance	40	Sameer Africa ltd
15	CIC Insurance	41	Nairobi Securities Exchange
16	Athi River Mining	42	Safaricom ltd
17	Bamburi Cement	43	Nairobi Securities Exchange
18	Crown Berger	44	Trans-Century ltd
19	East African Cables	45	Total Kenya ltd
20	Kenya Airways	46	Ken Gen ltd
21	National Media Group	47	Kenya power and lighting Co.ltd
22	Standard Media Group	48	Kakuzi ltd
23	TPS Eastern Africa	49	Atlas Development and Support
24	Pan African Insurance	50	Kapchorua ltd
25	Uchumi Super Market	51	Limuru tea ltd
26	Express ltd	52	Umeme ltd
27	Rea Vipingo ltd		

---

**Appendix III: Record Survey Sheet**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Accounts Payables Period (days)										
Accounts Receivables Period (days)										
Inventory Conversion Period (days)										
Cash Conversion Period (days)										
Company Size (market value of companies)										
Stock Liquidity of (Bid-Ask Price)										

## Accounts Receivables conversion Period

year	AR_stac	AR_Eq	AR_Ba	AR_St	AR_Dia	AR_IB	AR_HF	AR_KC	AR_EA	AR_Ma	AR_C	AR_Sam	AR_N	AR_S	AR_To	AR_K	AR_Kf	AR_Sca	AR_Uc	AR_Ki	AR_Nm	AR_St	AR_Br	AR_C	AR_T	AR_	
2014	282	283	124	540	141	91	59	343	147	128	68	94	57	27	41	52	241	119	9	86	379	62	109	53	71	103	2
2015	163	97	72	240	85	90	33	104	104	116	75	103	54	30	41	31	201	149	7	69	41	79	101	37	89	98	27
2016	77	92	31	307	50	62	17	192	127	162	59	80	112	47	109	15	87	152	10	53	45	71	117	24	69	81	31
2017	56	100	70	78	61	48	30	79	110	67	66	94	55	39	44	123	79	156	9	5	47	68	115	22	67	80	26
2018	72	95	78	105	48	56	26	88	121	85	58	102	55	36	40	201	140	154	13	78	47	63	108	15	53	109	35
2019	38	86	74	61	4	35	28	56	174	164	64	112	55	28	28	170	115	158	10	27	35	67	93	17	52	99	29
2020	33	128	80	86	36	29	76	101	223	52	77	90	86	24	19	140	138	128	7	60	38	69	23	16	72	80	35
2021	42	165	105	81	20	35	59	5	209	103	88	105	84	20	18	165	147	122	19	89	47	78	15	38	72	77	34
2022	43	763	245	65	35	18	60	6	196	142	72	75	42	23	25	106	122	119	9	153	49	87	122	45	48	78	47
2023	46	109	415	72	35	29	64	91	135	64	69	91	49	38	29	95	137	142	13	136	50	85	137	53	51	66	22

year	AR_B	AR_Bi	AR_C	AR_E	AR_M	AR_Un	AR_E	AR_Ec	AR_ka	AR_K	AR_Lir	AR_S	AR_W	AR_C	AR_M	AR_A	AR_Oi	AR_Ce	AR_Tra	AR_Hon	AR_Jut	AR_Pa	AR_KF	AR_	AR_Br	AR_CiC	
2014	103	25	78	62	74	30	29	25	63	48	155	62	69	91	112	252	58	74	66	774	63	71	27	160	4	3	46
2015	120	36	100	46	80	39	39	30	84	52	178	70	68	115	71	214	75	74	70	81	809	57	32	166	4	3	35
2016	103	30	90	44	101	30	50	31	68	23	225	46	44	122	94	31	81	75	87	115	57	53	25	145	4	2	36
2017	83	43	101	54	78	25	54	30	125	21	245	32	51	134	160	48	71	87	38	103	446	52	17	90	4	2	63
2018	106	21	97	57	89	30	50	10	81	23	322	54	48	92	98	98	83	97	39	169	36	50	44	69	42	19	42
2019	70	24	109	54	108	40	47	15	101	64	389	52	53	123	72	44	63	181	10	152	118	45	24	70	30	29	46
2020	95	40	106	56	115	48	46	33	85	46	447	51	67	91	147	122	72	63	24	212	118	72	7	76	38	43	50
2021	90	28	71	46	71	37	56	126	81	28	491	72	77	89	113	68	99	123	80	210	94	54	18	70	58	65	39
2022	111	25	65	52	101	40	60	155	135	38	461	148	67	161	120	77	83	108	56	198	118	67	18	89	72	43	44
2023	109	25	79	66	61	38	63	25	140	37	425	299	47	139	114	121	131	126	29	167	107	63	38	99	58	43	45



## Accounts payables conversion Period

year	Ap_BO	AP_B	AP_C	AP_EAI	AP_Mur	AP_U	AP_E	AP_Ec	AP_kar	AP_Kal	AP_Vip	AP_Si	AP_Wil	AP_NE	AP_f	AP_Oly	AP_Ce	AP_Tre	AP_Hor	AP_Jut	AP_Pe	AP_K	AP_Lib	AP_Bi	AP_CI	AP_sta		
2014	751	388	86	139	61	22	50	77	134	70	42	57	586	105	123	136	65	76	77	73	807	68	75	473	64	30	245	322
2015	340	136	89	143	87	35	50	226	378	62	53	61	115	77	128	157	97	74	78	80	776	72	388	534	51	35	251	211
2016	205	125	71	188	109	27	50	11	186	104	77	59	75	130	56	88	101	931	9	86	1	15	168	41	74	110	201	205
2017	251	83	113	192	88	19	67	167	143	106	32	182	97	12	123	435	90	573	527	107	2413	20	241	48	66	67	157	269
2018	257	124	45	217	71	22	71	9	79	123	30	59	99	93	74	56	125	641	578	272	1081	10	171	44	8	86	301	159
2019	308	157	44	195	97	29	81	11	80	53	51	41	88	123	50	46	114	547	260	144	2600	1	56	61	4	54	251	125
2020	332	174	63	164	170	81	71	5	97	49	36	37	96	101	81	59	82	439	114	158	2464	2	55	49	4	71	188	122
2021	302	171	136	145	145	49	77	158	39	48	48	40	92	46	58	33	143	605	531	127	1159	2	213	31	65	5	132	106
2022	367	135	144	159	384	44	127	239	41	62	60	40	76	46	72	38	191	486	325	168	933	3	145	25	48	2	805	122
2023	366	151	178	250	365	48	124	6	61	102	73	48	68	83	94	85	159	398	85	252	1476	5	130	29	42	5	964	87

year	AP_Equ	AP_Bar	AP_St	AP_Dia	AP_I&M	AP_HF	AP_KCB	AP_E	AP_Ma	AP_C&S	AP_Sam	AP_Ns	AP_Saf	AP_Tot	AP_Kge	AP_KP	AP_Scar	AP_U	AP_Ex	AP_K	AP_Nr	AP_Sta	AP_B	AP_C	AP_TP	AP_Pt
2014	314	220	1202	150	46	55	217	70	144	148	148	72	323	35	298	366	146	75	9	45	388	185	89	109	111	62
2015	147	101	873	112	47	53	108	49	109	129	129	83	314	39	448	467	1271	57	105	44	400	185	100	94	101	71
2016	51	85	762	77	48	55	300	77	181	73	73	60	325	106	244	352	1282	59	20	35	375	159	88	96	67	79
2017	74	166	104	114	51	85	39	75	130	90	90	34	247	68	227	269	168	50	42	59	304	205	103	78	116	72
2018	54	141	301	103	80	46	58	86	325	104	104	35	248	44	259	274	132	45	93	61	312	152	57	74	93	76
2019	50	146	154	83	52	67	73	167	362	112	112	94	205	49	308	135	148	52	104	43	343	154	82	73	100	73
2020	59	135	265	103	63	39	106	124	422	120	120	187	215	21	426	254	148	37	130	49	418	173	75	104	98	103
2021	53	148	174	80	63	8	131	116	115	115	115	98	207	18	332	250	133	38	141	59	415	145	88	116	105	116
2022	89	137	239	86	64	32	86	146	81	110	110	94	267	37	238	372	111	130	79	88	430	206	93	140	102	108
2023	287	168	115	58	73	107	28	143	1465	101	101	89	235	35	149	1011	136	314	304	129	470	497	101	139	96	127

## Inventory Conversion Period

year	IP_BO	IP_BAT	IP_Ci	IP_EA	IP_Mur	IP_Ur	IP_Ev	IP_Ega	IP_kap	IP_Ka	IP_Lir	IP_Vir	IP_Sas	IP_W	IP_COP	IP_NE	IP_Ariv	IP_Oly	IP_Cel	IP_Trar	IP_Ho	IP_Jubil	IP_Par	IP_KF	IP_Lib	IP_Bri
2014	393	259	34	171	28	52	174	148	130	27	5	139	608	84	351	42	82	56	203	121	87	212	71	110	22	30
2015	163	127	61	143	52	54	109	470	337	42	5	174	115	43	312	330	98	59	180	122	89	264	201	13	22	52
2016	125	106	68	82	34	79	153	119	131	45	4	147	60	94	324	63	109	72	291	156	88	245	418	10	22	72
2017	145	103	100	67	33	69	202	292	80	40	4	33	74	93	43	165	96	24	568	150	991	162	429	6	23	18
2018	109	134	50	70	42	61	168	17	38	78	4	185	89	49	56	336	93	91	434	81	99	107	728	3	26	79
2019	127	138	27	101	55	53	204	22	41	27	2	121	82	48	397	212	157	90	351	59	251	166	713	2	22	168
2020	112	150	36	86	86	83	151	32	66	29	3	114	66	91	324	388	86	87	394	68	306	135	610	2	52	396
2021	103	184	38	114	30	57	208	28	72	20	5	122	56	77	510	58	147	117	317	89	203	196	507	2	52	422
2022	98	215	43	120	36	48	143	27	65	23	1	132	61	78	288	45	136	154	114	75	46	224	372	2	57	115
2023	99	198	36	92	22	54	139	6	120	44	1	196	51	116	320	25	110	151	25	65	70	131	177	2	45	2

year	IP_CIC	IP_stach	IP_Eq	IP_Bar	IP_Star	IP_Dia	IP_L&I	IP_HF	IP_KI	IP_E	IP_Ma	IP_C&S	IP_S	IP_N	IP_S	IP_Tot	IP_Kc	IP_KPL	IP_Scc	IP_Uc	IP_E	IP_KQ	IP_Nn	IP_Sk	IP_E	IP_Cn	IP_TP	IP_Po
2014	163	452	204	288	165	317	248	44	40	154	163	230	135	72	34	50	90	149	3	47	1	22	88	63	109	129	25	94
2015	101	404	99	269	336	340	253	55	44	97	185	179	129	68	32	35	78	201	44	41	9	10	202	115	122	145	32	78
2016	113	416	43	281	180	133	361	80	207	151	239	149	171	96	33	385	62	129	27	33	2	11	109	61	96	120	29	52
2017	99	565	49	222	182	204	543	79	227	94	115	165	119	51	29	188	111	149	2	33	4	13	120	130	70	88	29	59
2018	82	524	74	240	254	268	406	54	273	72	218	167	139	47	47	40	78	125	1	34	6	13	132	89	61	93	31	73
2019	184	357	20	338	603	257	177	125	563	113	168	171	132	49	18	54	133	88	4	34	5	13	139	74	74	77	29	85
2020	57	372	87	344	371	266	316	124	627	94	215	159	157	148	17	30	50	169	1	30	76	11	148	67	73	99	31	116
2021	40	339	57	478	341	265	327	280	108	83	365	151	204	542	21	37	40	140	1	34	7	12	129	52	76	128	31	121
2022	30	344	66	309	50	309	230	277	809	77	365	136	233	272	53	45	27	165	0	31	75	9	141	45	90	125	28	103
2023	221	294	235	215	113	261	248	251	142	67	258	161	262	219	5	54	26	342	3	19	307	10	225	232	93	105	31	67

## Cash Conversion Period

year	CC_B	CC_Bi	CC_C	CC_E	CC_M	CC_I	CC_E	CC_I	CC_k	CC_Lin	CC_V	CC_S	CC_V	CC_C	CC_N	CC_C	CC_C	CC_C	CC_H	CC_Ji	CC_Pe	CC_I	CC_L	CC_Br		
2014	-255	-255	26	94	41	59	152	97	59	5	118	144	91	70	340	158	75	55	192	-11	-657	215	22	-203	-38	3
2015	-57	-57	73	46	45	58	98	273	42	32	129	183	68	81	255	388	75	58	172	122	121	249	-155	-355	-26	20
2016	23	23	87	-61	27	83	153	139	13	-35	152	134	29	86	361	6	89	-784	369	185	144	283	275	114	-47	-35
2017	-23	-23	88	-71	23	76	189	154	63	-45	216	-117	27	215	80	-222	78	-242	79	146	-976	194	205	48	-40	-47
2018	-41	-41	103	-89	60	69	147	18	41	-22	296	181	37	48	80	377	51	-453	-106	-22	-946	147	600	28	60	11
2019	-111	-111	92	-40	66	64	170	26	63	38	339	132	47	48	419	210	106	-276	101	66	-2232	210	682	11	47	143
2020	-126	-126	79	-22	31	51	126	59	54	26	413	128	37	81	390	452	76	-289	305	122	-2040	206	562	29	86	368
2021	-109	-109	-27	15	-44	45	187	-4	114	0	448	154	41	120	565	93	103	-365	-133	171	-862	248	312	41	45	482
2022	-159	-159	-36	13	-247	44	76	-57	159	-2	402	241	51	193	336	85	28	-224	-154	104	-769	288	246	66	81	155
2023	-159	-159	-63	-92	-281	44	78	25	199	-22	353	447	29	172	341	61	83	-121	-31	-20	-1299	189	86	72	62	40

year	CC_C	CC_st	CC_Er	CC_Ba	CC_St	CC_D	CC_I8	CC_H	CC_I	CC_EA	CC_M	CC_C	CC_C	CC_N	CC_S	CC_Tc	CC_K	CC_Sc	CC_L	CC_Ei	CC_K	CC_Nn	CC_St	CC_Ba	CC_C	CC_T	CC_Pc	
2014	-36	412	173	192	-497	309	293	48	167	231	147	150	190	58	-262	56	-156	24	-24	-18	78	356	-239	-13	-13	91	17	34
2015	-115	357	49	240	-297	314	296	35	41	152	192	126	203	39	-252	37	-339	-65	-1078	-9	-27	7	-119	31	31	140	29	35
2016	-52	289	83	227	-275	107	375	42	100	201	220	135	216	148	-246	388	-167	-135	-1103	-17	36	21	-195	19	19	93	43	4
2017	5	352	75	126	156	151	540	24	267	129	52	140	196	73	-180	164	8	-41	-9	-9	-33	1	-116	41	41	78	-7	13
2018	-176	436	115	177	58	214	382	34	303	107	-22	121	209	67	-165	36	20	-10	23	1	-9	-1	-118	44	44	72	47	31
2019	-21	270	56	267	510	178	160	85	545	120	-29	123	191	10	-160	32	-5	68	14	-8	-71	5	-137	14	14	56	28	41
2020	-82	283	156	289	191	200	281	161	621	192	-156	116	215	47	-174	28	-237	53	-19	0	6	0	-201	-83	-83	67	12	48
2021	-53	275	169	435	248	206	298	331	-19	176	352	125	238	527	-167	37	-128	38	-9	15	-45	0	-208	-77	-77	84	3	38
2022	-731	265	739	417	-125	258	184	305	729	126	426	98	231	220	-190	33	-105	-86	9	-90	148	-29	-202	-39	-39	33	4	42
2023	-697	254	56	463	71	239	204	208	206	59	-1143	129	236	179	-191	48	-28	-533	8	-282	140	-69	-159	-128	-128	18	1	-38

## Firm Size

year	Z_BOC	Z_BAT	Z_Carb	Z_EABr	Z_Mum	Z_Unga	Z_Ever	Z_Egai	Z_kap	Z_Kak	Z_Lim	Z_Vip	Z_Sas	Z_WI	Z_COP	Z_NBK	Z_Ariv	Z_Oly	Z_Cent	Z_Trans	Z_HomA	Z_Jubile	Z_PanAt	Z_Kre	Z_Lib	Z_BitA	Z_CIC
2014	2E+09	3E+09	9E+08	2E+10	1E+10	4E+09	5E+08	6E+08	1E+09	2E+09	4E+07	1E+09	4E+09	4E+09	7E+10	4E+10	5E+09	1E+09	8E+09	8E+09	2E+08	2E+10	6E+09	1E+10	2E+09	3E+09	2E+09
2015	2E+09	4E+09	1E+09	2E+10	1E+10	5E+09	5E+08	6E+08	1E+09	2E+09	5E+07	2E+09	7E+09	4E+09	8E+10	4E+10	6E+09	1E+09	8E+09	8E+09	2E+08	2E+10	6E+09	1E+10	2E+09	5E+09	3E+09
2016	2E+09	1E+09	1E+09	3E+10	2E+10	6E+09	1E+09	6E+08	1E+09	2E+09	7E+07	1E+09	8E+09	4E+09	1E+11	5E+10	1E+10	8E+08	7E+09	9E+09	2E+08	2E+10	8E+09	2E+10	2E+09	3E+09	3E+09
2017	2E+09	7E+09	2E+09	3E+10	2E+10	5E+09	1E+09	6E+08	1E+09	3E+09	1E+08	1E+09	9E+09	5E+09	2E+11	6E+10	2E+10	1E+09	8E+09	1E+10	1E+10	3E+10	1E+10	2E+10	2E+09	5E+09	7E+09
2018	2E+09	8E+09	2E+09	3E+10	2E+10	6E+09	1E+09	6E+08	2E+09	3E+09	2E+08	2E+09	9E+09	6E+09	2E+11	7E+10	2E+10	1E+09	1E+10	2E+10	2E+09	4E+10	1E+10	2E+10	2E+10	3E+10	1E+10
2019	2E+09	9E+09	2E+09	3E+10	3E+10	6E+09	1E+09	6E+08	2E+09	3E+09	3E+08	2E+09	9E+09	7E+09	2E+11	7E+10	3E+10	2E+09	1E+10	2E+10	2E+09	5E+10	2E+10	2E+10	3E+10	4E+10	1E+10
2020	3E+09	1E+10	2E+09	3E+10	3E+10	8E+09	9E+08	5E+08	2E+08	4E+09	3E+08	3E+09	9E+09	7E+09	2E+11	9E+10	2E+10	2E+09	2E+10	2E+10	4E+09	6E+10	2E+10	3E+10	3E+10	5E+10	2E+10
2021	2E+09	1E+10	3E+09	4E+10	1E+10	8E+09	9E+08	4E+08	2E+09	4E+09	3E+08	3E+09	1E+10	8E+09	3E+11	1E+11	3E+10	2E+09	2E+10	2E+10	3E+09	7E+10	2E+10	3E+10	3E+10	7E+10	2E+10
2022	2E+09	1E+10	3E+09	4E+10	7E+09	9E+09	7E+08	4E+08	2E+09	4E+09	3E+08	5E+09	2E+10	9E+09	3E+11	1E+11	5E+10	2E+09	7E+10	2E+10	4E+09	8E+10	3E+10	4E+10	3E+10	8E+10	2E+10
2023	2E+09	1E+10	3E+09	3E+10	2E+10	9E+09	5E+08	8E+08	2E+09	5E+09	3E+08	4E+09	2E+10	9E+09	4E+11	1E+11	5E+10	1E+09	8E+10	2E+10	4E+09	9E+10	3E+10	4E+10	3E+10	8E+10	3E+10

year	Z_stach	Z_Equit	Z_Bar	Z_Slanb	Z_Dia	Z_I&M	Z_HFCk	Z_KCB	Z_Eaca	Z_Mar	Z_C&G	Z_Sam	Z_NSE	Z_Saf	Z_Tot	Z_Kga	Z_KPLC	Z_Scan	Z_Uchu	Z_Exp	Z_KQ	Z_Nme	Z_Slam	Z_Bamb	Z_Crov	Z_TPS	Z_Port
2014	9E+10	5E+10	2E+11	4E+10	4E+10	5E+10	1E+10	1E+11	3E+09	1E+09	2E+09	3E+09	4E+08	7E+10	1.4E+10	1E+11	5E+10	2E+09	2E+09	5E+11	8E+10	6E+09	2E+09	2E+10	2E+09	7E+09	9E+09
2015	1E+11	8E+10	2E+11	1E+11	6E+10	6E+10	1E+10	2E+11	3E+09	1E+09	3E+08	3E+09	3E+08	7E+10	1.5E+10	1E+11	6E+10	4E+09	2E+09	4E+11	8E+10	7E+09	3E+09	3E+10	2E+09	7E+09	9E+09
2016	1E+11	1E+11	2E+11	1E+11	7E+10	5E+10	2E+10	2E+11	4E+09	1E+09	3E+09	3E+09	3E+08	9E+10	3.2E+10	1E+11	7E+10	4E+09	2E+09	4E+11	7E+10	7E+09	3E+09	3E+10	2E+09	7E+09	1E+10
2017	1E+11	1E+11	2E+11	1E+11	8E+10	9E+10	3E+10	3E+11	5E+09	1E+09	4E+09	3E+09	4E+08	1E+11	3E+10	2E+11	8E+10	8E+09	3E+09	5E+11	7E+10	8E+09	3E+09	3E+10	2E+09	1E+10	1E+10
2018	2E+11	2E+11	2E+11	2E+11	1E+11	1E+11	3E+10	3E+11	5E+09	1E+09	6E+09	3E+09	5E+08	1E+11	3.5E+10	1E+11	1E+11	8E+09	4E+09	8E+11	8E+10	9E+09	4E+09	3E+10	2E+09	1E+10	1E+10
2019	2E+11	2E+11	2E+11	1E+11	1E+11	1E+11	4E+10	4E+11	6E+09	6E+08	6E+09	3E+09	9E+08	1E+11	3.3E+10	2E+11	1E+11	9E+09	5E+09	5E+11	8E+10	1E+10	4E+09	4E+10	3E+09	1E+10	1E+10
2020	2E+11	3E+11	2E+11	2E+11	2E+11	1E+11	5E+10	4E+11	7E+09	5E+08	7E+09	4E+09	7E+08	1E+11	4E+10	2E+11	2E+11	1E+10	4E+09	5E+11	1E+11	1E+10	4E+09	4E+10	3E+09	2E+10	2E+10
2021	2E+11	3E+11	2E+11	2E+11	3E+11	2E+11	6E+10	5E+11	8E+09	6E+08	8E+09	4E+09	2E+09	1E+11	3.3E+10	3E+11	3E+11	1E+10	5E+09	5E+11	1E+11	1E+10	4E+09	4E+10	4E+09	2E+10	2E+10
2022	2E+11	4E+11	2E+11	2E+11	2E+11	2E+11	7E+10	6E+11	6E+09	6E+08	9E+09	4E+09	2E+09	2E+11	3.4E+10	3E+11	2E+11	1E+10	4E+09	4E+11	2E+11	1E+10	4E+09	4E+10	5E+09	2E+10	2E+10
2023	3E+11	5E+11	3E+11	2E+11	3E+11	2E+11	7E+10	6E+11	8E+09	5E+08	1E+10	3E+09	2E+09	2E+11	3.6E+10	4E+11	3E+11	1E+10	3E+09	4E+11	2E+11	1E+10	4E+09	4E+10	5E+09	2E+10	3E+10

## Liquidity

year	L_BOC	L_BAT	L_Carb	L_EAF	L_Mum	L_Unga	L_Ever	L_Egad	L_kap	L_Kak	L_Lim	L_Vip	L_Sas	L_Wil	L_COF	L_NBI	L_ARiv	L_Oly	L_Cent	L_Trans	L_HomAfr	L_Jubile	L_PanAfr	L_KRe	L_Lib	L_BritA
2014	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	
2015	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141
2016	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
2017	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193
2018	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124
2019	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
2020	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124
2021	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098
2022	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227
2023	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110

year	L_CIC	L_slacha	L_Equity	L_Bar	L_Stanf	L_Dia	L_I&M	L_HF	L_KCB	L_EAcc	L_Ma	L_C&G	L_Sar	L_NSE	L_Saf	L_Tot	L_Kgen	L_KPLI	L_Scan	L_Uchul	L_Exp	L_KQ	L_Nmer	L_StaMe	L_Bani	L_Crow	L_TPS	L_Port
2014	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	
2015	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141
2016	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
2017	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193	0.193
2018	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124
2019	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
2020	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124
2021	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098
2022	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227
2023	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110