The relationship between the liquidity risk, financial leverage and firm financial performance: Evidence from Top-40 Johannesburg Stock Exchange (JSE) firms

by

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DECLARATION

I, Ntomolane Lobisa Matsoma, declare that the dissertation - *The relationship between the liquidity risk, financial leverage and firm financial performance: evidence from top-40 Johannesburg Stock Exchange (JSE) firms* - is my own work and that all the sources I have used or quoted in this dissertation have been indicated and fully acknowledged by means of complete references.

Date: 06 January 2022

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ABSTRACT

The focus of the study was to investigate the relationship between liquidity risk, financial leverage and firm's financial performance with evidence from top-40 JSE firms. Despite the existing literature on the topic, no study investigated the impact of liquidity risk, financial leverage on firm's financial performance with specific reference to top-40 JSE firms. The sample of 21 top-40 JSE firms were used, during the period 2011 to 2019. The data of the study were collected from Iress INET BFA database. The system generalized method of moments (GMM) was used to analyse the relationship between independent variables and dependent variable. The return on asset (ROA) and return on equity (ROE) as proxy of firm financial performance was used as dependent variable whereas, financial leverage, liquidity, firm size and growth opportunities as independent variables.

The findings revealed an adverse and remarkable connection between liquidity risk and financial leverage as represented by both DE and TDR. The study also demonstrated that liquidity risk has a negative and remarkable effect on firm performance as measured by both ROA and ROE. The researcher found that financial leverage as measured by DE and TDR has an adverse impact on firm performance as measured by ROA and ROE. The study recommended that top-40 JSE firms should put in place policies that reduce liquidity to increase company leverage as highly geared firms are at risk. The study recommends that directors and managers should control and manage liquidity risk and leverage as they are found to improve the variety and the quality of the firm's profitability. The implications for future studies are that the model can include several variables that are important in the past literature to expand the explanatory variables.

Keywords: liquidity risk; financial leverage; firm performance; JSE top 40

ABSTRACT/ OPSOMMING: AFRIKAANS

Die studie het daarop gefokus om die verhouding tussen likiditeitsrisiko, hefboomfinansiering en firmas se finansiële prestasie met bewyse van Top 40 JSEfirmas te ondersoek. Ongeag die bestaande literatuur oor die onderwerp, het geen studie die impak van likiditeitsrisiko en hefboomfinansiering op firmas se finansiële prestasie met spesifieke verwysing na Top 40 JSE-firmas ondersoek nie. 'n Steekproef van 21 Top 40 JSE-firmas oor die tydperk 2011 tot 2019 is gebruik. Die data is van die Iress INET BFA-databasis verkry. Die stelsel-algemene momentmetode (GMM) is gebruik om die verhouding tussen die rentabiliteit van bates (RVB) en opbrengs op ekwiteit (OOE) (afhanklike veranderlikes) as gevolmagtigdes van firmas se finansiële prestasie en hefboomfinansiering, likiditeit, firmagrootte en groeigeleenthede (onafhanklike veranderlikes) te ontleed.

Die bevindings het 'n kritiese en merkwaardige verband tussen likiditeitsrisiko en hefboomfinansiering getoon soos voorgestel deur beide skuld-tot-ekwiteitverhouding en totale skuldverhouding. Die studie het ook getoon dat likiditeitsrisiko 'n negatiewe en merkwaardige invloed op firmas se prestasie het soos gemeet deur beide RVB en OOE. Hefboomfinansiering soos gemeet deur beide skuld-tot-ekwiteitverhouding en totaleskuldverhouding het 'n negatiewe invloed op firmas se prestasie soos gemeet deur RVB en OOE. Die aanbeveling is dat Top 40 JSE-firmas beleide daar moet stel wat likiditeit verminder om maatskappyhefboomfinansiering te verhoog omdat firmas met hoë hefboomfinansiering bedreig word. Direkteure en bestuurders moet likiditeitsrisiko en hefboomfinansiering beheer en bestuur omdat hierdie faktore die verskeidenheid en gehalte van 'n firma se winsgewendheid verbeter. Die implikasies vir toekomstige studies is dat die model verskeie veranderlikes kan insluit wat in die literatuur as belangrik geïdentifiseer is om die verduidelikende veranderlikes uit te brei.

Sleutelwoorde: likiditeitsrisiko; hefboomfinansiering, firmas se prestasie, JSE Top 40

ABSTRACT/ KAKARETŠO: NORTHERN SOTHO

Šedi ya nyakišišo e be e le go nyakišiša kamano gare ga kotsi ya likhwidithi, tšhomišo ya ditšhelete le tshepedišo ya ditšhelete ya difeme ka bohlatse go tšwa go difeme tša JSE Top 40. Go sa šetšwe dingwalo tše di lego gona ka ga hlogotaba ye, ga go na nyakišišo yeo e nyakišišitšego khuetšo ya kotsi ya likhwidithi le tšhomišo ya ditšhelete go tshepedišo ya ditšhelete ya difeme gagolo go šupša difeme tša JSE Top 40. Sampole ya difeme tša JSE Top 40 tše 21 e šomišitšwe go tloga ka 2011 go fihla ka 2019. Datha e kgobokeditšwe go tšwa tatapeising ya Iress INET BFA. Mokgwa wa dinako wa tshepedišo ye e akaretšwago (generalised method of moments (GMM)) o šomišitšwe go sekaseka kamano gare ga poelo ya thoto (return on asset (ROA)) le poelo ya boleng bja thoto (return on equity (ROE)) (diphetogo tše di sa ikemelago) bjalo ka baemedi ba tshepedišo ya ditšhelete ya kgolo (diphetogo tše di ikemetšego).

Dikutullo di utolla kgokagano ye mpe le ye e kgolo gare ga kotsi ya likhwidithi le tšhomišo ya ditšhelete bjalo ka ge go emetšwe ke bobedi sekoloto go tekanyo ya kabelo (debt to equity ratio (DE)) le tekanyo ya sekoloto sa palomoka (total debt ratio (TDR)). Nyakišišo e bontšhitše gape gore kotsi ya likhwidithi e na le khuetšo ye mpe le ye kgolo go tshepedišo ya difeme bjalo ka ge e lekantšwe ke bobedi ROA le ROE. Tšhomišo ya ditšhelete bjalo ka ge e lekantšwe ke DE le TDR e na le khuetšo ye mpe go tshepedišo ya difeme bjalo ka ge e lekantšwe ke ROA le ROE. Tšhišinyo ke gore difeme tša JSE Top 40 di beya melawana yeo e fokotšago likhwidithi go oketša tšhomišo ya khamphani, ka ge difeme tšeo di fetogilego di le kotsing. Balaodibagolo le balaodi ba swanela go sepetša le go laola kotsi ya likhwidithi le tšhomišo ya tšhelete ka ge mabaka a a hwetšwa gore a kaonafatša dipoelo tša feme tša go fapafapana le boleng. Ditlamorago tša dinyakišišo tša ka moso ke gore mmotlolo o ka akaretša diphetogo tše mmalwa tšeo di bonwego bjalo ka tše bohlokwa ka dingwalong go katološa diphetogo tša tlhalošo.

Mantšu a bohlokwa: kotsi ya likhwidithi; tšhomišo ya ditšhelete; tshepedišo ya difeme; JSE Top 40.

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LIST OF ABBREVIATIONS

ACT	agency cost theory
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AMFI	Association of Micro Finance Institutions Reports
CR	current ratio
D/E	debt to equity
DPR	dividend pay-out ratio
FirmSZ	firm size
FGLS	generalized least square
FSA	financial statement analysis
GMM	generalized method of moments
GRO	growth of assets
ICMD	Indonesian Capital Market Directory
JSC	Jordanian Stock Exchange
L-CAPM	Liquidity-adjusted Capital Asset Pricing Model
LIQ	liquidity
LTDR	long-term debt ratio
JSE	Johannesburg Stock Exchange
M&M	Modigliani and Miller's recommendation
NSE	Nigerian Stock Exchange
OLS	ordinary least square
POT	pecking order theory
ROA	return on asset

ROE return on equity

- TDR total debt ratio
- TOT trade-off theory
- SME small medium enterprises
- SPSS Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1. Introduction

1.1. Background of the study

Before and after the global economic downturn during 2007-2008, the world experienced a remarkable financial downfall. The financial crisis developed from United States markets in 2007 before it spread worldwide in 2008. The emerging countries and emerging market economies including South Africa were negatively affected by the crisis. The effect of the crisis on the South African financial markets was caused by unprecedented capital outflows, reduction in real foreign investment (Rena and Msoni, 2014). During this period, the world economy was often described as "flooded with liquidity," meaning that the supply of credit was overflowing (Adrian and Shin, 2009).

Given the global economic downturn, numerous large organisations went bankrupt. For example, in 2007, an investment bank Bear Stearns, German Sachsen Landesbank, and in 2008, Lehman Brothers, Washington Mutual were some of the companies that went bankrupt (Guillén, 2009). The important reason behind the liquidation was the usage of ineffective liquidity risk management principles and the extra use of debt capital or borrowing (Rahman and Rahman, 2017). Therefore, it is important to effectively govern the liquidity risk and financial leverage as this will enable the firm to perform well and have long-term sustainability.

According to Kibuchi (2015), effective management of a firm's liquidity risk and financial leverage are considered as core elements of management functions for all businesses of all sizes. In contrary, Kibuchi (2015) argues that ineffective management of a firm's liquidity risk and financial leverage will result in a firm facing difficulties in meeting its financial commitments when they are due. Moreover, he highlighted that effective management of liquidity risk and financial leverage requirements of a company has direct effects on profitability. If the liquidity risk is well

governed and the borrowed funds used appropriately to cover resources, a firm can have adequate financial performance status. This means it can have a competitive edge over its rivals. According to Almajali, Alamro and Al-Soub (2012), firm's financial performance is the key activity of an organisation to gain and govern the assets in different ways and to expand and maintain a competitive edge over a long run.

Financial leverage refers to when firms use debts to finance its assets and projects (Odit and Chittoo, 2008). The use of debt financing can be beneficial to the available owners of the firms since it confers the connection between the earnings before interest and tax (EBIT) and the funds available to shareholders (Ndubuisi, Juliet & Onyema, 2019). On the contrary, Ndubuisi, et al. (2019) further assert that the more a company uses debts to finance its assets will cause the liquidity risk to be high. It is particularly important that companies maintain the debts ratios as minimal as possible to avoid more liquidity risk.

The researcher investigated the connection between the liquidity risk and financial leverage and the firm's performance with evidence from top-40 JSE firms during the period of 2011 to 2019. This topic originates from developed markets in established countries and less empirical research studies has being conducted in the emerging countries. The justification of using the top-40 JSE firms is that the South African financial market has been considered as the largest securities exchange in Africa. The top-40 JSE firms contribute over 80% of market capitalisation on the South African market. This preceding statement is supported by Mashamba and Magweva (2019) who indicated that JSE in South Africa is the biggest and leading securities exchange on the African continent with market capitalisation estimated at R14-trillion in June 2017. According to the World Economic Forum's global competitiveness survey for 2016- 2017, South Africa's JSE was among the highest ranked in position three in respect of supervision of securities exchanges around the world.

Mohohlo and Hall (2018) highlight that South Africa has a highly regulated security system and strong economy; therefore, it can develop from the world's financial difficulties without suffering major harm. Furthermore, they indicate that the weight and stability of the statements of the financial position of South African banks give them a boost in providing enough funds to companies in the country.

Pagach and Warr (2010) indicated that larger companies, with high financial leverage and unbalance cash flows have the tendency to implement a universal approach to manage liquidity risk. The management of financial leverage is key to any company that aims to maximize profit effectively. Nawaiseh (2015) demonstrates that effective financial leverage is important as it has a great effect on the benefits for the organisation and on the presence of the company in the market. However, management is likely to encounter liquidity risks because of insufficient amount of investment in working capital because of the shortage of liquidity. Chesang (2017) argues that whenever there is an increment on leverage, return and risk also increases, while a downfall in leverage causes the return and risk to go down. Moreover, he clarified that leverage can be divided into two parts, which are operating and equity trading. Financial leverage is described as utilisation of the stable charges of assets that is preference and debt capital alongside the stockholder's equity in the capital structure. Operating leverage is the extent to which organisations are having manageable fixed costs, a rise in fixed costs increases the operating leverage.

Vengesai and Kwenda (2018) argue that the trade-off theory indicates that leverage is the life wire of the business. It also amplifies that performance liquidity and cash flows are key to success. They further indicated that too much debt can lead to financial crisis, liquidation and underinvestment, rising from bondholder interest to maintain liquidity. However, Mule and Mukras (2015) argue that the trade-off theory deduces that advantages to using leverage in the capital structure until an ideal structure is reached. They further suggested that the theory perceives that interest on debt is tax-free and this will reduce the expense risk, therefore, expanding the reduction of tax income. In turn, an increased level of liabilities in an organisation makes it unsafe for shareholders to invest assets there.

1.2. Problem Statement

Studies on the connection among liquidity risk, financial leverage and the firm's financial performance have yet to produce strong link relation between the key variables. In emerging markets, a few studies have been conducted in connecting liquidity risk and financial leverage and the firm's financial performance but still find to be inconclusive and yielded mixed results. The existing literature showed a positive relationship among liquidity risk and financial leverage and financial leverage and financial performance (Dakua, 2019; Källum and Sturesson, 2017; Nawaiseh, 2015; Rehman, 2013).

In contrast, an adverse connection between liquidity risk and financial leverage and firm's financial performance has been found (Daryanto, Samidi and Siregar, 2018; Källum and Sturesson 2017; Lipson and Mortal, 2009; Frieder and Martell, 2006). In addition, some authors found that there is no relationship at all (Källum and Sturesson, 2017; Onofrei, Tudose, Durdureanu and Anton, 2015).

In South Africa, little attention has been given on liquidity risk management and financial leverage and their impact on the companies' financial performance. This little attention is caused by the great cost entanglement and lower returns that liquidity has in South Africa (Claassen and Van Rooyen, 2012). Furthermore, Claassen and Van Rooyen (2012) highlight that the effect of the financial crisis is extremely low as compared to the cost implications of another crisis if liquidity risk is not well managed.

As stated above, there are few empirical studies that are linking the liquidity risk with financial leverage and their effect on firm financial performance but there is no empirical study with specific reference to top-40 JSE firms. Therefore, the study examined the connection between liquidity risk, financial leverage and firm's financial performance with evidence from top-40 JSE firms to understand the risk appetite of the South African market during the period of 2011 to 2019.

1.3. Research purpose and objectives

The part has been split into units namely: primary objective and secondary objectives. The point is to obviously state what the review needs to accomplish, thus, deliverable.

1.3.1. Primary Objectives

• To examine the relationship among liquidity risk, financial leverage and the firm performance with evidence from top-40 JSE firms.

1.3.2. Secondary objectives

- To establish the connection between liquidity risk and financial leverage, evidence from top-40 JSE firms.
- To establish the effect of liquidity risk on the firm performance with evidence from top-40 JSE firms.
- To determine the influence of financial leverage on the firm performance with evidence from top-40 JSE firms.

1.4. The hypothesis

Hypothesis 1:

- H₀ There is no connection between liquidity risk and financial leverage with evidence from top-40 JSE firms.
- H₁ Liquidity risk has a connection with financial leverage, with evidence from top-40 JSE firms.

Hypothesis 2:

- H₀ Liquidity risk has no effect on the firm performance with evidence from top-40 JSE firms.
- H₁ Liquidity risk has an effect on the firm performance with evidence from top-40 JSE firms.

Hypothesis 3:

- H₀ Financial leverage has no influence on the firm performance with evidence from top-40 JSE firms.
- H₁ Financial leverage has an influence on the firm performance with evidence from top-40 JSE firms.

1.5. Research questions

The study answered the following questions:

- To what extent is the connection between liquidity risk and financial leverage with evidence from top-40 JSE firm?
- What is the effect of liquidity risk on the firm performance with evidence from top-40 JSE firms?
- Does the financial leverage influence firm performance with evidence from top-40 JSE firms?

1.6. Contribution of the study

There seems to be no consensus on the connection among liquidity risk and financial leverage. Therefore, the gap still exists. According to Goel, Chadhaa and Sharmaa (2015), no agreement was made with in respect to the connection between liquidity risk and financial leverage combined in relation of leverage and operating liquidity on the firm's performance.

It is important to conduct this study as it will give more clarity to check if the correlation between the liquidity risk and financial leverage with evidence from top-40 JSE firms exist. The development of this study will produce the results of the correlation between liquidity risk and financial leverage of South African markets and the extent to which the correlation between liquidity risk and financial leverage of South African markets.

1.6.1. Academics/Researchers

The results of research will add value to the existing pattern on investors' behaviour relating to the liquidity of companies. Academics/researchers will utilise the discovery

of the research to formulate the research questions and give a reference for future studies in the field of liquidity and capital structure.

1.6.2. Organisations/Institutions

This study will be beneficial to the management practitioners. It will enable them to gain insights on how to effectively manage the liquidity risk by applying appropriate methods such as measuring, monitoring and controlling liquidity risk. In addition, the findings of this research will be used as a reference point to organisations who wish to finance their projects using financial leverage.

1.6.3. Policymakers/Government

The findings of this study will help the policymakers to develop new standards in formulating the appropriate degree of liquidity for organisations especially for companies in which pension funds are been invested.

1.7. Structure of the study

Chapter 1: Introduction and Background

This section discusses the overall background the study on hand, the problem statement, the research purpose and objectives, the research hypothesis, research questions, the contribution of the study, and a brief overview of chapters to conclude this chapter.

Chapter 2: Literature Review

This chapter discusses the key variables and explain the different theories developed by previous authors about liquidity risk and financial leverage and critically evaluate and interpret the empirical literature.

Chapter 3: Research Methodology

This topic covers the tools, techniques and methods, which has been deployed to achieve the objective and hypothesis of the study.

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Chapter 4: Research Finding and Discussion

This chapter shows and discusses the different findings from the data collected.

Chapter 5: Conclusion and Recommendation

This chapter is the last section of the studies and demonstrates the closure of the study and discusses the recommendation as indicated by the after-effects of the research.

1.8. Conclusion

This chapter introduced the connection among liquidity risk, financial leverage and firm performance of top-40 JSE listed firms. International studies have been conducted on the related topic but few research studies have been conducted in relation to connection between liquidity risk, leverage and firm's financial performance with evidence from top-40 JSE firms. Nevertheless, there is no general conclusion in relation to the topic, related studies had inconsistent results, that is positive, negative and no relationship among liquidity risk, financial leverage and firm's financial leverage. The next chapter explains the theoretical and empirical literature that are related to this topic.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Introduction

The earlier chapter has touched on the background of the connection between the liquidity risk, financial leverage and firm performance. Musah and Kong (2019) investigated the correlation between liquidity and financial leverage and performance of companies on the Ghana Stock Exchange. The research indicated that the liquidity and financial leverage are both the determinants of the organisation's financial performance. Therefore, they require good planning, monitoring and management to improving the effectiveness of the firms. On the other hand, Shahzad and and Tariq Hussain (2016) indicate that every organisation that aims to maximise profit with minimum risk should therefore have a well structured plan to manage its risk for optimal profit. Therefore, organisations apply various approaches to manage liquidity risk as well as financial leverage. Jahfer and Madurasinghe (2019) highlight that liquidity and leverage management are important elements of firms as they both have a direct inflence on the performance of the firms. In addition, the organisations and all other business bodies should enfold both liquidity management and financial leverage management to assist them lower their risk associated with their business operations. This segment of the reseach will look at the review of literature covering the connection between the liquidity risk and financial leverage and companies performance with evidence from top-40 JSE firms. The chapter commences by looking at the theoretical literature, followed by the general definitions of main variables. The third point will be the empirical overview of the study which covers connection among liquidity risk and financial leverage with reference from top-40 JSE firms. Furthermore, the research will look at the correlation of liquidity risk on the firm performance with evidence from top-40 JSE firms. In continuation, the fifth section will cover the effect of financial leverage on the firm performance with evidence from top-40 JSE firms. The summary of overall literature review will conclude the chapter.

2.2. Theoretical literature review

This segment focuses on the theorical literature put forward by various academic scholars who have conducted research studies on the topics relating liquidity risk, financial leverage and firm's performance. The study has developed from the theory of agency cost, trade-off theory, pecking order theory, irrelevance theory and the theory of liquidity-adjusted capital asset pricing model. The justification of choosing these theories is based on their aim to relate investment and financial leverage with financial power and the profitability of the firm (Ngigi, 2015).

2.2.1. Agency cost theory (ACT)

The agency cost theory (ACT) was conceptualised and developed by Jensen and Meckling in 1976. In their study, Jensen and Meckling (1976) define theory of agency cost as the theory in which one or more persons connect with someone else to do the job on their behalf which includes designating some decision making to the agent. To add on the definition of the agency cost theory, AI-Tally (2014) indicates that the agency theory refers to the relationship issues between the principal and the agent. He further indicated that an agency relationship exists when a principal designates decision job to the agent. Moreover, AI-Tally (2014) highlights that the relationship issues arises when the activities or expectations of the agent and the principal are different. As indicated by Karanja (2018), leverage complements the company's performance by limiting the differences among shareholders and managers of a firm because of having more money. Jensen and Meckling (1976) point the conflicts between the debt suppliers and firms investors exist owing to the firm's financial performance. These might make conflicts because of the combination of investments either debt, equity or a mix of both (Myers, 1977).

The agency theory of Jensen and Meckling (1976) expresses that high debt instils discipline in shareholders and is therefore associated with better financial performance (Evgeny, 2015). In addition, Calabrese (2011) highlights that debt is a beneficial tool to manage the shareholders that uses debt to finance their capital. 2015). Hence, the agency theory keeps up the utilisation of debt financing to enhance financial performance (Muchiri, Muturi and Ngumi, 2016). The agency theory likewise

offers a significant assistance understanding a firm's use of debt (Marete, 2015). In particular, the utilisation of debt may decrease managerial diplomacy and curb the dissension between managers of the company and the investors of the company (Haugen and Baker, 2006). In that case, Jensen and Meckling (1976) added that an inflated degree of debt ratio (financial leverage) is affiliated to better firm financial performance. Along these lines, an agency costs theory explains the choices of the capital structure that should be a target to reduce the cost related to the agency.

This is done by expanding debt financing, therefore expanding the value of the firm just as lowering the friction that may exist between managers of a firm and investors (Mohamed, 2016). Jensen and Meckling (1976) argue that managers have a favourable advantage if they keep and maintain a low debt ratio as debt is not a prohibited cash flow. This statement is in line with the agency cost theory.

The theory recommends the use of debt financing by the firm to finance its capital expenditure is imperative (Calabrese, 2011). Calabrese (2011) maintains that managers concentrate on utilising the cash that an organisation has after paying off its operating expenses and capital expenditures to support the liabilities apart from making an effort to place the assets within unfruitful projects.

This theory was established on the idea that a manager's conduct can be constrained by debt financing (Mohamed, 2016). Mohamed (2016) added that the manager utilises the free cash flow to a lending rate of the acquired liabilities to back the firms' funding projects. The theory is therefore applicable to the present study since it informs one of the independent variables that is financial leverage. Agency theory argues that leverage can be utilised as an answer to any agency issue that may come up (Jensen and Meckling, 1976). The agency theory portrays an important role in financing decisions because of the issues that emerge among the debt holders and the shareholders (Aliu, 2010). Aliu (2010) further maintains that debt holders have a legitimate review if the board forsakes to make intrigue instalments when expected. As a result, managers who are concerned about possible job loss will be bound to work in the firm as productively as possible to meet the intrigue instalments, in this way adjusting their conduct nearer to shareholder wealth maximisation.

2.2.2. Trade-off theory

The trade-off theory (TOT) was originally initiated by Myers and Majluf in 1984. The trade-off theory underscores that choosing the ideal trade-off among equity, debt and is dependent on this hypothesis, firms endeavour to adjust among the strength and weaknesses of debt (Al Momani and Obeidat, 2017). Mule and Mukras (2015) added that the trade-off theory controls the way utilisation of leverage in a company's finance structure is advantageous up to where the ideal capital structure is obtained and directed by the harmony between insolvency and the tax benefit of borrowing (Owolabi and Inyang, 2013).

In consistency with trade-off theory, this study focused on the debt financing strategy for the firm to pay its assets. The trade-off theory justifies the use of debt that companies should opt to use frequently if its profit exceeds its expenses (Abdu, 2016). The theory is suitable to this review given that the greater part of the top-40 JSE firms select debt for their financing since debt is better positioned to make higher income and benefits appeared differently in relation to those that were not sharp with the degree of debt (Kayhan, and Titman, 2007). According to Mohamed (2016), the theory of compromise expresses that an ideal obligation amount is controlled by a connection between costs that are identified with debt financing against the advantages that will be acquired if debt financing is used by a firm. Therefore, there is a great leverage repossesses by a dynamically helpful firm to back its activities. Trade-off theory communicates that organisations with different benefits should back their exercises by utilising debt to keep away from the issue of illiquidity, which can seriously affect the everyday running of the firm (Rayan, 2010). Ju, Parrino, Poteshman, and Weisbach (2005) suggest that trade-off theory performs reasonably well in expecting capital structure for firms with ordinary degrees of debt. Their theory demonstrates that organisations are leveraged and the hypothesis predicts a leverage ratio. Moreover, they contended that it is imperative to perceive that while the trade-off model depicts the prediction of capital structures that are moderately like those watching for a common firm, and it does not think about all determinants of the capital structure decision. Adongo (2012) contends that the trade-off anticipates that huge beneficial

firms will use more obligation since they will undoubtedly have a high tax assessment rate and low bankruptcy hazard.

Kumar (2008), Franklin and Muthusamy (2010) and Ashraf and Rasool (2013) depicted the summary of trade-off theory main statements as follows:

- Looking to benefit from the tax rate on intrigue costs the profoundly exhausted organisations utilise more debt contrasted with the low taxed organisations. Therefore, profoundly exhausted organisations are utilised.
- The non-obligation charge (for example, deterioration) safeguard subs for the duty tax shield on interest cost. Dependent upon a gigantic non-obligation charge tax shield (for instance exactly when there is a likelihood to deduct a ton of deterioration from the available pay), the firm uses less obligation and is less used.
- Profitable firms use obligation to offset/stay away from corporate assessments. The firm that furnishes its customers with specific items is less used because the one-of-a-kind use of capital disposes of the danger of utilising this capital in numerous ways when the firm becomes bankrupt.
- This implies lower predictability of income and assurance of the firms from monetary trouble. Such a firm looks "safer" to the specialist; therefore, obligation financing is simpler gotten.
- As a result, the direct connection interfaces the size of the firm and the leverage.
 However, if it gets unsafe revenue sources, there is an indirect connection between profit and leverage.

2.2.3. Pecking order theory

The pecking-order theory (POT) conceptualised by Donaldson in 1961 when he directed a study investigation of 25 United States (US) firms and this theory demonstrates that organisations select inside funding to outside funding (Atiyet, 2012). In this theory, the management of the firm uses a hierarchical way to decide which method of financing first to pay its assets. The hierarchy theory proposes that firms lean toward internal payment over debt capital and spell out that organisations use

interior available funds first then issue debt and lastly if all else fails they issue equity capital (Abeywardhana, 2017).

As indicated by the theory, an ideal capital not really set in stone from outrageous changing of the expenses which are identified with debt financing and tax advantage for the use of debt financing (Mohamed, 2016). The decision of which capital structure to utilise is key in such manner, as this will decide how well the firm performs. In accordance with the pecking-order theory, this review gives a clear indication of the importance of using debt financing instead of equity financing.

As indicated by Mule and Mukras (2015), the pecking order theory does not stress target leverage; rather, current leverage reflects the company's verifiable gainfulness and the requirement for extra venture assets eventually in time and depends on data asymmetry. They further exhibited that the pecking-order theory describes why inside finance is more common than outside finance and why debt is seen as the most ideal decision for firms. In addition, they underlined that debt finance is seen as engaging and continuously advantageous as it is seen as versatile.

The work of Kumar (2008) recommends that the pecking order framework spreads out the linkages between the company's capital structure, profit and investment policies and proposes that organisations utilise inside value to pay dividends and account for new investments. In continuation with his investigation, Kumar (2008) sketched out that the pecking order theory positions interior equity at the top, trailed by debt and afterward crossbreeds of debt-equity, with an external asset at the foundation of the pecking order. He presumed that the pecking order theory expresses that organisations hold fast to a chain of importance of financing sources and favour inner financing when accessible; and, if outside financing is required, debt is favoured over equity. In his study of the determination of UK corporate capital gearing, Brierley (2005) concludes the pecking order theory by asserting that whenever retained earnings are deficient, administrators will settle on debt as opposed to equity finance, since debt suppliers, with a prior case on the company's resources and income, are less uncovered than value equity shareholder to botches in regarding the firm. Nonetheless, the manager will choose equity finance when in doubt in this process,

and these conditions, corporate furnishing will reflect a firm's necessity for outside reserves.

In relation to the study, top-40 JSE firms can utilise the pecking order theory to finance their investment. They use internal funds available (retained earnings), as they become depleted, the firm can utilise the financial leverage obtained through debt. However, choosing borrowing will make equity financing fall away. Likewise, pecking order theory recommends that organisations that are issue borrowing send a good signal about their future possibilities. This indicates that the organisation has greater investment opportunities and signalling is reliable with shareholder's wealth maximisation (Adongo, 2012).

2.2.4. Irrelevance theory

Irrelevance theory was first formed and introduced in 1958 by Modigliani and Miller and is currently seen as the beginning stage of the currently used capital structure theory. Modigliani and Miller (1958) highlight that irrelevance capital structure assumes that financial leverage has an indirect influence on the firm value. However, their theory depended on the exceptionally prohibitive assumptions that do not hold in the real world. These presumptions consolidate amazing capital business sectors, homogenous cravings, no expenses, and no trade costs. The presence of bankruptcy expenses and ideal tax treatment of premium portions lead to the prospect of an "ideal" capital design which enhances the worth of the firm or exclusively restricts its outright cost of capital.

According to Modigliani and Miller (1958) in what they call M&M recommendation-I, no capital structure mix is better than the another. Modigliani and Miller's recommendation-II endeavoured to respond to the question of why there was a high rate of return when the debt proportion was high. It communicated that the high expected rate of return created by debt financing offset the risk obtained, considering the financing mix picked. As shown by this hypothesis, the firm has a bunch of expected revenue sources, and when it picks some piece of debt and equity, all of what it does is that it parts up the revenue streams among monetary subject matter experts (Modigliani & Miller, 1958).

Abeywardhana (2017) explored behaviour of shareholders and capital market theory which acknowledged that the firms value is not affected by the capital structure of the firm. In addition, he pointed out that irrelevance theory is hypothetically extremely solid yet dependent on an unreasonable arrangement of presumptions. Along these lines, this theory prompted a plethora of research on immateriality and this hypothesis is substantial hypothetically; the world without assessments were not legitimate.

Modigliani and Miller (1958) show that firms can amplify their qualities by using more borrowing considering tax assessment that are lined up with the usage of borrowing. Henceforth, firms profit by taking on more leverage. As per theory, firms prefer to finance their assets using mix capital structure (debt and equity) under the perfect market. Goyal (2013) stresses that the kind of mix of debt and equity will limit the organisation's equity charge and therefore boosts the organisation's benefit and market value is the ideal capital structure. However, financial leverage does not have a well-defined equation for making a choice on ideal capital structure.

According to the theory, there is no financing structure which is better than the other, debt holder in the firm has the same values as equity holder. Therefore, this theory is appropriate for the study, as it postulates that financial leverage is in direct extent to the cost of capital which will rise under debt component and which will see equity shareholder a higher risk to the organisation (Kunga, 2015). The theory acknowledges that borrowers enjoy a benefit taking everything into account. Consequently, the cost of borrowing declines. This theory informs one of the main variables, which is financial leverage. The proven works of Modigliani and Miller (1963) are relevant to this study as they recommended that there are advantages to having a financial obligation in the capital structure. As indicated by Modigliani and Miller (1963), the introduction of taxes to debt gives an advantage to borrowers given that the interest paid on the taxes are tax deductible, which decreased the cost of debt, hence improving the firm's performance.

2.2.5. The liquidity-adjusted capital asset pricing model

In 2005, Acharya and Pedersen proposed and formulated the theory of liquidityadjusted capital asset pricing model (L-CAPM). In their liquidity-adjusted capital asset pricing model, Acharya and Pedersen (2005) posit that a shareholder's required return depends on its normal liquidity just as on the covariances of its expected return and liquidity with the exchange market return. Moreover, a persevering negative shock to a security's liquidity results in fallen existing returns and a rising future returns.

Garnia, Sudarsono, Masyita, and Primiana (2016) led an investigation of a liquidityadjusted capital asset pricing model utilising amortized liquidation cost as a liquidity measure. In their review, the liquidity-adjusted capital asset pricing model (L-CAPM) is viewed as an expansion of the standard capital resource evaluating model by considering the liquidation cost defined by Acharya and Pedersen in 2005. They further demonstrated that the standard capital asset pricing model is utilised to quantify deliberate risk.

According to Acharya and Pedersen (2005), the liquidity capital asset pricing model proposes that a market record, crossed from a mean-variance efficient asset space net of asset explicit liquidity costs, is a superior contender to lessen the detailed mispricing related with standard mean-variance CAPM. The generalisations of the model consider the assurance of asset prices inside the model and records for the complete expense of exchange as opposed to exogenously determined costs and model operators going up against the expense of selling (Acharya and Pedersen, 2005).

Lee (2011) observes that the liquidity-adjusted capital asset pricing model of Acharya and Pedersen (2005) is determined in a structure like the traditional CAPM, that is, risk avoidance investors that grow their normal utility under a given wealth necessity. In any case, in the L-CAPM, the trading cost-free stock cost is supplanted with the value that is adjusted by the stochastic exchanging cost.

Lee (2011) experimentally examined the liquidity-adjusted capital asset pricing model on an international level. Predictable with the model, he discovered that liquidity risk is evaluated freely from market risk in universal financial markets. That is, shareholders' required rate of return relies upon the covariance of its own liquidity with absolute nearby market liquidity, similarly as the covariance of its own liquidity with neighbourhood and overall market returns. He additionally demonstrates that the US market is an important main thrust of worldwide liquidity risk. Moreover, his discoveries uncovered that the valuing of liquidity risk emerge crosswise over nations as per geographic, monetary and political conditions.

The liquidity adjusted capital asset pricing model is applicable for this study, as it informs the liquidity risk, which is one of the variables. Garnia, et al. (2016) communicated that L-CAPM can be inferred by isolating the impact of illiquidity into the liquidation cost and liquidity risk. Furthermore, they demonstrated that the liquidity risk is utilised to represent the vulnerability of liquidation cost.

2.3. Definition of key variables

2.3.1. Liquidity risk

Liquidity refers to a measure which speaks to the capacity of a firm having resources to meet immediate and short-term obligation (Alina, Sher and Muhammad, 2016). Furthermore, liquidity risk may emerge because of liquidity mismatch which is estimated in terms of liquidity gap (Muriithi and Waweru, 2017). Liquidity gap arises because of the imbalance between assets and liabilities. Akhtar (2007) emphasises that liquidity risk can often emerge from apparent or actual liquidity weaknesses would have an opposite influence on the company performance.

EI-Massah, Bacheer and AI Sayed (2019) describe liquidity risk as the probability of not meeting financial obligations. Khidmat and Rehman (2014) assert that liquidity risk is an organisation's inadequacy to subsidise additional productive assets or potential inability to repay the liabilities due. Under basic conditions, the absence of enough liquidity could result in an organisation to be insolvency and could be set under receivership by the administrative authority.

2.3.2. Financial leverage

The financial leverage can be seen as the use of the debt finance by a firm instead to equity financing (Kenn-Ndubuisi and Nweke, 2019). According to Kenn-Ndubuisi and Onyema (2018), the use of debt financing in the firm's capital structure mix is efficient as it decreases the cost of capital which aids the increase in firm's net return. Therefore, the more a company uses borrowing in its capital structure, the more it

employs financial leverage which is one of the required tools to improve firm performance. Yousaf (2017) defines financial leverage as the extant to what a firm has utilised borrowed funds to finance its capital structure. Furthermore, he emphasised that if a firm uses most of borrowed funds from the bank to fund its capital structure then eventually the firm should pay a greater amount of fixed expense or loan fee. Therefore, over the top utilisation of debt to fund capital structure can increase the risk of the monetary crisis and the likelihood of insolvency which might emerge in view of the company's powerlessness to repay the acquired asset. Also, KhurramShabbir (2018) expressed that with regards to picking the best structure, finacial leverage that is generally appropriate for the organisations' needs and can bear more benefit. Failure to put contemplations on the capital structure might provoke less benefit, misfortune, liquidation, and decrease in the worth of the company's worth.

2.3.3. Firm's financial performance

Wekesa (2016) sees financial performance as an assessment of a firm's effective utilisation of its resources for its main business processes to produce earnings. This term likewise used to quantify a company's high monetary prosperity over a predetermined time or to give correlations about comparable companies that work in a similar industry level. Financial performance is portrayed as the utilisation of a wide range of bookkeeping measures to assess how well a firm is utilising its assets to produce profit (Kyule, 2015). The firm financial performance is often classified or measured as profitability that reflects the manager's capacity to acquire ideal return for resources available to them over a period. Profitability refers to net operating profit divided by total assets (Danis, Rettl and Whited, 2014).

2.4. Empirical framework

2.4.1. Liquidity risk and financial leverage

There has been a concerning debate in relation to the connection between liquidity risk and financial leverage. The question was, 'Does the connection between liquidity risk and financial leverage exit? The liquidity risk and financial leverage form the core elements for business survival. Leverage and liquidity are interconnected, and the
organisation holds convertible assets as a safeguard with the end goal of retaining the financial stuns and furthermore, to benefit the debts and future fixed charges (Owino, 2011). In relation to the idea of the trade-off theory capital structure, the high liquidity ratio indicates the firms' capacity to fulfil its short-term liabilities, this is supported by the positive connection between liquidity and financial leverage (Butt, Khan and Nafees, 2013). Even though liquidity was not mentioned in the general idea of the trade-off theory. Liquidity can also be linked with the firm's debt management strategy to enable the firms to invest their funds in liquid assets to benefit from high returns and to generate more funds to fulfil their debt commitments. In addition, trade-off theory also demonstrates the rise in the degree of liquidity risk and decreases the credit rate and automatically increases the debt usage thus the positive of liquidity on leverage (Owino, 2011). Whereas, in relation to pecking order theory, the theory predicts that the companies with more convertible resources can make use of its financial resources to finance business activities; however, less leverage can be expected (Ibrahim and Lau, 2019). In their findings, Ahsan, Wang and Qureshi (2016) consistent with pecking order theory, posit an opposite connection between liquidity risk and debt ratio in the short run. However, this connection becomes directly with long-term debt. In accordance with the agency cost theory, the strength of the firm's manager can be high, resulting in better financial performance through the utilisation of manager's power (Ramli, Latan and Solovida, 2018).

a) Mixed results on liquidity risk and financial leverage

In the other related study, results were found to be inconsistent "*mixed results*" (Ibrahim and Lau, 2019; Rajput and Chawla, 2019; Aymanns and Farmer, 2015). The study conducted by Ibrahim and Lau (2019) who investigated the influence of assets tangibility, growth opportunities, profitability and liquidity on financial leverage. Their results were found to be mixed (positive, negative and no relation). Their outcomes demonstrate significantly positive and opposite connection between liquidity and short-term debt ratio. They further found a positive correlation among asset tangibility, growth opportunities and long-term debt ratio. Liquidity shows negative and no relation to leverage. Though assets tangibility and growth opportunities had direct effect on debts ratio, and profitability and liquidity are contrarily critical to the debt ratio. Their

results were in accordance with the pecking order theory, they presumed that enduring organisations want to utilise interior resources as their fundamental need for financial leverage decisions to support the organisational task.

Rajput and Chawla (2019) also found the "mixed results" on their investigation on the capital structure determinants using significant factors like as tax, profitability, size, tangibility, volatility, and liquidity. They discovered a positive connection among firm size and assets tangibility, and both directly correlated to leverage but growth opportunities, volatility, and liquidity were indirectly correlated to leverage. But an unstable correlation was stressed between taxes, profitability with respect to leverage. The same results were also found by Aymanns and Farmer (2015) after examining the dynamics of the leverage cycle. In their findings, they have reported that dynamics resulting from bank leverage management are stronger than inconsistent results between leverage, liquidity risk and asset prices.

b) Positive results between liquidity risk and financial leverage

Previously, scholars discovered positive connection between liquidity risk and financial leverage (Zulkipli, Abdullah and Kamaluddin, 2019; Alao, Okewale, and Sanyaolu, 2019; Silwal, 2016; Rajendran and Achchuthan, 2013; Alkhatib, 2012; Moghaddam and Abbaspour, 2017; Khalaj, Farsian and Karbalaee, 2013).

In the similar study, Moghaddam and Abbaspour (2017) studied the impact of financial leverage and current ratio on earnings management and capital. The study was generalised from the sample 14 banks recorded on the Tehran Stock Exchange from 2010 to 2015. To test the hypothesis, the study used the multivariate linear regression models. They discovered that the level of financial leverage and current ratio has direct and significant impact on earnings management of banks.

Sari, Titisari and Nurlaela (2018) presented the evidence on the relationship between asset, liquidity, firm size, and profitability. The secondary data was used and purposive sampling method was used to come up with the samples of 156 firms recorded in Indonesian Stock Exchange between 2014 and 2015. They discovered a direct connection between liquidity and financial leverage.

Tahir, Mushtag, Nasir and Khan (2017) conducted the study on factors affecting financial leverage with specific reference to oil and gas industry of Pakistan. The authors adopted the regression analysis with the use of STATA to run the data. The study discovered that liquidity risk has a perfect correlation on financial leverage. These findings also suggest that most large developing companies tend to opt for external funding to pay for their borrowing.

Silwal (2016) assessed a research on the correlation between liquidity and financial leverage with empirical evidence from Nepalese non-financial recorded companies during 2005 to 2014. The study used the samples of 18 firms listed on Nepal Stock exchanges. To check the correlation between liquidity and financial leverage, the study adopted multivariate regression analysis. The independent variables were comprising liquidity, company size, market to book. The dependent variable was devoted as financial leverage. The research discovered a positive correlation between liquidity and financial leverage.

Also supporting positive relation are Nwanna and Ivie (2017) who investigated the connection between financial leverage and firm's performance with specific reference to banks recorded in the Nigerian Stock Exchange. The leverage was measured by debt ratio, debt-equity ratio and interest coverage ratio, whereas the firm's performance was by profitability, size, liquidity, and managerial efficiency, and market capitalisation value. The sample of the study consisted of 13 listed banks in Nigeria Security Exchange from 2006 to 2015. To test and analyse the hypothesis, the study applied the multiple regression models. The findings of the study revealed a direct connection between leverage and firm performance. In contrast, managerial efficiency and financial leverage shown to have no relationship with liquidity, size and market capitalisation value.

Goel, Chadhaa and Sharmaa (2015) studied the relationship between liquidity and leverage, with evidence from Indian machinery industry. In their studies using ten-year data of 151 Indian types of machinery, they found a direct correlation between the liquidity and financial leverage.

Related study conducted by other authors confirmed a positive correlation between liquidity risk and financial leverage. Zulkipli, Abdullah and Kamaluddin (2019) assessed the influence of leverage on liquidity together with firms' financial performance of the Malaysian farming industry during 2011 to 2015. Furthermore, their study also tries to analyse both the ability the financial leverage and liquidity in anticipating firms' financial performance. Forty agricultural firms that were listed in the Bursa Malaysia were used as a sample. The findings reveal a strong direct correlation between financial leverage, liquidity and the firm performance. Furthermore, they indicated that both financial leverage and liquidity can additionally explain and predict how the firm will perform. The results inform the trade-off theory, which anticipated an increase on profitability would decrease the degree of debt, but the increase can only be seen if the optimal level of debt is reached; otherwise, there will be no increase on profitability.

Alao, Okewale, and Sanyaolu (2019) analysed if leverage has an influence on the liquidity of Nigerian companies recorded on the NSE. In their study, they used the sample of only 17 Nigerian consumer goods firms recorded on the NSE from 2012 to 2017. The study used a multiple regression method to analyse the data. The researcher revealed that leverage has a positive influence on liquidity management among consumer goods companies in Nigeria.

Rajendran and Achchuthan (2013) investigated the connection between liquidity and financial leverage from Sri Lanka Telecom Plc. The secondary data concerning to the connection between liquidity and financial leverage from the 2005 to 2011 were gathered. The study used the regression method to address the question of, "To what degree does liquidity influence the financial leverage of the Sri Lanka Telecom Plc?" The investigator revealed that the decision making on the financial leverage highly relies upon the liquidity management of the Sri Lanka Telecom Plc. Because of that reason, the firm should concentrate on the liquidity management to make the decisions on the financial leverage which should direct firm's value in the long-term. Thus, the positive connection between liquidity and financial leverage exist in long run point of view.

Alkhatib (2012) analysed the determinants of financial leverage with the specific reference to industrial and services sectors firms listed on the Jordanian Stock Exchange (JSC) during 2007 to 2010. Research sample size was consisting of 121 firms listed on the JSC during 2007 to 2010. The research adopted regression model to analyse the data. A direct connection between liquidity and financial leverage was discovered for the industrial and service sectors of Jordan.

Khalaj, Farsian and Karbalaee (2013) assessed the connection between liquidity and leverage with evidence from top100 listed public Malaysian firms. The period of the research was for five years from 2006 to 2010 fiscal years. The liquidity was classified as independent variable with the proxy of current ratio, whereas, leverage as classified as dependent variable with the proxy debt ratio. Research findings revealed a strong direct correlation between liquidity and financial leverage.

Šarlija and Harc (2012) evaluated the effect of liquidity on the financial leverage of Croatian companies. Correlation analysis was employed to analyse the connection between liquidity and financial leverage. The study used a survey to conduct the research from 1045 Croatian firms' sample. The researcher a direct relationship between liquidity and leverage. Furthermore, they highlighted that the weight of the connection between liquidity and financial leverage is stronger in a short run than in the long run. They concluded that firms with greater liquid assets tend to be less leveraged in the long run, which can lead to inventory level increment, therefore, increase leverage. However, having more money in current assets can result in a decrease in the short and long-term leverage.

In addition to the literature, Morellac (2001) testifies that resources are utilised as insurance and the connection between liquidity and leverage relies upon the degree to which there are mutual agreements between the firm and bondholders. In his discoveries, Morellac (2001) demonstrates that transfer of assets reduces the size and estimation of a firm and limitation pledges between debenture holders and the firm diminishes the risk exposure of creditor's hence direct connection relationship between leverage and liquidity, then, if the limitation arrangements are not set up, adverse connection exist.

c) Negative relation between liquidity risk and financial leverage

In contradiction to positive results, some studies found negative connection between liquidity risk and financial leverage (Njire, 2014; Frieder and Martell, 2006; Lipson and Mortal, 2009; Onofrei, et al., 2015; Ghasemi and Ab Razak, 2016; Wolmarans, Moyo and Brummer, 2013; Oduol, 2011; Sidhu, 2018).

In their study, Jahfer and Madurasinghe (2019) investigated the influence of leverage on liquidity. Only thirty-seven (37) companies were selected Colombo Stock Exchange to make the sample of the study during 2009 to 2016. The study adopted panel data, fixed effect analysis to analyse the data. From the analysis of the study, it was reported that liquidity ratios have an inverse relationship with capital.

Based on the belief of equity market to give useful data for a firm to make decision, Dang, Ho, Lam, Tran and Vo (2019) analysed the connection between liquidity and corporate capital structure decision. The study also tested whether the relationship between selected variables effect differs from country level institutional environments. The population of the study consists of 19,939 firms from comprehensive international dataset was used. The sample of the study was generalised across 41 countries during 2000 to 2010. The study revealed that liquidity has adverse connection with leverage. From the findings, it was indicated that companies with greater liquidity will have lower leverage. Secondly, countries with institutional environments strength are likely to have an insufficient connection between liquidity and leverage.

Njire (2014) investigated the influence of leverage on corporate investment for nonfinancial firms listed at the Nairobi Securities Exchange. He used a sample of 45 organisations to conduct his study. Only 37 out of 45 firms were used in his study which is 82.2 per cent, these excluded the financial related: banks and protection firms due to the regulations in the area. He utilised quantitative strategies in breaking down the information, using SPPS version 21.0. His investigation found an adverse connection between financial leverage and corporate investment. Liquidity likewise negatively affects investment. Furthermore, discovered an adverse connection between the firm's decision on investment and the cash stream, profitability, firm size, and growth, while an opposite relationship exists with leverage and liquidity. These findings were supported by Frieder and Martell (2006), Lipson and Mortal (2009) tested the connection between leverage and liquidity. They discovered an indirect connection between liquidity risk and financial leverage. Daryanto, Samidi and Siregar (2018) studied the influence of the liquidity and leverage on financial performance with reference to Indonesian property and real estate enterprises. In their result of the analysis, they showed an inverse connection between liquidity risk, financial leverage and financial performance.

Sidhu (2018) embarked on the same journey to investigate the relationship between leverage and stock liquidity. The period for the research was for five (5) from 2009 to 2013. The multiple regression technique as used to test and run the data. The results indicated that the stock market liquidity has an inverse relationship with firms' leverage. However, when the degree of debt decreases can cause the stock market liquidity to be high.

Onofrei, et al. (2015) examine the factors of capital structure of micro- and small enterprise in Romania. Their investigation used debt ratio as the dependent variable and five elements (profitability, tangibility, liquidity, size, and growth opportunity) as factors of capital structure. They have discovered that leverage is inversely connected to tangibility, profitability and liquidity while the size of the firm and growth opportunities have additionally been found to negatively affect the leverage, however to a lower degree.

Ghasemi and Ab Razak (2016) explore the influence of liquidity risk with the proxy of (current ratio and acid test ratio) on the financial leverage (debt-equity and debt-asset ratios) among companies recorded in the Market of Bursa, Malaysia from 2005 to 2013. The study used pooled ordinary least square regression method to analyse the acquired data. The results of the study demonstrated that liquidity has a positive correlation on leverage. Although it was additionally revealed that the acid test ratio has a remarkable impact on leverage while the current ratio is indirectly connected to leverage.

Oduol (2011) tested the connection between liquidity and financial leverage of firms listed on the Nairobi Stock Exchange. The sample of the study was on 30 listed firms on the NSE for five year (2006 to 2010). The secondary data were analysed by means

of multivariate regression analysis. The researcher discovered an adverse and insignificant connection between liquidity and leverage of the firms listed on NSE.

Wolmarans, et al (2013) assessed the dynamic factors of capital structure with evidence from South African firms. The study used the sample of 96 firms recorded on the Johannesburg Stock Exchange (JSE) from 2005 to 2010 to explore the correlation between leverage and the financial performance. In accordance with the trade-off theory (TOT) and agency cost theory, their findings demonstrated that expenditures are directly connected to financial leverage, while asset tangibility and retention rate are adversely related to financial leverage. Their results support the validity of the pecking order theory. Lastly, liquidity and financial crisis are indirectly related to financial leverage by the trade-off theory which anticipated a rise on leverage will increase the profitability of the firm.

The case study conducted in Thailand by Udomsirikul, Jumereornvong and Jiraporn (2011) probed the correlation between liquidity risk and financial leverage. After all the tests have been conducted, an adverse connection was found between liquidity risk and leverage. Moreover, the review featured that organisations with more convertible equity will in general have lower equity cost and they may settle on more equity costs than less obligation in their capital structure.

2.4.2. Liquidity risk and firm's financial performance

Efficient liquidity management is a key factor that assists in providing sustainability on the firm's profitability and simultaneously keeps the financial institutions from illiquidity (Okaro and Nwakoby, 2016). Eljelly (2004) argues that managing liquidity is vital when firms are in good financial shape, and even more vital when the firm is in financial crisis which may lead to poor profitability. Liquidity and company performance remain significant boundaries for organisations with respect to the assessment of resources. Liquidity remains a critical determinant of working capital which is a key in managing short term funds for companies. If the firm's liquidity risk is well managed, then it can lead to an increase in the working capital and increase firm's financial performance (Sattar, 2020). In relation to trade-off theory, liquidity and profitability are interlinked which play critical role in the study. The general expression for the literature has

aligned itself to the trade-off between liquidity-profitability which says that these two variables cause a non-ending conflicts, therefore a picking one over the other will automatically say trade-off of the other (Dash and Hanuman, 2008).

In the existing literature, Sattar (2020) conducted the study in textile sector to assess the connection between liquidity and profitability. The study adopted simple regression method test and run the data in Stata 12. The findings of the study revealed that liquidity with the proxy of current ratio has remarkable correlation on company performance with the proxy of return on equity (ROE) in 2014 but in 2015 the findings revealed that current ratio has direct but insignificant influence on return on assert (ROA). Agreeing with the direct connection are Le and Phan (2017) who found a direction and insignificant connection between liquidity and profitability.

Durrah, Abdul, Syed and Nour (2016) explore the influence of liquidity ratios on the factors of profitability for food industries firms listed in Amman Bursa. The period of the study three years was from 2012-2014. Their study demonstrated that liquidity ratios has no effect on profit, whereas, current ratio has a direct but weak influence on profitability of food industries firms listed in Amman Bursa. Similarly, Shabbir and Iftikhar (2018) conducted research on the connection between liquidity risk and company performance. It was highlighted by the researchers that firms in the textile sector use their finished goods as the main resources or assets. This was done mainly because the rise in working capital needs firms to have more convertible assets. The value and sustainability of the firm depend on the profitability and the quality of the product. The quantitative data collection was done with use of 30 manufacturing sectors as a sample. A regression technique was used to run the analysis. The findings discovered a perfect connect between liquidity risk and company performance.

Gonga and Sasaka (2017) explored the indicators of the financial performance with evidence from 55 registered insurance companies in Nairobi County. The study adopted mixed research approaches to gather the information. The data were collected through primary and secondary sources. The researcher's findings posit a weak direct connection between liquidity and firm's performance.

Wekesa (2016) investigated the connection between liquidity risk and profitability of commercial banks in Kenya. They used a descriptive research design to test their variables with the assistance of the SPSS, their data was assessed using descriptive statistics, correlation and regression analysis as these are standard approved tools for using descriptive research designs. The researcher discovered that liquidity has a positive and remarkable connection with the profitability. Owing to the findings that Wekesa (2016) recommended, future studies should utilise a composite proportion of bank performance that includes both qualitative aspects, (for example, customer satisfaction) and quantitative measures, for example, equity, net interest margin and ROA ought to be received to discover how liquidity risk influences commercial banks' performance.

Alzorqan (2014) conducted a study on bank liquidity risk and performance on the banking system in Jordan. The purpose was to investigate difficulty of ascertaining optimal bank liquidity that would guarantee stable and profitable financial operations. The population comprised all the 23 commercial banks in Jordan with the sample of two banks. Regression model was utilised to estimate the connection between the variables under assessment from 2008 to 2012. The researcher discovered a direct influence liquidity risk and financial performance.

Mugetha (2019) explored the influence of liquidity on firm performance of recorded companies in the Nairobi Securities Exchange. In his studies, he discovered that liquidity has a positive and remarkable influence on firm performance of listed firms in the Nairobi Securities Exchange. Furthermore, he added that liquidity plays a vital job in the well-functioning of a business. Liquidity is not only assisting with guaranteeing the individual or business on having consistent dependable stock on hand. However, it is also advisable for firms to have more liquid assets which assist in deciding the financial well-being of the future investments.

Dakua (2019) studied the influence of liquidity on financial leverage in the Indian steel industry. The author used correlation matrix, multiple regressions to test variables. The investigator discovered a positive among productivity and liquidity together with debt ratio. However, he revealed an indirect connection between debt ratio and asset structure.

Ehiedu (2014) explored the impact of liquidity on firm performance of selected firms and utilising the Financial Statement Analysis (FSA) approach. The quantitative research design was used in the investigation. The population comprised publicly recorded firms which forms "Mechanical/Domestic products" industry. His general findings revealed a perfect connection between liquidity and profitability but no clear connection between acid-test ratio and profitability.

Kibuchi (2015) explored the nexus between liquidity and firm performance of commercial banks in Kenya. His study employed descriptive research approach. He additionally utilised cross-sectional timeframe in which information was accumulated from 2010 to 2014 and therefore, a causal study was utilised in a non-created setting with no researcher obstruction. Multiple regressions were applied to evaluate the effect of liquidity risk on banks' financial performance. His results discovered a positive connection between ROA and customer deposit, cash balance and firm size. However, a direct connection between ROA and liquidity risk existed. Kibuchi (2015) concluded by saying that liquidity risk might not only have bad influence the firms' financial performance but also on its image. Moreover, he highlighted that liquidity risk might cause a loss of trust among the investors if they are not informed of them in advance.

Yusoff (2017) examined the correlation between liquidity, debt and profitability among large firms in consumer product sector in Malaysia. His investigation used panel data to assess the data. Researcher retrieved from the announced financial statements of 116 firms in the consumer product sector during 2012 – 2015. The results revealed a positive and remarkable impact between liquidity in term of acid test ratio and firm performance. However, when using the current ratio, the negative and insignificant relationship was found on firm performance. Lastly, the author recommended that organisations can enhance their financial performance by raising the degree of liquidity and keeping up their optimal debt structure level.

Rehman, Khan and Khokhar (2015) explored the correlation between liquidity and profitability with specific reference from 99 listed companies in Tadawul. The general findings of the study indicated a perfect correlation between ROA and the current ratio. Furthermore, they uncovered an indirect correlation between the ROA and acid test

ratio and cash ratio of the organisations in Saudi Arabia. They also revealed an inverse correlation between the profitability, acid test ratio and cash ratio.

Ajanthan (2013) analysed the creation and degree of the connection between liquidity and profitability in profit-oriented listed trading firms in Sri Lanka Stock Exchange. Secondary data were extracted from the company's annual reports and accounts for the year 2008 to 2012. To analyse the connection between liquidity and profitability and to check if there is any cause and effect relationship between them, the study used correlations and regression analyses. The sample of the study consisted only eight trading companies recorded on Sri Lanka for five years. The results revealed a direct connection among liquidity and profitability.

Ahmad (2016) investigated the correlation between liquidity and firm performance of the standard chartered bank of Pakistan. Secondary data were used extract data. To discover the relationship and quality of the relationship, regression analysis was used. The research discovered an insignificant positive correlation between liquidity and profitability. Moreover, Ahmad (2016) suggested that firms must concentrate on liquidity management which has a direct relationship with the firm's profitability.

Mwangi (2014) empirically analysed the influence of liquidity risk on firm performance of deposit taking microfinance institutions in Kenya. The information was obtained from the institution's annual reports, Association of Micro Finance Institutions Reports (AMFI) for five years period from 2009 to 2013. The author adopted quantitative research approach. Inferential statistics were utilised to describe the main features of data collection. To analyse and run the data, the author used correlation and linear regression. The findings revealed that liquidity risk has a direct influence on firm performance.

Olalekan (2018) evaluated the connection between liquidity risk and firm performance of insurance companies listed in Nigerian Stock Exchange from 2011 to 2015. The total number of 25 insurance companies were selected but only 12 were used as a sample. The existing data extracted from company's financial reports were used, while the regression method was used to assess the data. The results revealed an opposite connection between liquidity and the ROA. Olalekan (2018) recommended that managers, investors and other stakeholders must control and manage liquidity risk because it was previously discovered to improve the nature and the quality of the firm performance.

Maaka (2013) explored the influence of liquidity on financial performance of commercial banks in Kenya. The study utilised the quantitative design and secondary data were extracted from the balance sheets, statement of comprehensive income and notes from commercial banks in Kenya. The samples of 33 commercial banks were used for the period of five years. The multiple regression analyses were used to check the influence of liquidity risk on financial performance. The findings of the study demonstrated that liquidity risk has an inverse influence on the firm's performance among Kenyan commercial banks. This negative relationship is caused by the increase in liquidity gap and leverage.

In his study, Ologbenla (2018) assessed the connection between liquidity management and profitability of insurance firms quoted on the Nigerian Stock Exchange. Quantitative data were extracted from the yearly reports of five quoted insurance companies. The obtained data were for the period of ten years from 2003-2012. Multivariate regression analysis was applied to run the data. The study discovered an inverse connection between liquidity and profitability with the proxy of ROA.

Using different sector, Ayako, Githui and Kungu (2015) conducted the study on factors of the profitability using non-financial companies quoted on the Nairobi Securities Exchange. The authors used the sample of 41 non-financial companies quoted on Nairobi Securities Exchange from 2003 to 2013. Multiple regression model was used to test and run the data. The investigator discovered an adverse connection between liquidity and profitability.

Khalid, Rashed and Hossain (2019) empirically investigated the correlation between liquidity and company performance of commercial banks in emerging countries, Bangladesh. Their assessments were performed using panel data model. The sample of 31 commercial banks listed on Dhaka Stock Market during 2010-2017. They discovered a negative correlation between liquidity and company performance.

Malik and Awais (2016) also added the information about the connection between liquidity and firm performance. The study was conducted to assert the trade-off between both liquidity and firm performance of Pakistan banks. The sample of the study consisted of 22 selected banks from Pakistan for the period of four years. The ordinary least square was utilised to measure the connection between liquidity and financial performance. It was discovered that there is no connection among liquidity and firm performance. These results were because of no clear structure from banks. However, Pakistani banks need to restructure the shareholders equity and give an optimal performance for the firm.

2.4.3. Financial leverage and firm's financial performance

Nguyen, Nguyen, Tran and Nghiem (2019) assert that financial leverage can have huge influence on the performance of the firms. Subsequently, the measurements of how financial leverage affects the firm performance are imperative and necessary to improve the efficiency of the firm. Furthermore, Shabbi (2018) added that the financial leverage effect forms one of the puzzles for management, with regards to shaping the finest leverage which is generally appropriate for the firm's demand. Inability to put contemplations on the capital structure may prompt less profitability, deficit, bankruptcy and reduction in the firm's worth.

The pecking order theory supports the connection between financial leverage and firm financial performance as suggested by AI-Tally (2014). The pecking order theory foresees that most large companies with a high degree of financial needs to sustain the businesses will have a possibility of high debt ratio since managers do not favour internal funds (AI-Tally, 2014). Bistrova, Lace and Peleckiene (2011) support the pecking order theory. Their research discovered an opposite correlation between debt ratio and firm performance. However, firms should use equity to finance its capital and avoid the use of debt. In the study using Pakistani firms, Mujahid and Akhtar (2014) tested the connection between financial leverage and firm performance. Furthermore, the authors suggested that firms need to be very careful in choosing the right structure to finance its capital. Amara and Aziz (2014) investigated the connection between leverage and firm performance and discovered that leverage and firm performance.

performance have an adverse connection. Therefore, the results highlighted that firms need to be alert in this regard and believe that wrong capital structure combination can negatively affect the firm's performance.

The agency cost theory supports the influence of financial leverage on firm performance. In testing the relationship between these variables using agency cost theory, Ahmed, Awais and Kashif (2018) discovered an adverse correlation among financial leverage and firm performance. The agency cost theory's suitability for this study is affirmed by Margaritis and Psillaki (2010) and Berger and Bonaccorsi (2006). As such, Fama and French (2002) contend that the usage of excessive debt makes agency issues among financial investors and loan specialists and that cause an indirect connection among leverage and profitability. Also supporting this relationship is the theory irrelevance which was revised by Modigliani and Miller in 1963, in their initial theorem. The theorem proposes that financial leverage is relevance to firms. Their theory predicts that high financial leverage assists the firm with valuable tax shields that strengthen the value of the firm. This study is supported by the revised theorem which predicts that financial leverage as a positive impact on profitability.

Various examinations have been conducted in relation to the connection between financial leverage and financial performance (Puwanenthiren, 2011; Chakraborty, 2010; Olaniyan, Soetan and Simon-Oke, 2017; Jeleel and olayiwola, 2017; Shahid, Akmal and Mehmood, 2016; Twairesh, 2014; Ahmad and Ali, 2016; Gweyi and Karanja, 2014; Suhaila, 2014; John-Akamelu, Iyidiobi and Ezejiofor, 2017; Raheel and Shah, 2015; Achchuthan, and Jasinthan, 2012, Leon, 2013).

In relation to the study, Källum and Sturesson (2017) conducted research on the connection between leverage and firm performance in Sweden. Their results showed inconsistency between the variables. Their findings demonstrated a significant positive, a significant an adverse and no significant connection between financial leverage and financial performance.

Dey, Hossain and Rahman (2018) studied the correlation between leverage and firm performance in publicly traded manufacturing companies in Bangladesh. They used two ordinary least square (QLS) regression models which comprising of 816

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observation (48 organisations x 17 years). Financial performance measured through ROA, ROE, EPS, and Tobin's Q, while financial leverage was estimated by using debtassets ratio and debt-equity ratio. Their discoveries indicated that ROA and Tobin's Q have inverse relationship with financial leverage, which is in accordance with the pecking order theory and numerous exact examinations. However, financial leverage has a direct connection with ROE and no connection with EPS.

Ramli, et al. (2018) tested the connection between leverage and profitability and the intervening influence of firm leverage in Malaysia and Indonesia. The existing information was used and the time frame for the study was from 1990–2010. The investigators when using the Malaysian sample, discovered a perfect connection between leverage and profitability. The study confirms that Malaysian firms use debt financing over the equity financing to improve profitability. On the same research, the findings demonstrated that the firm's leverage is vital in Malaysia than when using the Indonesian sample.

Iqbal and Usman (2018) examined the nexus among leverage and the firm performance of Textile Composite Companies listed in the top100 PSX of Pakistan. The five years data were gathered for the study from 2011-2015 and only the top 16 listed companies were chosen to the sample. The investigator utilised descriptive statistics, correlation analysis and regression model to do the analyses of the data. They found an indirect and remarkable influence between leverage and company's ROE. Furthermore, they revealed a direct and remarkable effect on return on asset. A high-financing cost and more measure of debt can make an equity value to go down. Notwithstanding, the amount of debt can cause an expansion in the organisation's profit. These results revealed a direct connection between leverage and profitability.

Kerim, Alaji and Innocent (2019) reviewed the connection among leverage and company performance of insurance companies recorded in Nigerian Stock Exchange from 2013 to 2017. The correlational design was utilised in the study. Targeted population of the study was 28 listed insurance companies but only 15 companies were included in the sample. The existing data were extracted from the published yearly reports for insurance companies in Nigeria. Collected data were assessed using

an ordinary least square regression model. The researchers revealed an inverse connection between debt ratio and profitability.

Abubakar, et al. (2018) assessed the impact of leverage on the company performance with the reference from conglomerates companies recorded in Nigeria. The sample size for the study consisted of five listed conglomerates companies. The study used the secondary data collection extracted from five conglomerates companies recorded in Nigerian Securities Exchange for the period of 12 years, from 2005 to 2016. The study used the descriptive research design consisting of measurements of tendency, coefficient of variation, skewness and kurtosis to align and present the data to be analysed. The results discovered a direct connection between leverage and company performance.

Gathara, Kilika and Maingi (2019) assessed the correlation between leverage and firm performance of selected firms listed at Nairobi Stock Exchange in Kenya. The study utilised the panel data model to examine the correlation between independent variable, the financial structure and firm performance. Their study data were gathered from 30 selected firms from 2007–2015. The investigation embraced the positivist way of thinking as it concentrated on objectivity and suit quantitative research with the target of testing theories. Furthermore, their study used existing data that were received from the yearly reports and financial reports of those selected firms. The researchers found a perfect correlation among leverage and firm performance of selected firms recorded at Nairobi Stock Exchange in Kenya. Gathara, et al. (2019) recommend that managers of the firms should utilise the wellsprings of money since financial leverage emphatically affects the profitability of the recorded firms in Kenya.

Tripathy and Shaik (2020) analysed the influence of leverage on financial performance for 56 food processing firms recorded in Bombay Stock Exchange over the period 2000-2018, utilising OLS, fixed effects, and random-effects models. The study found that leverage is significantly and positively correlated with financial performance. Moreover, they demonstrated that discoveries acquired are robust across the estimation techniques utilised. Nguyen, et al. (2019) assessed the connection between financial leverage and profitability, return on sales and return on capital employed among listed real estate companies in Vietnam. The data for the study were collected from 158 real estate companies listed on Vietnam Stock Exchange with 464 conservations. The quantitative research design was applied. The E-View 11.0 research software was used to analyse the collected data. Research discovered a perfect connection between leverage and profitability. As per the results of the study, the researchers propose explicit suggestions and answers for improving performance of companies recorded on Vietnam Stock Exchange.

Shimenga and Miroga (2019) explored the correlation between leverage, liquidity and firm performance of manufacturing companies in Kenya. The primary data collection was utilised. The method used to collect the primary data was structured questionnaires, while content validity was utilised to validate the data. The statistical package for the social sciences version 24 was utilised. The total number of 95 respondents participated in completing the questionnaire but only 87 of them completed the questionnaires. The study revealed a direct correlation between leverage, liquidity and the firm performance of manufacturing companies listed in NSE. Lastly, the study indicated that whenever the financial leverage has a perfect influence on the firm performance of manufacturing companies, the manufacturing will likely have an increase in their profitability. On the other hand, the study highlighted that when liquidity is a direct indicator of the financial performance, manufacturing companies with effective cash flow management will tend to have sustainable profitability for more years to come.

Kuria and Omboi (2015) studied the influence leverage on financial performance investments and banking firms recorded on the Nairobi Stock Exchange in Kenya for the from 2009-2013. Their research utilised descriptive and regression analysis techniques to assess the influence of the variables. Their findings uncovered a positive and remarkable connection between debt to equity ratio and ROE.

Gweyi and Karanja (2014) explored the connection between financial leverage and firm performance of savings credit co-operative society in Kenya. Existing data were obtained from the savings and credit c-operative society registered by Sacco Society Regulatory Authority from 2010 to 2012. The quantitative research approach was used. The results discovered a direct connection between financial leverage and financial performance.

Aliu (2010) explored the influence of leverage on firm performance of listed manufacturing companies in the Nigerian Stock Exchange. The researcher used a simple regression model to test and analyse the data. The study discovered a direct connection between leverage and firm performance of the listed manufacturing companies in Nigeria. The researchers argued that a with more profitability performs well and encounters lower debt.

Nawaiseh (2015) examined the impact of productivity and the company's size as an independent variable on leverage as an intermediary of total liabilities to total assets proportion (leverage) as a dependent variable. In his examination, he utilises the sample of 52 Jordanian Industrial listed organisations on Amman Stock Exchange. The results of his research demonstrate perfect connection between profitability in for ROA, and size on the leverage of industrial company's ROE. Along these lines, industrial companies may upgrade the profitability of their organisations by maximising the profit and expanding financial assets contrasted with total assets.

Rehman (2013) studied the connection between debt to equity ratio and firm performance of listed sugar companies in Pakistan. His study revealed a direct connection among debt-equity ratio and return on asset and sales growth, and the negative adverse connection among debt-equity ratio and earning per share, net profit margin and ROE.

In their assessment Ahmad, Salman and Shamsi (2015) examined the correlation leverage and performance of cement sector operating in Pakistan. In conducting their study, Ahmad, et al (2015) incorporated 18 cement producers out of 21 to do the investigation and using six years yearly information from 2005 to 2010 regarding financial leverage and profitability of the firms were mulled over. The researchers revealed an opposite correlation between leverage and performance at a 99% confidence interval.

Wainaina (2014) assessed the influence of leverage on the firm's performance of top most 100 SMEs small and medium enterprises in Kenya. Cross-sectional type of descriptive research design was utilised. His target population for the investigation was the best 100 SMEs (2013) in Kenya. It utilised a sample of 30 SMEs unsystematically selected dependent on the investigation population. The data collected for this study were for five years period 2008 to 2012. SPSS version 20, was used to analyse and run the test. According to the results, leverage had a great influence on firm performance.

Usman (2019) analysed the connection between leverage and firm performance of the consumer goods industry in Nigeria. The sample size consisted of only 6 consumer goods companies. The obtained data from the yearly reports of the selected companies were tested by using descriptive statistics, correlation and regression analysis in the form of E-views 8.0. The results discovered an inverse connection between debt ratio and firm performance.

Jeleel and olayiwola (2017) conducted the study of the influence of leverage on profitability of chemicals and paints firms listed on the Nigerian Stock Exchange. The total population consisted of 90 chemicals and paints companies recorded on the Nigerian Stock Exchange. From the targeted population only three chemicals and paints firms were used as a sample from 2000 to 2009. The results discovered that leverage has an opposite influence on profitability.

Bhayani and Ajmera (2018) tested the correlation between leverage and firm performance of the selected pharmaceutical companies in India. The researcher used only five pharmaceutical companies to the sample size. The existing data were utilised to collect the data from annual reports of the selected companies during 2012-13 to 2016-17. In addition, the researcher used the regression analysis to test and measure the influence of leverage on firm performance. The study revealed an indirect correlation between leverage and firm performance.

Yakubu, Alhassan, Mikhail and Alhassan (2017) analysed the influence of the leverage on profitability of banks services in Ghana. The researcher used 23 banks as a sample from 2010 to 2015. The existing data were obtained from the yearly reports of these banks. The method of analysis used was correlation analysis, descriptive analysis and panel regression analysis. The results revealed an unrelated connection between leverage and profitability of banks in Ghana.

Singh and Bansal (2016) conducted the study of the connection between leverage and profitability with reference from consumer goods companies listed on the National Stock Exchange of India. The sample size for the study consisted of 60 consumer goods companies from 2007 to 2016. The existing data were collected for the study and the regression model were applied analyse the data. The study discovered an adverse connection between leverage and ROA using Tobin's Q indicator.

Aziidah (2017) explored the correlation between leverage and company performance of Kenyan energy and petroleum companies recorded on the NSE. His research was based on an evaluation scale since the data were gathered from four Kenyan energy and petroleum companies recorded on the Nairobi Securities Exchange. The data were then run into Microsoft Excel and analysed descriptive statistics on profitability, dividend pay-out ratio, liquidity management and leverage. Proportions were utilised to investigate the profitability, dividend pay-out ratio, liquidity management and level of leverage on the select companies. Correlation and regression analysis were also utilised to build up the correlation between leverage and company performance of the select companies. Profitability (ROA), dividend pay-out ratio (DPR) and liquidity were utilised as proxies for company performance while debt to equity was utilised as a proportion of leverage. The study demonstrated that many firms tend to increase or keep the profitability level the same for long. The investigator discovered an indirect correlation among productivity and leverage, as companies depended more on debt had lower benefits while those depended more on equity had higher benefits.

In addition, Udeh, Nwude, Itiri and Agbadua (2016) provided a reference on the connection between debt ratio and firm performance of Nigerian listed companies. The study applied pooled OLS, fixed effects and random effects to test and analyse the secondary data. From the analysis, the researchers found an inverse and remarkable connection between debt ratio and firm performance of Nigerian listed companies. Moreover, the study also revealed an indirect connection between debt ratio and firm performance of Nigerian listed companies.

Rayan (2008) critically evaluated whether higher financial leverage can have a positive or negative influence on company value in the South African context. In addition, given the high level and volatility of the present local interest rate, this report considered the unpredictable local interest rate on capital structure. He used the 113 Johannesburg Stock Exchange (JSE) recorded firms. The researcher discovered that high leverage can affect the company value negatively. Moreover, the assessments of interest rates on capital structure showed to be unstable.

Malshe and Agarwal (2015) conducted a study of how leverage influences marketing results and consequent company value. They indicated that the influence has double impact: firstly, it decreases consumer satisfaction and restricts the relationship between satisfaction and firm value. In addition, higher leverage reduces company performance adaptability by compelling advertisers from taking advantage of growth opportunities from higher consumer needs. The leverage effect adversely directs customer satisfaction—firm value link. Increase in customer satisfaction are esteem improving at humble dimensions of the effect, yet a huge rise on degree of leverage increase in satisfaction are esteem decreasing.

Mwangi, Makau and Kosimbei (2014) studied the connection between leverage and profitability. The researchers utilised existing data extracted from financial statements of the listed companies, and employed panel data using random effects and feasible generalized least square (FGLS) model. The findings were that financial leverage is negatively related to performance which is measured by ROA. In South African context, Mashavave and Tsaurai (2015) found that leverage had no connection with companies listed on the Johannesburg Stock Exchange.

Even though a thorough investigations have been made relation to the connection between financial leverage and firm performance, no study has focused on top-40 JSE firms. Therefore, the study investigated the influence of financial leverage on firm financial performance with special reference to top-40 JSE firms as one of the hypotheses.

2.5. Chapter summary

The problem of the connection between liquidity risk, financial leverage and firm performance has been a worrying issue for number of researchers in the course of recent years. The liquidity risk management and leverage have been discussed in the literature as well as in the empirical research studies conducted in the subject area. It is evident that both liquidity risk and financial leverage are of paramount importance to a company's financial wellness, which ultimately help in improving the firm's performance. Liquidity risk management and financial leverage are known to assist the firm's capacity to meet the set goals of different stakeholders (Mworia, 2016).

Despite similar studies conducted on the correlation between liquidity risk, financial leverage and firm financial performance, most studies were conducted in developed countries and few studies in developing countries. However, as per studies conducted in the past, the results of the studies were found to be inconsistent. Researchers have found positive correlation between liquidity risk, financial leverage and firm's financial leverage, while others found negative and no relationship. The studies reviewed varies from business to business, country to country and market to market but results may not be generalised to top-40 listed firms.

None of those studies assessed the connection between liquidity risk, financial leverage and firm financial performance with specific reference to top-40 JSE firm. Therefore, to build on the existing literature, this study will specifically focus on the connection between liquidity risk, financial leverage and firm's financial performance with evidence from top-40 JSE firms. The next chapter describes the methodology of this study.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Introduction

The previous chapter outlined the theoretical framework and the empirical framework applicable for liquidity risk, financial leverage and firm performance. This segment of the study describes the research methodology utilised in the research study and tools, techniques and methods deployed to fulfil the goal and hypothesis of the research. The study focuses on examining the relationship between the liquidity risk and financial leverage and firm financial performance with specific reference to top-40 Johannesburg Stock Exchange (JSE) firms. The methodology of this study will follow the research onion developed by Saunders, Lewis and Thornhill (2016), as depicted in Figure 3.1. The reason for choosing this technique is that it is mostly and proficiently used, and creates a series of phases which can be utilised to analyse and assess steps of research methodology (Saunders et al., 2016).

The chapter begins by describing the purpose of research design followed by the research philosophy, research approach, research choices, time horizons, the research techniques and procedures, limitations and lastly ethical considerations.



Figure 3.1. Research onion approach

Source: Saunders, Lewis and Thornhill (2016).

3.2. Research design

The research design gives an overall structure of the method chosen by the researcher and the reason for that choice which is informed by the research philosophy (Saunders, et al., 2016). Research design helps the researchers to plan and have the philosophical overview of the assumptions that the study brings (Creswell, 2014). In addition, Robson (2002) describes the research design as the process of answering the research questions. Research design seeks for answer for the research problem and objectives to make research project (Saunders et al., 2016). Furthermore, it considers the research strategies, choices and period of time, data collection and analysis (Saunders et al., 2016). Three fundamental research methods that are normally used: qualitative research, quantitative research and mixed research method. The quantitative research method was considered relevant for this study. The reason for choosing the quantitative research design is that it focuses on testing a theory composed from the hypothesis, measured numerically and analysed with statistical procedure (De Vos, Strydom, Fouchè, and Delport, 2011).

The target population consists of top-40 JSE firms for nine years from 2011 to 2019. The sampling size comprises only companies that were consistently active on the top-40 JSE listed company's database from 2011 to 2019. Companies that were jumping in and out of top-40 during the period of 2011 to 2019 were excluded because they had incomplete and inconsistent data.

The secondary data were obtained directly from published and audited yearly reports (financial statements) of top-40 JSE listed companies which were sourced from the Iress INET BFA database. The data gathered were arranged and sorted out by using Microsoft excel before capturing it in Stata software version.14 to conduct the analysis.

Descriptive analysis was used to portray applicable aspects of liquidity risk, financial leverage and gave detailed information about each relevant variable. Correlation models, particularly Pearson correlation, was utilised to quantify the level of relationship between variables under thought. In contrast, system generalised method of moments (GMM) analysis was utilised to look at the connection between

independent variables and dependent variable and to know the impact of chosen independent variables.

The research process followed in the study is shown in Figure 3.2.

Figure 3.2. Research process



Source: Author compilation

3.2.1. Research philosophy

The research philosophy is the initial step of the research methodology process. Research philosophy alludes to the suppositions about the way people see the world and is utilised to foster the examination system and the strategies you pick as a feature of that procedure (Saunders et al., 2016). These assumptions direct the research strategy and the methodological choice the researcher chooses to kick start the research (Saunders et al., 2016). The following different types of philosophies were considered when choosing which philosophy to use in the research project:

- Pragmatism battles that the main determinant of the examination theory embraced is the investigation question – one methodology might be 'better' than the other for responding to specific inquiries (Saunders et al., 2016). Moreover, if the investigation question does not propose equivocally that either a positivist or interpretivist thinking is embraced, this attests the legitimate mastermind's view that it is absolutely possible to work with the two techniques for thinking. Pragmatism was considered not suitable for this study as it recommends that it is impractical to get to 'reality with regards to' real world exclusively by virtue of a single scientific method as suggested by positivist (Kivunja and Kuyini, 2017).
 - Positivism relates to epistemological methodology that foster public reality. The emphasis is on profoundly organised techniques to encourage replication, and the end product can be law-like generalisations similar to those produced by the physical and normal researchers (Saunders et al., 2016).
 - Realism epistemological level which identifies with consistent enquiry. The quintessence of realism is that what the faculties show us as actually is the reality and that things have a presence liberated from the human mind (Saunders et al., 2016). The realism also refers to the state of things which one creates, or with the help of past knowledge of life (Saunders et al., 2016). On that reason, it is not applicable for this study.

- Interpretivism is an epistemology that promotes the fundamental for the researchers to grasp contrasts between individuals in our work as friendly performers. This underlines the differentiation between doing an examination among people rather than things, for example, trucks and PCs (Saunders et al., 2016). Hopkins (2000) as cited on Banafa (2016) communicated that the goal of the interpretive exploration is to appreciate and decipher human conduct rather than sum up and foresee circumstances and end results. On that note, it is not pertinent to this review because the concentration is on using the current information.
- Objectivism An ontological level which attests that public components exist in a reality outside to, and autonomous of, social entertainers stressed over their existence (Saunders et al., 2016). Objectivists are subjected or associated with quantitative research as they focus is on statistical data and similar to positivism philosophy (Saunders et al., 2016).
- Subjectivism An ontological level which expresses that elements are produced using the discernments and ensuing activities of those public entertainers responsible for their creation (Saunders et al., 2016). Subjectivism is similar to interpretivism research philosophy as they are qualitative research in nature or people-oriented research, which is not relevant to this study (Bryman and Bell, 2014).

The positivist research philosophy was utilised in this review to create, test and affirm the hypothesis of existing theory. The justification of using positivism is that the research is taken on in a simple and freely manner and utilises the numerical data (Saunders et al., 2016). Mathematical methodology focuses on the examination techniques embraced by positivist analysts and they stick to unequivocally coordinated exploration strategies to uncover single and target real factors (Banafa, 2016). As indicated by Saunders et al., (2016), the positivism research strategy utilises the existing theory to formulate hypotheses that can be tested and confirmed and used for further development of theory. Kivunja and Kuyini (2017) emphasised that positivism advocates the utilisation of quantitative research techniques as the bedrock for the specialist's capacity to be precise in the portrayal of the parameters. They further highlighted that they used the data that are assembled, examined and interpreted to comprehend the relationships embedded in the data analysed. Banafa (2016) asserts that positivist researchers seek for objectivity and use reliably balanced and coherent ways to deal with research. Moreover, he featured that genuine and mathematical systems are focal in the examination strategies embraced by positivist specialists and they clung to an exceptionally organized exploration procedures to uncover single and target real factors.

3.2.2. Research approach

Saunders, et al. (2016) highlight that there are three main research approaches the researcher can follow when conducting a study. These research approaches are inductive, abductive and deductive.

Inductive – with this approach, the hypothesis is developed to explore the data collected and subsequently relate them to the literature (Saunders et al., 2016). The inductive approach is normally grounded on theories, which makes it not suitable to use in this study. Melnikovas (2018) added that the research projects begin with monitoring and data collection, then move to definition and analysis to develop a hypothesis. The inductive approach seeks to gain the perception the people attach events which makes it not suitable for this study (Saunders et al., 2016).

In abduction approach – information is utilised to investigate an occurrence, identify concepts and explain movements, to develop new or change the available theory which was previously tested, regularly through extra data collection (Saunders al., 2016). In addition, Melnikovas (2018) sees an abduction approach as view of existing events which is followed by the research that comes up with a best guess or conclusion based on accessible proof. The reason that the abductive approach combines both inductive and deductive approaches to find the explanations of the research solutions make it not applicable for this study (Melnikovas, 2018).

Deductive approach – asserts that research projects use the literature to assist the researcher with identifying hypothesis and ideas that will be used when testing data (Saunders et al., 2016). Melnikovas (2018) added that the research begins with the

available theory. Thereafter, the research question or hypothesis is conceptualised and data collection to agree or disagree with the hypothesis.

The study adopted the deductive methodology. The approach was chosen mainly because it seeks to explain or test the relationship between variables for the existing theory. The deductive methodology involves formulating a hypothesis based on the available theory and evaluating the connection between more than one variable from the theory (Saunders et al., 2016).

Zalaghi and Khazaei (2016) added that the deductive approach can be described by using the assumption driven from the existing theories.

According to Robson (2002), there are five consecutive stages through which the deductive methodology will deal well.

- Deducing a theory (a testable proportion about the connection between something like at least two variables) from the hypothesis.
- Communicating the hypothesis in functional terms (that is, showing definitively how the ideas or variables are estimated), which proposes an association between two explicit factors.
- Testing this functional hypothesis (this will incorporate something like one of the methodologies).
- Examining the specific aftereffect of the request (it will either in general certify the theory or show the prerequisite for its change).

After the researcher has identified the research philosophy and research approach, the next section discusses the methodological choices.

3.2.3. Research choice

It is imperative for the researcher to explore different types of research method to be able to determine the best suited to answer the objective of the research. Normally research has three types of research method, namely: Qualitative research method, quantitative research method and mixed research method. The descriptions of the research methods are discussed next. The qualitative research method refers to a type of group activity that spotlights in transit individuals' investigations and utilizes their investigations to comprehend the social truth of people (Mohajan, 2018). Qualitative research refers to a technique for inspecting and understanding the perception of individuals or human problems, which makes it unsuitable for this study (Creswell, 2014). Creswell (2014) expresses that the qualitative research method incorporates the developing queries and systems, data gathered in the members setting, data analysis inductively building from points of interest to general subjects, and the researcher's understandings of the meaning of the data.

Saunders et al., (2016) argue that the quantitative examination strategy is utilised to explore the connection between variables, which are assessed mathematically and data analysis frameworks that incorporate the utilisation of various factual strategies.

Mixed research method refers to a research method which involves the use both quantitative and qualitative in one project (Bryman, Bell, Hirschsohn, Dos Santos, Du Toit, Masenge and Wagner, 2014). Furthermore, Creswell (2014) asserts that mixed research method can be identified by the utilisation of both quantitative and qualitative data, and incorporating the two types of data that may include philosophical assumptions and theoretical frameworks. The mixed research method is not applicable for this study, as the investigator only focused on numbers.

This study adopted a quantitative research method. It is relevant for this topic, as it makes use of numbers, measurements, structure, and control (McMillan and Schumacher, 2006). The quantitative research method was chosen because the study mainly relies on testing hypotheses; so, it does not focus on any intelligent guesswork, rather will follow clear guidelines and objectives (Lichtman, 2013).

Creswell (2014) avers that quantitative research approach is utilised to examine the significant relationship between variables. In addition, he argues that these variables can be reviewed using statistical practices. Quantitative research approach uses techniques that are very distinctive from those utilised as a part of qualitative design.

3.2.4. Time horizon

In planning a research, the investigator needs to know whether the research conducted will be once-off data occurrence or multiple data occurrence. According to Saunders et al., (2016), longitudinal study and cross-sectional study can be used to determine time horizon for the research study. The next paragraph explains them in detail.

Cross-sectional study describes a particular phenomenon (or phenomena) at a given time and this sort of study frequently uses a survey (Saunders et al, 2016). Conversely, a longitudinal study is used to determine plot changes and its main strength is the capability to study change (Nylander and Renberg, 2013).

The study determines connection between liquidity risk and financial leverage and firm financial performance over the period of nine years from 2011 to 2019. This study followed the longitudinal time horizon because the collection of the data for this study is on a continuous basis for nine years from 2011 to 2019. Moreover, the data set is enough to determine the relationship. According to Kumar (2008), a longitudinal study permits the investigator to estimate the standard of change and obtain realistic data requiring assortment on a normal or proceeding with premise, therefore enhancing its accuracy. The benefit of longitudinal examination is its ability to concentrate on change and improvement throughout some stretch of time (Saunders, et al, 2016). Crosssectional data in isolation of time series is not suitable for this study on the grounds that the information will not be gathered at a specific point on schedule.

3.3. Research techniques and procedures

This section aimed at discussing the population and the sampling of the study.

3.3.1. Population

A population can be characterised as a group of potential members to whom the researcher needs to generalise the discoveries of the study (Salkind, 2012). The target population consisted of top-40 JSE listed firms for the period of nine years from 2011 to 2019. These periods included the data from post-2008 economic crisis as they form important part of the study. It is imperative to determine the movements of current ratio

(liquidity) and debt ratio (financial leverage) during those periods, as South Africa was also moderately affected by the crisis. The justification of using the top-40 JSE companies is because of the availability of its data.

3.3.2. Sample frame

Sample frame refers to the total list of the considerable number of cases in the population from which a sample will be chosen (Saunders et al., 2016). The sample frame of this review contains top-40 JSE listed organisations. The JSE top-40 list companies consist of the 40 largest firms listed on the JSE's main posting board and determined by their market capitalisation. Market capitalisation is a proportion of the value of a publicly-traded organisation and relies on the capacity of the organisation to restore reserves at a rate that will support future production (Ewing and Thompson, 2016).

3.3.3. Sample size

According to Salkind (2012), sampling is defined as a subgroup of the population. Saunders et al (2016) highlight that the selection of sample size is guided by the following:

- The sureness you need in your information that is, the degree of assurance that the characteristics of the information accumulated will address the characteristics of the complete population.
- The weight of the errors you can allow that is, the precision you require for any estimates made from the sample.
- The types of analysis you will attempt specifically the quantity of classifications into which you wish to partition your information.
- The population size from which your sample will be selected.

The top-40 JSE listed companies in the sample for this study comes from different sectors. However, it is impractical to use all the top-40 JSE listed companies to fulfil the research goal because of the unavailability of data considering the period of the study (2011-2019). The other reason behind picking top-40 JSE was the fact that it covers over 80% of the market capitalisation of the JSE (Mamaro and Tjano, 2019).

The sampling size comprises only companies that were consistently active on the top-40 JSE listed company's database for the period of nine years from 2011 to 2019. However, companies that were jumping in and out of top-40 during the covered period were excluded because they had incomplete and inconsistent data.

3.3.4. Sample technique

The purposive sampling was applied in this study. Purposive sampling is reducing the population to shape the specimen in view of members who met all or many criteria (Du PlooyCilliers, Davis and Bezuidenhout, 2014). As indicated by Tongco (2007), purposive sampling is more affordable and it can assemble more data by utilising a scope of various techniques. The reason behind the choice of using purposive sampling is its ability to develop a historical reality, describe a phenomenon or formulate something about which only little is known (Kumar, 2008).

3.3.5. Conceptual framework

The objective of a conceptual framework is to classify and portray items which are applicable to the study and guide the connection among them. Such a structure would assist researchers with characterising the idea, map the research territory of conceptual scope, systematise relations among ideas, and identify gaps in the literature (Creswell, 2003). Figure 3.3. depicts of conceptual framework.

Figure 3.3. Conceptual framework



Source: Author compilation

3.3.6. Sources of Data

The primary data and secondary data collection are two types of data collection that are normally used in the research study. Primary data refer to the data gathered the first time by a way of questionnaires and interviews and such data are very tedious and expensive to accumulate (Kisaka et al., 2015). Conversely, secondary data can

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be described as existing information that can assist in tackling the issue in the question in hand (Tustin, Martins and Van Wyk, 2010).

The information was gathered in the form of secondary data in this study. This method of collecting data is cheap and convenient compared to primary data collection. Sunders et al (2016) highlight that the most significant part of using secondary data is that it is easily accessible and available at a low cost, However, the inconvenience of such data is not really sufficient to address the research question. Secondary data were obtained directly from published and audited yearly reports of top-40 JSE listed companies from the Iress INET BFA database. The variables that were obtained from the yearly reports are current ratio, debt to equity ratio, total debt ratio, ROA, ROE and growth of assets. All these variables were used as a measure of the main variables which are liquidity risk, financial leverage and firm's financial performance. Iress INET BFA was chosen because of its reliability and accessibility. The year-to-year financial information was retrieved from the financial statements for the period of nine years from the beginning of the 2011 financial year to year-end of 2019 financial year. The consideration of yearly reports is because they portray the full company performance.

3.3.7. Data Analysis and model specification

It is imperative that before any analysis can be done, data need to be coded, cleaned and properly arranged so that it can be easy for the researcher to run the analysis. Mugenda and Mugenda (2005) demonstrate that information ought to be cleaned, coded and appropriately broke down to acquire a precise investigation. The data were run by the use of Stata version 14 software. The information gathered was arranged and sorted out using Microsoft Excel before capturing it in Stata software version.14 to run the analysis.

Stata software version.14 was chosen based on its popularity within both academic field and business circles, making it the effectively used software package of its type. Cameron and Trivedi, (2010) emphasised that Stata software provides the researcher with different tools like graphs and tables which contains number, text and formatting information.
• Descriptive analysis

Descriptive analysis was used to portray applicable aspects of liquidity risk, financial leverage and gave itemised information about each applicable variable. The descriptive analysis involves the recognisable proof of a particular phenomenon of a specific wonder based on an observational premise, or the investigation of the connection between at least two factors or more (Williams, 2011).

• Correlation models

Correlation models, particularly Pearson correlation was utilised to quantify the level of relationship between variables under thought. Gilchrist and Samuels (2015) define Pearson correlation as a tool that measures the existence and power (given by the coefficient r between -1 and +1) of a linear connection among two variables. They further indicate that if the end results are significant then the correlation exists. The reason for using Pearson correlation is that it provides an accurate idea of effect size when the assumption of linearity is not violated.

• Panel data analysis

The panel data analysis was utilised to look at the connection between leverage, profitability and the explanatory variables. Panel data analysis is described as a combination of time series and cross-sectional data (Gujarati and Porter, 2008). For instance, in the current study taking data period from 2011 to 2019 comprises features of time series while the data from JSE listed companies represent a cross-sectional data.

3.3.8. Estimation Techniques

To examine connection between liquidity risk, financial leverage and a firm's financial performance, the panel data model was applied. The investigator applied a set of diagnostics tests to ensure that the model was very much determined and to ensure that the most appropriate estimation technique to run the data was chosen. The researcher additionally completed diagnostics tests to choose the most suitable model specification and estimation technique.

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3.3.8.1. Pooled ordinary least squares (OLS) model

OLS models are the most prohibitive model as pooled models accept that regressors are exogenous and the pooled OLS model expects that there are no unobservable effects. The OLS model prohibits the *ui* variables in the estimations (Wooldridge, 2008).

The panel analysis is economically expressed as follow:

$$y_{it} = \alpha + \beta x_{it} + u_{it} \tag{3.1}$$

Where y_{it} represents the dependent variables, \propto is the intercept, x_{it} denotes the angle of independent variables, β is the coefficient of independent variables to be assessed. The equation 3.1 represents the simplest way of pooled panel analysis and it is represented in similar way as the OLS model. This pooled analysis suggests that the relationship between variables and their average values are constant over time. There are two types of panels. The first is balanced panel and the second is unbalanced panel. The balanced panel includes the equivalent number of observations for every single cross-sectional while the unbalanced panel may have unequal number of observations in its cross-sectional units (Brooks, 2014).

3.3.8.2. Fixed Effects Model (FE)

Panel estimation can either use the fixed effects model, time-fixed effects models or random effects model. If the fixed effects model is applied on panel data to determine the influence of explanatory variable on the dependent variable, the generic equation (1) become:

$$y_{it} = \alpha + \beta x_{it} + u_i + v_{it} \tag{3.2}$$

Where u_i encapsulates all series that can affect y_{it} cross-sectionally and yet remains constant over time. Besides the fixed effect, it is expected to have a time-fixed effects model. This model is utilised when the researcher assumes that the average value of y_{it} fluctuates over time yet not cross-sectionally. The time-fixed effects model is written as follows:

$$y_{it} = \alpha + \beta x_{it} + \lambda_i + v_{it} \tag{3.3}$$

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Where λ_i denotes the time variation intercept that summarises all the variables that affect y_{it} and changes over time yet remain steady cross-sectionally.

3.3.8.3. Random Effects Model (RE)

Another approach that can be applied on panel data is the random effects model. Contrary to the fixed effect model presented above, the random effect model suggests dissimilar intercept for several units and these connections remain stable together. The connection between the dependent and independent variables, random effects approach is expected to be identical cross-sectionally and temporally (Brooks, 2014). The random effects model includes a random variable and the coefficient of the intercepts are expected to grow over time. This model is written as follows:

 $y_{it} = \propto + \beta x_{it} + \omega_i$, where $\omega_i = \epsilon_i + v_{it}$ (3.4)

3.3.8.4. Feasible generalised least squares

The assessment of the feasible GLS model was used. The FGLS random effect is viewed as a grid-weighted normal of within (fixed effect) and random effect assessors (Baltagi, 1995; Baum, 2006). The system relies upon weighting each discernment with a factor that is alternately compared to the error change. This model is composed as follows:

$$y_{it} = X_{it}\beta + u_{it}.\tag{3.5}$$

3.3.8.5. The generalised method of moments (GMM)

Specifically, the study followed a unique panel data model, the GMM which is applicable than OLS, fixed effects model and random effects model as it addresses the issues of endogeneity and specification errors. The GMM was established by Holtz-Eakin, Newey and Rosen (1988). In the study conducted by Arellano and Bond, (1991), the endogeneity and specification errors were tested using OLS strategy in a panel data but the results were not enough. The study subsequently used a dynamic panel GMM estimator, which makes a matrix of internal mechanisms to express the endogeneity of the slacked depended variable and the independent variables of this study (see Arellano and Bond, 1991; Arellano and Bover, 1995; and Blundell and Bond, 1998). Nonetheless, GMM estimator captures just short-run dynamics since it

is generally limited to short time-series in which the stationarity of the factors is less significant (Samargandi, Fidrmuc, and Ghosh, 2014).

The general expression of the GMM formula proposed by Arellano and Bond (1991), expanded by Arellano and Bover (1995) and Blundell and Bond (1998) and further explained by Oseni, Akinbode, Babalola, and Adegboyega, (2020) was adopted for this study.

$$Y_{it} = \alpha Y_{it-1} + \beta X_{it-1} + \mu_i + \varepsilon_{it}$$
(3.6)

Where Y represents independent variable, X represents dependent variables, μ_i is an unobserved effect, ε_{it} is the error term, and whereas, t represents time period and i the company. The nature of the $\varepsilon_{it} = u_t + u_i$, where u_t represent the unobserved time effects and u_i represent the unobserved individual effects.

The system GMM consolidates in a system, the distinction GMM estimator regressions and the regressions of the slacked level variables are merged as instrument variables (Arellano and Bover, 1995; Blundell and Bond, 1998). Since the differenced GMM makes an issue of loss of efficiency as the variables are not utilised in levels, these limitations can be incorporated in the level equation in the formula (Arellano and Bover, 1995; Blundell and Bond; 1998).

The choice of utilising the system GMM model is validated by conducting the specification tests as proposed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). The Sargan and Hansen test of over recognising limitations is performed to test for the legitimacy of the instruments (Arellano and Bond, 1991; Arellano and Bover, 1995). Therefore, for this study, the following GMM model was created to examine the correlation between liquidity risk, financial leverage and firm's financial performance with evidence from top-40 JSE firms.

$$D/E_{it} = (\alpha - 1)\Delta D/E_{i,t-1} + \beta_1 \sum_{i=1}^n \Delta LIQ_{it} + \beta_2 \sum_{i=1}^n \Delta ROA_{it} + \beta_3 \sum_{i=1}^n \Delta FIRMSZ_{it} + \Delta\varepsilon_{it}$$

$$(3.7)$$

$$TDR_{it} = (\alpha - 1)\Delta TDR_{i,t-1} + \beta_1 \sum_{i=1}^n \Delta LIQ_{it} + \beta_2 \sum_{i=1}^n \Delta ROA_{it} + \beta_3 \sum_{i=1}^n \Delta FIRMSZ_{it} + \beta_4 \sum_{i=1}^n \Delta Growth_{it} + \Delta \varepsilon_{it}$$
(3.8)

$$ROA_{it} = (\alpha - 1)\Delta ROA_{i,t-1} + \beta_1 \sum_{i=1}^n \Delta LIQ_{it} + \beta_3 \sum_{i=1}^n \Delta FIRMSZ_{it} + \beta_2 \sum_{i=1}^n \Delta Growth_{it} + \Delta \varepsilon_{it}$$
(3.9)

$$ROE_{it} = (\alpha - 1)\Delta ROE_{i,t-1} + \beta_1 \sum_{i=1}^n \Delta LIQ_{it} + \beta_3 \sum_{i=1}^n \Delta FIRMSZ_{it} + \beta_2 \sum_{i=1}^n \Delta Growth_{it} + \Delta\varepsilon_{it}$$
(3.10)

Where D/E_{it} represent debt to equity ratio which measures financial leverage at time t, TDR_{it} represent total debt ratio and measures financial leverage. LIQ_{it} represent liquidity at time t, ROA_{it} represent ROA as time t, ROE_{it} represent ROE at time t, $FIRMSZ_{it}$ represent firm size at time t, $Growth_{it}$ represent asset growth at time t, β 1, β 2, β 3, β 4 represent the Beta Coefficients and ε_{it} is the error term.

The measurement of the variables was as follows:

Liquidity risk was measured by the proxy of current ratio; current ratio is expressed as the firm's ability to finance its short-term debt or a percentage change of a firm's shortterm assets to its shot-term liabilities (Ohman and Tazdanfar, 2017).

Current ratio = $\frac{Current \ assets}{Current \ liability}$

Financial leverage was estimated by debt to equity ratio, which refers to a change of a total liabilities to its equity and total debt ratio (Sari and Hutagaol, 2009), and total debt ratio which refer to the percentage change of a total liabilities to its total assets (Ohman and Tazdanfar, 2017; Ahsan, Wang and Qureshi, 2016).

Debt to equity ratio = $\frac{Total \ debt}{Equity}$ Total debt ratio = $\frac{Total \ debt}{Total \ assets}$

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A firm's financial performance was estimated by ROA and ROE. The ROA refers to the percentage change that indicates how a company's assets are utilised to make income (Chadha and Sharma, 2015), whereas, the ROE refers to percentage change of a firm's net profit after tax to its shareholders equity (Hussain, Hamza and Miras, 2015)

 $ROA = \frac{Net \ profit \ after \ tax}{Total \ Assets}$ $ROE = \frac{Net \ profit \ after \ tax}{Shareholders \ equity}$

Growth (GRO) was measured by the proxy of growth of assets, which refers to a yearly percentage change of assets (Ohman and Tazdanfar, 2017; Ahsan, et al., 2016).

 $Gro = \frac{Assets (current) - Assets (previous)}{Assets (previous)}$

Firm size (FZ) was estimated by the regular logarithm of the assets.

FirmSZ = logarithm of assets

The study utilised the pooled effects, FE, RE, FGLS and system GMM models.

3.3.9. Diagnostic tests

Post-assessment diagnostics test was done to guarantee that the assessed model was consistent and reliable. This study has employed the following tests of specification: Joint validity of cross-sectional individual effects, Breusch Pagan (1980) LM test for Random Effects, Hausman specification test, test for heteroscedasticity: Modified Wald test for group-wise heteroscedasticity, and the test for cross-sectional dependence: Pesaran (2004) CD test.

• Joint validity of cross-sectional individual effects

The principal test that was applied in this review was that of the poolability of panel data. An applied Chow test or F-test to test for the legitimacy of cross-sectional individual impacts was utilised in this review.

The hypotheses are stated as follows:

 $H_0: \boldsymbol{\alpha}_1 = \boldsymbol{\alpha}_2 = \cdots \boldsymbol{\alpha}_{N-1} = \mathbf{0}$

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$H_{A}:: \alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq \mathbf{0}$

The null hypothesis was not accepted if the p-value is below 5% and the conclusion was that cross-sectional individual effect is not valid. Conversely, the null hypothesis was welcomed if the p-value is above 5% and the conclusion was that cross-sectional individual effect is valid. On that note, the pooled OLS estimation framework will not be used and continue to consider the fixed effect domain.

• Breusch Pagan (1980) LM test for Random Effects

Heteroscedasticity can be defined as information with inconsistent changeability across a bunch of independent variables (Baltagi, 2005). In that way, if the data are heteroscedastic, there might be biased coefficients. In a regression model, the information ought to be homoscedastic, which means the variance of the errors ought to be consistent (Baltagi, 2005). The Breusch Pagan (1980) Lagrange Multiplier (LM) test is utilised to examine for homoscedasticity or sequential relationship. The null hypothesis for this assessment state that random effect is absent when the p-value is above 5%. The alternative hypothesis is that the random effect is present.

The hypotheses are stated as follows:

*H*₀: $\delta_{\mu}^{2} = 0$ (constant variance across firms) *H*_A: $\delta_{\mu}^{2} \neq 0$

If the alternate hypothesis is valid then OLS estimation is not suitable and random effects are present (Baltagi, 2005).

Hausman specification test

The Hausman specification (1978) test was applied to choose among the fixed effect model and random-effect model. The null hypothesis assessment preferred model is the random effect model and the alternative hypothesis assessment preferred fixed effect model.

The hypotheses are stated as:

 $\begin{array}{l} H_0: \ (\mu_{it}|X_{it}) = \mathbf{0} \\ H_A: \ (\mu_{it}|X_{it}) \neq \mathbf{0} \end{array} \end{array}$

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The null hypothesis is welcomed when the p-value is above 5% and the regressor is exogenous; therefore, the random effect specification is valid. On the other hand, the null hypothesis is said to be rejected when the p-value is below 5%. Therefore, the regressor is not exogenic and the fixed effect specification is valid.

• Test for heteroscedasticity: Modified Wald test for group-wise heteroscedasticity

These modified Wald figures captured in this test were used to set up whether the residual in the assessed fixed effects model were homoscedastic. The model was surveyed anticipating homoscedasticity of the residual. Without the same, it conveyed the assessment inclination. The assessment should be helped to get heteroscedasticity vigorous standard mistakes.

The hypotheses are stated as:

 $H_0: \delta_i^2 = \delta$ for all *i* (stable variance)

$$H_0: \delta_i^2 \neq \delta$$
 for all *i*

The null hypothesis is that the variance of the error term is stable and heteroscedasticity is absent when p-value exceeds 5%. However, when the p-value is below 5%, the variance of the error term is said to be unstable and heteroscedasticity is present.

• Test for cross-sectional dependence: Pesaran (2004) CD test

The cross-sectional dependence test was applied to test if residuals are connected across the system. This may prompt the issue of occurring relationships. In this manner, wrongly disregarding conceivable relationship of backsliding aggravations after time and subjects can provoke one-sided original induction (Hoechle, 2007).

The hypotheses are stated as:

H0: $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ (residuals across the companies are not related) HA: $\rho_{ij} \neq \rho_{ji} = 0$ Therefore, the null hypothesis was accepted when the p-value is above 5% and the cross sectional are independent. In contrast, the alternative hypothesis was rejected and the cross sectional are interdependent.

3.4. Limitations

Regardless of how well an investigation can be driven or created, the researcher still experiences potential troubles either with data or composing which are out of the researcher's control, time and again, this can impact the final products or conclusion that can be drawn (Mokoma, 2014). The shortfall of this study is the usage of small sample size, which is only limited to top-40 JSE firms who were consistently active during 2011 to 2019 financial years. On this study period of nine years, all companies that were jumping in and out top-40 will be excluded. The utilisation of a quantitative approach is one more impediment as it just gives the mathematical depictions instead of informed narrative and for the most part gives less elaborative records of human discernment. The usage of the secondary data is another limit in this study, as the data collected or considering may not be suitable to research question of the study (Saunders et al., 2016).

3.5. Reliability and Validity

Reliability defined as the steadiness which an estimating tool yields a specific outcome when the element being measured has not changed (Leedy and Ormrod, 2010). Lawrence (2006) contends that if the statistical outcomes produced by an indicator do not separate because of the appearances of the measurement process, the estimating instruments are reliable. If the estimating instruments lead to unpredictable or inconsistent results, they are seen as unreliable. The researcher assumes that reliability is about truthful, precision and consistency of the information accumulated and the outcomes presented. Reliability has to do with whether the signal and conclusions are drawn up to the analysis.

Validity can be defined as the degree to which examined measures that we wish to quantify (Cooper and Schindler, 2008). That is, validity is characterised "as far as whether the estimating instrument estimates what it expected to quantify" (Pilot and Beck, 2006). The accuracy of the measurement relies upon the consistency of the

measurement. Concerning this study, secondary data were collected from existing and available financial reports of top-40 JSE firms in the Iress INET BFA database. Since the positivistic worldview focuses on the exactness of the measurement and the capacity to have the option to repeat the analysis reliably, there is consistently the risk that the validity would be exceptionally low. As such, if the reliability is high, the validity can be low.

3.6. Ethical Requirements

This study depends on publicly accessible data. However, where there is any sensitivity to the data that will be utilised, the identity of the associations will be protected by the researcher. Ethical clearance was issued by the Ethics Committee of the University of South Africa (Unisa) to ensure that the researcher will observe research ethics through integrity in analysing and interpreting research results to ensure that the data are not manipulated.

CHAPTER FOUR

4. FINDINGS AND DISCUSSION

4.1. Introduction

The previous segment presented the methodology and the data analysis technique appropriate for the research. This section introduces the discoveries and discussions of the analyses discussed in the previous chapter and testing the hypotheses developed in this dissertation. The main goal was to determine the connection between liquidity risk, financial leverage and firm's financial performance with evidence from top top-40 JSE firms. The full sample contained 21 top-40 JSE firm. There is a total of 189 observations presented. The system GMM technique was employed to do the testing of variables.

The chapter is organised as follows: section 4.2 presents descriptive statistics. Section 4.3 offers correlation matrix analysis for the main variables. Section 4.4 offers diagnostic tests for variables and system GMM analysis. Section 4.5 concludes the chapter.

4.2. Descriptive statistics

The statistics in the table show the mean, minimum, maximum, standard deviation and variables' current ratio (CR), debt to equity ratio (DE), firm size (FIRMSZ), growth opportunities (GRO), ROA, ROE and total debt ratio (TDR) for the sample of 21 top-40 JSE firms in this study. Table 4.1 presents the summary of the descriptive statistics of the dependent variable and independent variables for 21 top 40 JSE firms from the period 2011 to 2019 with a total of 189 observations.

Creswell (2014) highlights that descriptive analysis of information for variables in a study incorporates depicting the outcomes through means, standard deviations and scope of scores. Along these lines, they measure the dispensation, typically the value of a series and the normal of a series determined utilising the mode and median.

Variables	Mean	Median	Maximum	Minimum	Std.	Observations
Vallables	Mean	Wedian	Maximum	Winning	Dev.	180.0000
CR	1.4722	1.2200	6.6700	0.1600	1.0540	189.0000
D_E	5.1930	1.0000	288.9700	0.0000	21.6521	189.0000
FIRMSZ	18.4187	18.0825	21.5455	15.5463	1.4273	189.0000
GRO	0.0955	0.0938	0.8174	- 0.8935	0.1595	189.0000
ROA	8.4624	7.4600	38.4400	- 8.2100	9.7935	189.0000
ROE	15.2201	15.3200	441.5200	- 483.6500	49.9980	189.0000
TDR	0.5240	0.5200	1.3700	0.0000	0.2892	189.0000

 Table 4.1: Summary of descriptive statistics

Source: Stata output

Table 4.1 shows the mean of all variables from 8.46 as a minimum for ROA and 15.22 as a minimum for ROE which are indicators of the firm's performance to the maximum of 18.42 for firm size as calculated by the logarithm of assets. These results indicate that the top-40 JSE firms generated a profit of 8.46% on average for ROA and 15.22% for ROE for the period of the study under consideration after they made financing of 1.47% of their borrowing through debt and 5.19% as equity. Table 4.1 gives the evidence that they made a minimum loss of 8.21% and 483.65%% as the financing of borrowings were made by debt and equity respectively for the study period under consideration. Both the ROA and ROE are important elements/measurements top-40 JSE firm's financial performance. The standard deviation for ROA and ROE varies from the mean by 9.79% and 50% respectively.

As depicted in Table 4.1 which showed that the maximum value of ROE is more than ROA, which demonstrates that top-40 JSE firms generate more returns on their equity than on debt. Aziidah (2017) argues that firms that depended more on debt had fewer benefits while those that depended more on equity had more benefits.

Descriptive statistics showed that top-40 JSE firms on average had 1.47 of liquidity as measured by current assets over current liabilities. The results from Table 4.1 showed that top-40 JSE firms require 147% on current assets to finance their borrowings. The liquidity of the top-40 JSE firms went from a base worth of 0.16 to the limit of 6.67 with the deviation of 105% all over. These values are regarded as good performance indicators and suggest that top-40 JSE firms are creditworthy.

DE and TDR are both measurements of financial leverage. The DE average ratio is 5.19 which implies that top-40 JSE firms can pay their debt. On average, debt to equity deviated with 21.65 up and down. The minimum DE ratio was 0.00 while the maximum was 288.97. This revealed that top-40 JSE firms' capital structure is made of debt to equity. On the other hand, the TDR average is 52% which means that 52% of capital structure in the top-40 JSE firms consists of debt. On average, debt to assets deviated by 29% up and down. The minimum value of the top-40 JSE firms was 0.00 to the maximum value of 1.37. These results implied that top-40 JSE firms are leveraged.

The mean value of size of top-40 JSE firms in the study was 18.42, as estimated by the logarithm of assets and the median was 18.08. The minimum values for firm size was 15.55% and the maximum value was 21.55% while firm size deviation was 1.48% up and down. The mean demonstrated the connection between firm size and assets. The mean and median are moderately close which indicated that there is no wide variety in the data.

On average, top-40 JSE firms have recorded growth rate of 9.5% over a period of nine year from 2011 to 2019. Considering the outcomes on average, top-40 JSE firms seemed to be on a rapid growth regarding assets. The minimum value was negative 0.8935% and maximum 0.8174% for study period viable. On average, the top-40 JSE firms made a deficiency of 0.8935%.

4.3. Correlation Analysis

Variabl			FIRMS					
es	CR	D_E	Z	GRO	ROA	ROE	ТА	TDR
	4 0000							
CR	1,0000							
D_E	- 0,1826 ** -	1,0000						
FIRMS Z	0,2963 ***	0,0605	1,0000					
GRO	0,0485	0,0104	0,0306	1,0000				
ROA	0,0668	0,1262 4* -	0,4109 **	0,24123 ***	1,0000			
ROE	0,0321 -	0,7455 ***	- 0,0178	0,1583* *	0,1664 ** -	1,00 00		
ТА	0,3284 *** -	0,0658	0,8307 ***	- 0,0323	0,4149 ***	0,00 74 -	1,0000	
TDR	0,6026	0,2564 ***	0,2386	0,0487	0,0400	0,08 71	0,2650 ***	1,00 00

Table 4.2: Correlation matrix for the main variables used in this study

* p < 0.05, ** p < 0.01, *** p < 0.001

Source: Author's computations

After incorporating and establishing the statistics summary and patterns in the key variables, this section analyses the correlations between the key variables. The correlation coefficient is an instrument that actions the existence and power (given by the coefficient r between - 1 and +1) of a direct connection between the dependant and independent variable (Gilchrist and Samuels, 2015). A static model is determined to analyse the connection between liquidity risk, financial leverage and a firm's financial performance.

The connection of the variables used in the research are reported in Table 4.2.2. As outlined in Table 4.2.2, there is an adverse and remarkable correlation between liquidity (CR) as measured by current ratio and firm leverage as measured by DE, (-

0.1826) and TDR (-0.6026) respectively. This implies that as liquidity decreases the leverage increases. These outcomes support the hypothesis layout, which anticipated the connection between liquidity risk and financial leverage top-40 JSE firms. The study also showed a direct connection between CR and ROA (0.06675) and ROE (0.03213) respectively as a proxy of firm performance. This implies that as liquidity increases, the firm's performance also increases. The results support the hypothesis outline, which expected the connection between liquidity and firm performance.

The research demonstrated that firm size (0.0605) and growth (0.01036) are positively and insignificant correlated with DE as a measure of leverage. Furthermore, the study revealed an opposite and remarkable correlation between DE and ROA (-0.1262) and ROE (-0.7455). These results as shown in Table 4.2.2 demonstrate that high financial leverage experiences by top-40 JSE firms will tend to lower their firm performance.

An adverse and remarkable connection between firm size and ROA (-0.4109) whereas an indirect and weak correlation between firm size and ROE (-0.0178) has been discovered. However, firm size has a direct and significant connection with TDR (0.2386). This result implies that as the firm grows, the leverage also goes up. Furthermore, the study showed a positive and remarkable connection between growth opportunity and ROA (0.2412) whereas growth opportunity and ROE (-0.1583) have an adverse and significant correlation among them. This result suggests that as the top-40 JSE firms grow in assets, the ROA also increases. However, the ROE will decrease. The research discovered a positive and insignificant correlation between growth opportunity and TDR (0.0487). This suggests that as leverage increases the top-40 JSE firms will grow as well.

The study also discovered a positive and insignificant connection between TDR and ROA (0.0400). However, an adverse and insignificant connection between TDR and ROE (-0.0871) has been discovered. The results suggest that as leverage goes up, financial performance of top-40 JSE firms also rises as measured ROA. Conversely, the results imply that as financial leverage increases, financial performance of top-40 JSE firms decreases as measured by ROE.

4.4. The diagnostic tests for variables and system GMM analysis

This section presents the diagnostic test for variables and the system GMM model to test the correlation between liquidity risk, financial leverage and firm performance of top-40 JSE firms. Various examinations were done, which include pooled effects, fixed effects (FE), random effects (RE) models, system GMM and FGLS tests. These included the tests for joint validity of cross-sectional individual effects, Breusch Pagan (1980) LM test for random effects, Hausman (1978) specification test, Heteroscedasticity test, and cross-sectional dependence tests (Pesaran (2004) CD test Frees (1995) CD test).

 Table 4.3: Diagnostic tests with Leverage (DE) as the dependent variable and ROA as the measure of profitably

Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=1.28	0.2027	Cross-sectional individual effects are valid.
individual effects			
$H_0: \alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_{A}::\alpha_{1}\neq\alpha_{2}\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
$H_0: \delta_{\mu}^2 = 0$			
$H_A: \delta_{\mu}^2 \neq 0$			
Hausman (1978) specification test	Chi2 = 29.69	0.0000	Regressors not exogenous. Hence the Fixed
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			effects specification is valid.
H_A : $E(\mu_{it} X_{it}) \neq 0$			

Heteroscedasticity $H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for all i	LM =1.30	0.2600	The variance of the error term is constant. Heteroscedasticity is not present.
Cross-sectional dependence tests $H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ $HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 5.291	0.0000	Cross sections are interdependent.
Frees (1995) CD test	F= 3.167	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.1. Diagnostic tests with Leverage (DE) applied as the dependent variable and ROA as the measure of profitably

The reported test was found in Table 4.3, first and foremost, the joint validity of crosssectional individual effects was examined. The examination affirmed the meaning of cross-sectional individual effects, as the F-statistic (1.28) is more prominent than the test measurement (0.2027). In contrast, the probability value is more than 5%; hence, the cross-sectional individual effects are valid and the null hypothesis was accepted. This test affirmed that firms are heterogeneous and that capital structure/leverage affects a ROA. On that note, within the sight of fixed effects, the pooled OLS assessment technique gets inconsistent and inefficient.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and affirmed that random effects are not present and the random-effects model is not preferred.

Thirdly the researcher test was the Hausman (1978) specification. The results confirmed that the fixed effects specification is valid; hence, the regressors are not exogenous. The heteroscedasticity test affirmed that the variance of the error term is stable while the heteroscedasticity is absent.

The investigator examined for cross-sectional dependence by employing the Pesaran (2004) cross-sectional dependence test. The null hypothesis of the interdependence of cross-sections was accepted as the test statistic was not important at the 1% level of significance. Alternatively, Frees test affirmed that cross-sectional effects are not present. The investigator demonstrated that the consolidation of time effect controls for temporal dependence; in any case, the issue of spatial dependence remains. Therefore, the investigator utilised the fixed effect with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was not the solution.

	Pooled Effects	Fixed Effects	Random	System GMM	FGLS		
			Effects				
	DE	DE	DE	DE	DE		
L.DE	0.173^{*}	-0.00106	0.173^{*}	0.134***	0.173*		
	(0.0777)	(0.0843)	(0.0777)	(0.0217)	(0.0763)		
LIQ	-3.226	-1.419	-3.226	-2.866*	-3.226		
	(1.765)	(2.662)	(1.765)	(1.286)	(1.734)		
FIRMSZ	-0.886	-17.70^{*}	-0.886	-20.81**	-0.886		
	(1.422)	(6.933)	(1.422)	(6.749)	(1.396)		
GROWTH	4.070	10.98	4.070	73.13*	4.070		
	(11.32)	(12.44)	(11.32)	(29.71)	(11.11)		
201		a 		o o - o**			
ROA	-0.283	-0.777	-0.283	-8.070	-0.283		
	(0.210)	(0.455)	(0.210)	(2.374)	(0.207)		
	27.20	220.0*	27.20	4 = 0 4 **	25.20		
_cons	27.30	339.3	27.30	450.1	27.30		
	(27.86)	(130.0)	(27.86)	(136.5)	(27.36)		
Ν	168	168	168	168	168		
Groups	21	21	21	21	21		
	•• 10.00*	1 4	10 00***	00 11***	1 < 50***		
F-stas/Wach	12 13.03*	1.4	13.03***	89.11***	16.50***		
R-SQUARE	D 0.6482	0.471	0.6482				
A rellano-Bo	nd $AR(1)$			-1 47			
A rellano-Ro	Arollono Bond AD(2)			0.37			
Sargan test c	of overid		0.37				
Hansen test	of overid		2 38				
Instruments				10			

Table 4.4: The determinants of leverage as measured by debt to equity ratio and ROA as measure of profitability

`Standard errors in parentheses p < 0.05, ** p < 0.01, *** p < 0.001

4.4.2. The determinants of leverage as measured by debt to equity ratio and ROA as measure of profitability

Post estimation diagnostic statistics in Table 4.4 shows that the model is robust and was not weakened by many instruments as the groups are more than the number of instruments. Results from the system GMM module showed a positive and remarkable connection between DE and its lagged value. This implied that leverage is constant. The results agree with Mujahid and Akhtar's (2014) findings which indicate that leverage is constant.

The findings from the study highlighted an opposite and remarkable connection between liquidity and DE. This implies that leverage deteriorated as liquidity will go up. This agrees with the trade-off theory which anticipated an opposite connection between liquidity and DE. The results seconded by Wolmarans, et al.'s (2013) findings anticipated opposite connection liquidity and DE. It is recommended that financial firms should introduce policies that reduce liquidity to increase company leverage as highly geared firms are at risk. Furthermore, the results showed an adverse connection between firm size and DE. This is seconded by the results of Marete (2015) that affirmed an adverse connection between firm size and leverage. This is implied that if the big companies use more equity, their performance gets will be affected. Large financial firms are bound to lean toward debt financing to equity to benefit from an interest tax. This is in accordance with the anticipation of the trade-off theory.

On the other hand, the findings showed a positive and remarkable connection between growth opportunity and DE. This suggested that leverage is persistent. Moreover, the results indicated an indirect and remarkable correlation between ROA and DE. This suggests that when leverage decreases, ROA will increase. This agrees with agency cost theory which anticipated an indirect correlation between ROA and DE. In testing the correlation between ROA and DE using agency cost theory, Ahmed, et al. (2018) found that DE has an indirect correlation with ROA. It is recommended that firms should depend more on equity as it has higher benefits than debt (Aziidah, 2017).

 Table 4.5: Diagnostic tests with Leverage (DE) as the dependent variable and ROE as the measure of profitability.

Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=1.50	0.0896	Cross-sectional individual effects are valid.
individual effects			
H_0 : $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_A::\alpha_1\neq\alpha_2\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
$H_0: \delta_{\mu}^2 = 0$			
$H_{A}: \delta_{\mu}^{2} \neq 0$			
Hausman (1978) specification	Chi2 = 4.69	0.4551	Regressors are exogenous. Hence the Fixed
test			effects specification is not valid.
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			
H_A : $E(\mu_{it} X_{it}) \neq 0$			

Heteroscedasticity $H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for all i	LM =23.85	0.0000	The variance of the error term is constant. Heteroscedasticity is not present.
Cross-sectional dependence tests $H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ $HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 2.513	0.0120	Cross sections are interdependent.
Frees (1995) CD test	F= 1.226	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.3. Diagnostic tests with Leverage (DE) as the dependent variable and ROE as the measure of profitability

The reported test for these results is found in Table 4.5. The researcher began by testing the joint validity of cross-sectional individual effects. The test certified the importance of cross-sectional individual effects, as the F-statistic (1.50) exceeds the test estimation (0.0896). However, the probability value is more than 5%; hence, the cross-sectional individual effects are valid and the null hypothesis was accepted. The test affirmed that firms are heterogeneous and that capital structure/leverage has an influence on company performance. Therefore, within the sight of fixed effects, the pooled OLS assessment technique gets inconsistent and not efficient.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and affirmed that random effects are absent and the random-effects model is not preferred.

Thirdly the researcher test was the Hausman (1978) specification; the results confirmed that the fixed effects specification is not valid hence regressors are exogenous. The heteroscedasticity test affirmed that the variance of the error term is stable while the heteroscedasticity is absent.

The researcher examined for cross-sectional dependence by applying the Pesaran (2004) cross-sectional dependence test. The null hypothesis of the interdependence of cross-sections was accepted. As a result, the test statistic was not important at the 1% level of significance. In contrast, Frees test affirmed that cross-sectional effects are not absent. The study demonstrated that the addition of time effect controls for temporal dependence. However, the issue of spatial dependence remains. Therefore, the study utilised the fixed effects with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was not answer.

Pooled Effects		Fixed Effects	Random		FGLS	
	(1)	(2)	Effects	System GMM		
			(3)		(5)	
	DE	DE	DE	DE	DE	
L.DE	0.0726	0.0115	0.0726	0.0293^{***}	0.0726	
	(0.0516)	(0.0549)	(0.0516)	(0.00600)	(0.0507)	
	*		*	*	*	
LIQ	-2.803	-0.697	-2.803	-2.161	-2.803	
	(1.161)	(1.734)	(1.161)	(1.039)	(1.140)	
FIRMS7	0.0308	9.046*	0.0308	1 235***	0.0308	
1 11(1102	(0.845)	(3.901)	(0.845)	(1.150)	(0.829)	
	(0.015)	(3.901)	(0.015)	(1.150)	(0.02))	
GROWTH	-15.25*	-16.32*	-15.25^{*}	4.921	-15.25*	
	(7.187)	(7.703)	(7.187)	(9.940)	(7.058)	
			de de de			
ROE	-0.323***	-0.335***	-0.323***	-0.493***	-0.323***	
	(0.0221)	(0.0238)	(0.0221)	(0.0193)	(0.0217)	
cons	14 58	179 7*	14 58	8 104	1/1 58	
_cons	(16.23)	(72.31)	14.50	(23.10+	(15.94)	
	(10.23)	(72.31)	(16.23)	(23.40)	(13.74)	
N	168	168	168	168	168	
Groups	21	21	21	21	21	
Groups	21	21	21	21	21	
F-stas/Wach	i2 239.02*	41.69	239.02***	5116.16***	16.50***	
R-SQUARE	D 0.5681	0.5981	0.5681			
Arellano-Bond AR(1)				-1.07		
Arellano-Bond AR(2)				-0.65		
Sargan test	of overid		0.13			
Hansen test	of overid			3.12		
Instruments				10		

Table 4.6: The determinants of leverage as measured by debt to equity ratio and ROE as measure of profitability

Standard errors in parentheses p < 0.05, p < 0.01, p < 0.001

4.4.4. The determinants of leverage as measured by debt to equity ratio and ROE as measure of profitability

Post estimation diagnostic statistics in Table 4.6 indicates that the model is robust and was not weakened by many instruments as the groups are greater than the number of instruments. Results from the system GMM module showed a direct and remarkable correlation between DE and its lagged value. This inferred that leverage is persistent. The results are in line with Kuria and Omboi's (2015) findings which state that leverage is persistent.

The researcher found an adverse and significant correlation between liquidity and leverage (DE). This indicates that leverage decreases as liquidity increases. This is in accordance with the trade-off theory that anticipated adverse correlation between liquidity and DE. The findings were validated by Wolmarans, et al. (2013), as their study revealed an adverse correlation between liquidity and DE. It is suggested that firms should finance their assets with debt and equity as firms that are highly financed by debt alone have a high risk, therefore maximising the profit requires good combinations of debt and equity, whereas, a negative relationship is found (Kyule, 2015). However, the discoveries showed a positive correlation between firm size and DE. This result confirms Rajput and Chawla's (2019) findings which indicate that a positive correlation between firm size and leverage. The study also revealed a positive and insignificant correlation between growth opportunity and DE.

Furthermore, the study discovered that DE has an inverse and important connection with ROE. This agrees with the agency cost theory which anticipated an inverse connection between DE and ROE. The results are supported by Aziidah's (2017) findings who discovered an inverse connection between DE and ROE. It is recommended that firms should increase or keep the profitability level throughout the entire period for them to have a greater financial performance (Aziidah, 2017).

Table 4.7: Diagnostic tests with	leverage (DE) as the	e dependent variable and	ROA as the measure o	f profitability
Tuble 4.7. Diagnostio tests with	icverage (DE) as the	acpendent vanable and		

Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=2.63	0.0005	Cross-sectional individual effects are not valid.
individual effects			
H_0 : $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_A::\alpha_1\neq\alpha_2\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
$H_0: \delta_{\mu}{}^2 = 0$			
$H_{A}: \delta_{\mu}^{2} \neq 0$			
Hausman (1978) specification	Chi2 = 51.29	0.0000	Regressors not exogenous. Hence the Fixed
test			effects specification is valid.
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			
H_A : $E(\mu_{it} X_{it}) \neq 0$			

Heteroscedasticity $H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for all i	LM =8.72	0.0032	The variance of the error term is not constant. Heteroscedasticity is present.
Cross-sectional dependence tests $H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ $HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 2.315	0.0206	Cross sections are interdependent.
Frees (1995) CD test	F= 2.248	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.5. Diagnostic tests with Leverage (DE) as the dependent variable and ROA as the measure of profitability

The reported test for these results is found in Table 4.7. The researcher started by examining the joint validity of cross-sectional individual effects. The examination certified the importance of cross-sectional individual effects, as the F-statistic (2.63) is higher than the test estimation (0.0005). In contrast, the probability value (0.0005) is less than 5%, hence the cross-sectional individual effects are not valid and the null hypothesis was rejected. This examination confirmed that firms are heterogeneous and that capital structure/leverage has no effects on a firm's financial performance. Therefore, within the sight of fixed effects, the pooled OLS assessment technique gets inconsistent and not efficient.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and affirmed that random effects are absent and the random-effects model is not preferred.

Thirdly, the researcher test was Hausman's (1978) specification. The results confirmed that the fixed effects specification is valid; hence regressors are not exogenous. The heteroscedasticity test affirmed that the variance of the error term is unstable while the heteroscedasticity is available.

The researcher examined for cross-sectional dependence by using the Pesaran (2004) cross-sectional dependence test. The null hypothesis of the interdependence of cross-sections was accepted. As a result, the test statistic was not important at the 1% level of significance. In contrast, Frees test affirmed that cross-sectional effects are absent. The study demonstrated that the addition of time effect controls for temporal dependence. However, the issue of spatial dependence remains. Therefore, the study utilised the fixed effect with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was not the answer.

	Pooled Fixed Effects Rand		Random	System	FGLS
	Effects		Effects	GMM	
	(1)	(2)	(3)	(4)	(5)
	ROA	ROA	ROA	ROA	ROA
L.ROA	0.812^{***}	0.387***	0.812^{***}	0.772	0.812^{***}
	(0.0352)	(0.0733)	(0.0352)	(0.622)	(0.0346)
LIQ	-0.569	-0.189	-0.569	-4.333*	-0.569
	(0.315)	(0.454)	(0.315)	(1.669)	(0.309)
EIDMS7	0 762**	5 091***	0.762**	1 191***	0.762**
TIKMSZ	-0.703	-3.964	-0.703	-4.404	-0.703
	(0.249)	(1.071)	(0.249)	(1.650)	(0.243)
GROWTH	1.812	5 964**	1.812	1 108***	1 812
	(2 031)	(2.061)	(2.031)	(0.10)	(1.994)
	(2.031)	(2.001)	(2.051)	(0.10)	(1.551)
DE	-0.00845	-0.0196	-0.00845	-0.0914	-0.00845
	(0.0139)	(0.0139)	(0.0139)	(0.162)	(0.0137)
_cons	15.77^{**}	115.0^{***}	15.77**	35.50	15.77^{***}
	(4.867)	(20.00)	(4.867)	(36.32)	(4.780)
Ν	168	168	168	168	168
C	01	01	01	24	21
Groups	21	21	21	21	21
r- stas/Washi?	760 21*	21.50	760 21***	15 27***	16 50***
	$\mathbf{D} = 0.2214$	0.4208	0.3214	13.37	10.30
K-SQUARE	D 0.3214	0.4308	0.3214		
Arellano-Bo	nd AR(1)			-1.02	
Arellano-Bo	nd AR(2)			-2.14	
Sargan test o	of overid			10.36	
Hansen test	of overid			5.33	
Instruments				10	

Table 4.8: The determinants of leverage as measured by debt to equity ratio and ROA as measure of profitability

Standard errors in parentheses p < 0.05, p < 0.01, p < 0.001

4.4.6. The determinants of leverage as measured by debt to equity ratio and ROA as measure of profitability

Post estimation diagnostic statistics in Table 4.8 shows that the model is robust and was not weakened by many instruments as the groups are greater than the number of instruments. Results from the system GMM module showed a positive and insignificant correlation between ROA and its lagged value. This implied that firm performance is stable. The results agree with Ehiedu's (2014) findings which state that leverage is stable.

The researcher revealed a negative and remarkable relationship connection liquidity and ROA. This demonstrates that a high liquidity risk will tend to decrease profitability. This is in line with liquidity-adjusted capital asset pricing as the model foresees the negative connection between liquidity and ROA. The results are supported by Maaka's (2013) findings which argued a negative connection between liquidity and ROA. As recommended by Olalekan (2018) managers, investors and other stakeholders should control and manage liquidity risk as it has been empirically revealed to improve the nature and the class of the company performance.

The researcher also found an inverse and remarkable relationship between firm size and ROA. This implies that the size of the firm does not affect profitability. This disagrees with Marete's (2015) findings which posits the positive connection between firm size and ROA. Moreover, the researcher revealed that firm growth is directly and remarkably related to ROA. These results disagree with Olalekan (2018) findings which stated that growth opportunity is directly related to ROA.

The researcher also discovers an adverse and insignificant connection between DE and ROA. This means that leverage decreases as profitability increases. This agrees with the agency cost theory which anticipates an adverse connection between DE and ROA. The results are supported by Ahmed, et al.'s (2018) findings which indicated an adverse relationship between DE and ROA. It is recommended that financial firms should not rely more on debt as it lowers profitability while firms that rely more on equity tend to generate more profits.

 Table 4.9: Diagnostic tests with leverage (TDR) as the dependent variable and ROA as the measure of profitability

Test	Test Statistic	P – Value	Inference		
Joint validity of cross-sectional	F=2.74	0.0003	Cross-sectional individual effects are not valid.		
individual effects					
H_0 : $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$					
$H_A::\alpha_1\neq\alpha_2\neq\cdots\alpha_{N-1}\neq0$					
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random		
random effects			effects model is not preferred.		
$H_0: \delta_{\mu}^2 = 0$					
$H_{A}: \delta_{\mu}^{2} \neq 0$					
Hausman (1978) specification	Chi2 = 54.62	0.0000	Regressors not exogenous. Hence the Fixed		
test			effects specification is valid.		
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$					
H_A : $E(\mu_{it} X_{it}) \neq 0$					

Heteroscedasticity $H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for all i	LM =8.65	0.0033	The variance of the error term is not constant. Heteroscedasticity is present.
Cross-sectional dependence tests $H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ $HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 21.671	0.0947	Cross sections are independent.
Frees (1995) CD test	F= 1.621	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.7. Diagnostic tests with leverage (TDR) as the dependent variable and ROA as the measure of profitability

The reported test for these results is found in Table 4.9. The researcher begins by testing the joint validity of cross-sectional individual effects. The test affirmed the importance of cross-sectional individual effects as the F-statistic (2.74) is higher than the test estimation (0.0003). On the contrary, the probability value (0.0003) is less than 5%; hence, the cross-sectional individual effects are not valid and the null hypothesis is therefore rejected. This test certified that firms are heterogeneous and that the TDR has a negative influence on ROA. Therefore, the use of the fixed effects pooled OLS assessment technique was not effective.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and confirmed that random effects are not present and the random-effects model is not preferred. Thirdly, the researcher tested the Hausman (1978) specification; the results confirmed that the fixed effects specification is valid hence regressors are not exogenous. The heteroscedasticity test confirmed that the variance of the error term is unstable while the heteroscedasticity is there.

The researcher assessed the cross-sectional dependence by using the Pesaran (2004) cross-sectional dependence test. The null hypothesis of independence of cross-sections was accepted, therefore, the test statistic was remarkable at the 1% level of significance. In contrast, Frees test confirmed that cross-sectional effects are present. The study highlighted that the inclusion of time effect controls for temporal dependence. However, the issue of spatial dependence remains. Furthermore, the study used the fixed effect with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was the answer.

	Pooled Effects	Fixed Effects	Random Effects	System GMM	FGLS
	(1)	(2)	(3)	(4)	(5)
	ROA	ROA	ROA	ROA	ROA
L.ROA	0.816 ^{***}	0.373 ^{***}	0.816 ^{***}	0.820	0.816 ^{***}
	(0.0357)	(0.0737)	(0.0357)	(0.719)	(0.0350)
LIQ	-0.577	-0.408	-0.577	-5.589 [*]	-0.577
	(0.380)	(0.471)	(0.380)	(2.106)	(0.373)
FIRMSZ	-0.749 ^{**}	-5.555***	-0.749**	-1.142***	-0.749 ^{**}
	(0.251)	(1.052)	(0.251)	(0.268)	(0.247)
GROWTH	1.753	5.692 ^{**}	1.753	-4.464	1.753
	(2.031)	(2.050)	(2.031)	(22.64)	(1.994)
TDR	-0.258	-5.988	-0.258	-10.70 [*]	-0.258
	(1.378)	(3.322)	(1.378)	(5.179)	(1.353)
_cons	15.60 ^{**}	110.6 ^{***}	15.60 ^{**}	35.85	15.60 ^{**}
	(4.871)	(19.57)	(4.871)	(43.61)	(4.783)
Ν	168	168	168	168	168
Groups	21	21	21	21	21
F-stas/Wachi2 767.31* R-SQUARED 0.3208		21.93 0.4358	767.31*** 0.3208	11.27***	16.50***
Arellano-Bond AR(1)-0.86Arellano-Bond AR(2)-1.86Sargan test of overid12.41Hansen test of overid5.85Instruments11					

Table 4.10: The determinants of leverage as measured by TDR and ROA as measure of profitability

Standard errors in parentheses p < 0.05, ** p < 0.01, *** p < 0.001

4.4.8. The determinants of leverage as measured by TDR and ROA as measure of profitability

Post estimation diagnostic statistics in Table 4.10 showed that the model is strong and was not weakened by many instruments as the groups are greater than the number of instruments. Results from the system GMM module indicated a positive and insignificant relationship between ROA and its lagged value. This demonstrates that firm performance is stable. The results agree with Nawaiseh's (2015) findings which state that leverage is stable.

The study discovered an adverse and remarkable connection between liquidity and ROA. This demonstrates that as liquidity deteriorates the ROA rises. These findings are in line with the trade-off theory that anticipates an adverse connection between liquidity and ROA. In the same vein, this agrees Ologbenla's (2018) findings which argue an adverse connection between liquidity and ROA. Yusoff (2017) recommends that companies can improve their performance by raising the degree of liquidity and keeping up their ideal debt structure level.

The study also revealed an opposite and remarkable correlation between firm size and ROA. This demonstrates that the size of the firm cannot automatically determine the firm's performance. These findings agree with those of Nwanna and Ivie (2017) which revealed the opposite correlation between firm size and ROA. On the contrary, the researcher revealed an indirect and insignificant correction between growth opportunity and ROA. This means that the company's profitability does not depend on firm growth. These results resonate with those of Ramli, et al.'s (2018) findings which demonstrated an indirect connection between firm growth and ROA.

The study revealed an adverse and significant connection between TDR and ROA. This means as leverage falls ROA will appreciate. These findings agree with the pecking order theory which foresees an adverse connection between TDR and ROA. The results are seconded by Bistrova, Lace and Peleckiene's (2011) findings that revealed that leverage and ROA have an adverse connection. It is recommended that financial firms need to be careful when choosing the correct capital structure to use as wrong capital structure combination can negatively affect the firm performance.
Table 4.11: Diagnostic tests with leverage (DE) as the dependent variable and ROE as the measure of profitability

Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=1.93	0.0144	Cross-sectional individual effects are not valid.
individual effects			
$H_0: \alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_{A}::\alpha_{1}\neq\alpha_{2}\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
$H_0: \delta_{\mu}^2 = 0$			
$H_A: \delta_{\mu}^2 \neq 0$			
Hausman (1978) specification	Chi2 = 46.74	0.0000	Regressors not exogenous. Hence the Fixed
test			effects specification is valid.
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			
H_A : $E(\mu_{it} X_{it}) \neq 0$			

Heteroscedasticity $H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for all i	LM =47.15	0.0000	The variance of the error term is not constant. Heteroscedasticity is present.
Cross-sectional dependence tests $H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ $HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 0.575	0.5654	Cross sections are independent.
Frees (1995) CD test	F= 1.166	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.9. Diagnostic tests with Leverage (DE) as the dependent variable and ROE as the measure of profitability

The reported test for these results is found in Table 4.11. The researcher tested the joint validity of cross-sectional individual effects. The test confirmed the importance of cross-sectional individual effects, as the F-statistic (1.93) is greater than the test estimation (0.0144). In contrast, the probability value (0.0144) is less than 5%; hence, the cross-sectional individual effects are not valid, and the null hypothesis was rejected. This test confirmed that firms are heterogeneous and that DE has no effects on the ROE. Therefore, utilisation of fixed effects the pooled OLS assessment technique gets inconsistent and not efficient.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and affirmed that random effects are not present and the random-effects model is not preferred. Thirdly, the researcher test was the Hausman (1978) specification. The results confirmed that the fixed effects specification is valid; hence, regressors are not exogenous. The heteroscedasticity test confirmed that the variance of the error term is unstable while the heteroscedasticity is there. Finally, the researcher examined cross-sectional dependence by using the Pesaran (2004) cross-sectional dependence examination. The null hypothesis of independence of cross-sections was then not accepted. As a result, the test statistic was remarkable at the 1% level of significance. In contrast, Frees test affirmed that cross-sectional dependence. However, the issue of spatial dependence remains. Moreover, the researcher used the fixed effect with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was the answer.

	Pooled Effects	Fixed Effects	Random	System GMM	FGLS
	(1)		Effects		(7)
	(1)	(2)	(3)	(4)	(5)
LDOF	ROE	ROE	ROE	ROE	ROE
L.ROE	0.0531	-0.0567	0.0531	0.0249	0.0531
	(0.0508)	(0.0535)	(0.0508)	(0.0201)	(0.0499)
LIQ	-4.658	0.267	-4.658	-2.593*	-4.658
	(2.685)	(3.935)	(2.685)	(1.181)	(2.637)
FIRMSZ	0.154	-12.72	0.154	1.672	0.154
	(1.965)	(8.900)	(1.965)	(1.477)	(1.930)
GROWTH	-46.56**	-52.64**	-46.56**	-25.72	-46.56**
	(16.50)	(17.12)	(16.50)	(26.43)	(16.20)
DE	-1.742***	-1.746***	-1.742***	-1.719***	-1.742***
	(0.120)	(0.123)	(0.120)	(0.0128)	(0.118)
_cons	31.39	264.1	31.39	-1.625	31.39
	(37.76)	(165.0)	(37.76)	(28.12)	(37.08)
Ν	168	168	168	168	168
Groups	21	21	21	21	21
F-stas/Wacł	n i2 233.84*	42.81	233.84***	7411.07***	16.50***
R-SQUARE	CD 0.5777	0.6012	0.5777		
Arellano-Bo	ond AR(1)			-1.01	
Arellano-Bo	ond AR(2)			-0.11	
Sargan test	of overid			0.78	
Hansen test	of overid			9.32	
Instruments	8			12	

Table 4.12: The determinants of leverage as measured by debt to equity ratio andROE as measure of profitability

Standard errors in parentheses * p < 0.05, ** p < 0.01, *** p < 0.001

4.4.10. The determinants of leverage as measured by debt to equity ratio and ROE as measure of profitability

Post estimation diagnostic statistics in Table 4.12 indicate that the model is robust and was not weakened by many instruments as the groups are greater than the number of instruments. Results from the system GMM module indicated a direct and not significant between ROE and its lagged value. This implied that company performance is constant. The results agree with those of Kuria and Omboi (2015) which revealed that leverage is constant.

Results demonstrated that liquidity and ROE are inversely and remarkably related. This implies that when liquidity falls, ROE will rise. This is in accordance with trade-off theory as it anticipated an inverse connection between liquidity and ROE. This confirms Khalid, et al.'s (2019) findings which say liquidity and ROE are inversely related. It is recommended that financial firms should inform investors in advance about the liquidity risk as this might cause a loss of trust among them (Kibuchi, 2015). The study also discovered a direct but not significant connection between firm size and ROE. This is supported by Kibushi (2015) findings which revealed a direct connection between firm size and company performance.

The study also discovered an indirect and weak connection between firm growth and ROE. This means that the growth of the firm does not influence profitability. These results are supported by Ramli, et al.'s (2018) findings which showed an indirect connection between firm growth and ROE. This suggested that companies should lower their leverage which will increase financial performance's adaptability by compelling advertisers from using growth opportunities from higher consumer expectations (Malshe and Agarwal, 2015).

The researcher found that there is an adverse and remarkable correlation between DE and ROE. This implies that as leverage deteriorates, firm performance increases. This agrees with the agency cost theory as it foresees the adverse correlation between DE and ROE. These results are supported by Ahmed, et al. (2018) findings which showed an

adverse correlation between DE and ROE. The irrelevance theory also recommended that companies with high financial leverage can be assisted by valuable tax shields that strengthen company's value (Modigliani and Miller, 1963).

Table 4.13: Diagnostic tests wit	h leverage (TDR) as	the dependent variab	le and ROE as the meas	sure of profitability
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Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=3.81	0.0000	Cross-sectional individual effects are not valid.
individual effects			
$H_0: \alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_A::\alpha_1\neq\alpha_2\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
Ho: $\delta_{\mu}^2 = 0$			
$H_A: \delta_{\mu}^2 \neq 0$			
Hausman (1978) specification	Chi2 = -57.89	0.0000	Regressors not exogenous. Hence the Fixed
test			effects specification is valid.
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			
H_A : $E(\mu_{it} X_{it}) \neq 0$			
Heteroscedasticity	LM =26.29	0.0000	The variance of the error term is not constant.
$H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for			Heteroscedasticity is present.
all i			

Cross-sectional dependence tests			
<i>H</i> 0 : $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$			
$HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= -0.426	1.3296	Cross sections are independent.
Frees (1995) CD test	F= 0.023	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.11. Diagnostic tests with Leverage (TDR) as the dependent variable and ROE as the measure of profitability

In Table 4.13, the researcher assessed the joint validity of cross-sectional individual effects. The test confirmed the importance of cross-sectional individual effects, as the F-statistic (3.81) is more than the test estimation (0.0000). In contrast, the probability value (0.0000) is less than 5%; hence, the cross-sectional individual effects are not valid and the null hypothesis was therefore rejected. This test affirmed that firms are heterogeneous and that the TDR has no influence on ROE. Therefore, within the sight of fixed effects, the pooled OLS assessment technique gets inconsistent.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and confirmed that random effects are not present and the random-effects model is not preferred. Thirdly, the researcher test was the Hausman (1978) specification; the results confirmed that the fixed effects specification is valid; therefore, regressors are not exogenous. The heteroscedasticity test confirmed that the variance of the error term is not stable consequently the heteroscedasticity is there.

Finally, the study assessed the cross-sectional dependence by employing the Pesaran's (2004) cross-sectional dependence examination. The null hypothesis of independence of cross-sections was not accepted. However, the test statistic was significant at the 1% level of significance. In contrast, Frees test certified that cross-sectional effects are present. The researcher avers that the consolidation of time effect controls for temporal dependence. However, the issue of spatial dependence remains. On that note, the researcher used the fixed effect with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was not the solution.

	Pooled Effects	Fixed Effects	Random	System GMM	FGLS
			Effects		
	(1)	(2)	(3)	(4)	(5)
	ROE	ROE	ROE	ROE	ROE
L.ROE	0.186^{*}	-0.0343	0.186^{*}	0.160**	0.186^{*}
	(0.0760)	(0.0735)	(0.0760)	(0.0512)	(0.0746)
I IO	1 220	8 240	1 220	5 705**	1 220
LIQ	-1.529	-0.249	-1.329	-3.703	-1.529
	(4.891)	(5.704)	(4.891)	(2.049)	(4.803)
FIRMSZ	0.451	18.90	0.451	3.300	0.451
	(2.978)	(12.21)	(2.978)	(2.215)	(2.925)
		4.4			
GROWTH	-47.53	-72.78**	-47.53	-29.32	-47.53
	(24.99)	(23.67)	(24.99)	(24.74)	(24.54)
TDR	-18.70	-251.0***	-18.70	-55.55*	-18.70
	(17.48)	(40.08)	(17.48)	(23.63)	(17.17)
				``´´	
_cons	19.73	-183.3	19.73	-12.28	19.73
	(57.89)	(224.1)	(57.89)	(34.97)	(56.85)
Ν	168	168	168	168	168
Groups	21	21	21	21	21
F-stas/Wach	i2 10.96*	9.20	10.96***	2.95***	16.50***
R-SQUARE	D 0.0521	0.2447	0.0521		
A				1 40	
Arellano-Bo	$\mathbf{na} \mathbf{AK}(1)$			-1.48	
Arellano-Bo	$\mathbf{na} \mathbf{AK}(2)$			1.42	
Sargan test o	of overid			0./1	
Hansen test	of overid			5.08	
Instruments				12	

Table 4.14: The determinants of leverage as measured by total debt ratio and ROEas measure of profitability

Standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

4.4.12. The determinants of leverage as measured by total debt ratio and ROE as measure of profitability

Post estimation diagnostic statistics in Table 4.14 indicated that the model is robust and was not weakened by many instruments as the groups are greater than the number of instruments. Results from the system GMM module showed a positive and remarkable connection between ROE and its lagged value. This implied that firm performance is constant. The results resonate with those of Kuria and Omboi (2015) which revealed that leverage is constant.

The researcher found that liquidity has an opposite and remarkable connection with profitability. This implies that a rise in liquidity risk will cause profitability to fall. These results are compatible with the trade-off theory which foresees an opposite connection between liquidity and profitability. The results confirm Ologbenla's (2018) findings which indicated an opposite connection between liquidity and profitability. As indicated in the literature, firms need to concentrate on liquidity management to improve the profitability of a firm (Ahmad, 2016). The researcher further revealed a direct and insignificant connection between firm size and ROE. This implies that big companies are associated with high profitability. These results are in accordance with those of Nawaiseh (2015) which revealed a direct connection between firm size and ROE.

The study revealed that growth opportunity and ROE are indirectly and insignificantly related. This signals that the growth of a firm cannot predict high profitability. These findings disagree with the pecking order theory which anticipated a direct connection between growth opportunity and profitability. Pecking order theory presumed that enduring companies utilise interior resources as their fundamental need for financial leverage settlements to grow and support the business task (Ibrahim and Lau, 2019). These results are supported by Onofrei, et al. (2015) findings which revealed that growth opportunity and ROE are indirectly related. Moreover, the researcher revealed an adverse and remarkable connection between TDR and ROE. This implies that as the total debt ratio increases, ROE decreases. This agrees with the pecking order theory as it anticipated an adverse connection between TDR and ROE. These results confirmed

Udeh, et al.'s (2016) findings which revealed a negative relationship between TDR and ROE. Mohamed (2016) recommended that financial firm managers should make use of the operating cash to a borrowing rate of the acquired debt to back the firms' funding projects.

Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=2.99	0.0001	Cross-sectional individual effects are not valid.
individual effects			
$H_0: \alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_A::\alpha_1\neq\alpha_2\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
$H_0: \delta_{\mu}{}^2 = 0$			
$H_{A}: \delta_{\mu}^{2} \neq 0$			
Hausman (1978) specification	Chi2 = 46.28	0.0000	Regressors not exogenous. Hence the Fixed
test			effects specification is valid.
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			
H_A : $E(\mu_{it} X_{it}) \neq 0$			
Heteroscedasticity	LM =21.33	0.0000	The variance of the error term is not constant.
$H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for			Heteroscedasticity is present.
all i			

 Table 4.15: Diagnostic tests with leverage (TDR) as the dependent variable and ROA as the measure of profitability

Cross-sectional dependence tests			
$H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$			
$HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 1.238	0.2156	Cross sections are independent.
Frees (1995) CD test	F= 0.050	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.13. Diagnostic tests with Leverage (TDR) as the dependent variable and ROA as the measure of profitability

The reported test for these results is found in Table 4.15. The researcher first tested the joint validity of cross-sectional individual effects. The test affirmed the effects of cross-sectional individual effects, as the F-statistic (2.99) is bigger than the test estimation (0.0001). In contrast, the probability value (0.0001) is less than 5%; hence, the cross-sectional individual effects are not valid and the null hypothesis was rejected. This test certified that firms are heterogeneous and that the total debt ratio has no effects on a firm's profitability. Accordingly, within the sight of fixed effects, the OLS assessment strategy gets inconsistent and not effective.

The second test the researcher tested was the Breusch Pagan (1980) LM which confirmed that random effects are not present and the random-effects model is not preferred. The third test researcher tested was the Hausman (1978) specification. The results affirmed that the fixed effects specification is valid; hence regressors are not exogenous. In contrast, the heteroscedasticity test certified that the variance of the error term is not constant while the heteroscedasticity is present.

The researcher concluded the tests by testing for the cross-sectional dependence by employing the Pesaran (2004) cross-sectional dependence test. The null hypothesis of independence of cross-sections was not accepted. As a result, the test statistic was remarkably present. The researcher maintains that the inclusion of time effects controls the dependence of time. However, the problem of spatial dependence persists. Although the researcher used the fixed effect with the standard error estimator of Driscoll and Kray (1998), which controls for heteroscedasticity, cross-sectional dependence was the solution.

	Pooled Effects	Fixed Effects	Random	System GMM	FGLS
			Effects		
	(1)	(2)	(3)	(4)	(5)
	TDR	TDR	TDR	TDR	TDR
L.TDR	0.930^{***}	0.535^{***}	0.930***	0.809^{*}	0.930^{***}
	(0.0291)	(0.0679)	(0.0291)	(0.289)	(0.0286)
L IO	-0.00861	-0.0240*	-0.00861	-0.800***	-0.00861
LIQ	(0.00001)	(0.02+0)	(0.00806)	(0.0632)	(0.00001)
	(0.00000)	(0.00007)	(0.00000)	(0.0032)	(0.00772)
FIRMSZ	0.00307	0.0186	0.00307	-0.0356	0.00307
	(0.00547)	(0.0240)	(0.00547)	(0.0300)	(0.00537)
GROWTH	0.368***	0.141***	0.368***	0.858***	0.368***
	(0.0430)	(0.0432)	(0.0430)	(0.132)	(0.0422)
	× ,	× ,	```'	× /	· · · ·
ROA	-0.00167***	-0.258***	-0.00167***	-0.937***	-0.00167***
	(0.000812)	(0.00161)	(0.000812)	(0.00875)	(0.000797)
		0.0474		0.040	
_cons	-0.0120	-0.0454	-0.0120	0.940	-0.0120
	(0.107)	(0.453)	(0.107)	(0.722)	(0.105)
Ν	168	168	168	168	168
Groups	21	21	21	21	21
F-stas/Wach	ui 2 1750.92*	20.65	1750.92***	^c 20.54***	16.50***
R-SQUARE	D 0.3788	0.4209	0.3788		
Arellano-Bo	nd AR(1)			-1.79	
Arellano-Bo	nd AR(2)			-0.52	
Sargan test	of overid			4.83	
Hansen test	of overid			1.75	
Instruments				10	

Table 4.16: The determinants of leverage as measured by total debt ratio and ROA as measure of profitability

Standard errors in parentheses * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.0001

4.4.14. The determinants of leverage as measured by total debt ratio and ROA

Post assessment diagnostic statistics in Table 4.16 showed that the model is robust and was not weakened by numerous instruments as the groups are greater than the number of instruments. Results from the system GMM module showed a positive and significant TDR as a proportion of leverage and its lagged value. This suggested that leverage is persistent. These results resonate with those of Abubakar, et al. (2018) which revealed that leverage is persistent.

The researcher reported that liquidity has an inverse and remarkable influence on TDR. This means that as liquidity goes down, the leverage will rise. These findings are consistent with pecking order theory which anticipated an inverse correlation between liquidity and TDR. This result confirms Ahsan, et al.'s (2016) findings which posit that liquidity risk has an inverse correlation with TDR. In line with agency cost theory, the strength of the firm's manager can be high, which can result in better profitability through the utilisation of the manager's power (Ramli, et al., 2018).

The researcher also revealed that an adverse and weak connection between firm size and TDR. These results are opposite to the trade-off theory which foresees the direct connection between firm size and TDR. These results are supported by Onofrei, et al.'s (2015) findings which stated that firm size has an opposite connection with TDR. Tahir, et al. (2017) recommend that most large developing companies should opt for external funding for their borrowing. Furthermore, the study revealed that growth opportunity has a direct influence on TDR. This implies that as a firm grows, firms will make use of more debt to finance their resources. These results resonate with the pecking order theory which anticipated a direct connection between growth opportunity and TDR. In supporting these results, Ibrahim and Lau's (2019) findings also assert that growth opportunity has a direct connection between firm growth and TDR. As the irrelevance theory recommends, the higher expected return on debt financing is offset by acquired risk, with little attention paid to the chosen financing mix (Modigliani and Miller, 1958). The researcher also discovered an adverse and remarkable connection between TDR and ROA. This demonstrates that as financial companies utilise more debt to pay their resources, the ROA will decrease. These results agree with agency cost theory which foresees that TDR has an indirect influence on ROA. This result confirms Ahmed, et al.'s (2018) findings which revealed the negative relationship between TDR and ROA. Muchiri, Muturi, and Ngumi (2016) recommend that firms should opt to utilise debt financing to finance their resources as it improves the financial performance of the firm.

Table 4.17: Diagnostic tests with leverage (T	DR) as the dependent variable and	ROE as the measure of profitability

Test	Test Statistic	P – Value	Inference
Joint validity of cross-sectional	F=4.13	0.0000	Cross-sectional individual effects are not valid.
individual effects			
H_0 : $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$			
$H_A::\alpha_1\neq\alpha_2\neq\cdots\alpha_{N-1}\neq0$			
Breusch Pagan (1980) LM test for	LM = 0.0000	0.9776	Random effects are not present. Random
random effects			effects model is not preferred.
$H_0: \delta_{\mu}{}^2 = 0$			
$H_A: \delta_{\mu}^2 \neq 0$			
Hausman (1978) specification	Chi2 = 69.63	0.0000	Regressors not exogenous. Hence the Fixed
test			effects specification is valid.
$H_0: \mathbf{E}(\boldsymbol{\mu}_{it} \mathbf{X}_{it}) = 0$			
H_A : $E(\mu_{it} X_{it}) \neq 0$			
Hotoroscodasticity	LM =21.26	0.0000	The variance of the error term is not constant.
$H_0: \delta_i^2 = \delta$ for all $i H_0: \delta_i^2 \neq \delta$ for			Heteroscedasticity is present.
all i			

Cross-sectional dependence tests			
$H0: \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$			
$HA: \rho_{ij} \neq \rho_{ji} = 0$			
Pesaran (2004) CD test	CD= 0.582	0.5606	Cross sections are independent.
Frees (1995) CD test	F= 0.143	α= 0.10 : 0.3169 α= 0.05 : 0.4325 α= 0.01 : 0.6605	

4.4.15. Diagnostic tests with Leverage (TDR) as the dependent variable and ROE as the measure of profitability

The reported test for these results is found in Table 4.17. The researcher examined the joint validity of cross-sectional individual effects. The examination certified the relevance of cross-sectional individual effects, as the F-statistic (4.13) is bigger than the test estimation (0.0000). In contrast, the probability value (0.0000) is less than 5%, Hence, the cross-sectional individual effects are not valid and the null hypothesis was rejected. This test certified that firms are heterogeneous and that the total debt ratio has no effects on ROE. Therefore, the use of fixed effects on the pooled OLS assessment technique was not efficient.

Secondly, the researcher tested the Breusch Pagan (1980) LM test and affirmed that random effects are not present and the random-effects model is not preferred. Thirdly, the researcher test was the Hausman (1978) specification. The results confirmed that the fixed effects specification is valid; hence, regressors are not exogenous. The heteroscedasticity test affirmed that the variance of the error term is not constant while the heteroscedasticity is present.

Lastly, the study examined for cross-sectional dependence by employing the Pesaran (2004) cross-sectional dependence test. The null hypothesis of independence of cross-sections was rejected. As a result, the test statistic was significant at the 1% level of significance. In contrast, Frees test confirmed that cross-sectional effects are present. The researcher argues that the incorporation of time effect controls for temporal dependence. However, the issue of spatial dependence remains. Therefore, the researcher utilised the fixed effect with the Driscoll and Kray (1998) standard errors estimator, which controls the heteroscedasticity and cross-sectional dependence was the solution.

	Pooled Effects	Fixed Effects	Random	System GMM	FGLS
			Effects		
	(1)	(2)	(3)	(4)	(5)
	TDR	TDR	TDR	TDR	<u>TDR</u>
L.TDR	0.929	0.451	0.929	0.608	0.929
	(0.0286)	(0.0674)	(0.0286)	(0.280)	(0.0281)
LIQ	-0.00856	-0.0265**	-0.00856	-0.0820	-0.00856
	(0.00803)	(0.00906)	(0.00803)	(0.0503)	(0.00789)
	0.00217	0.0427*	0.00217	0 0 10***	0.00217
FIRMSZ	0.00317	0.0437	0.00317	0.240	0.00317
	(0.00488)	(0.0196)	(0.00488)	(0.0166)	(0.00479)
CPOWTH	0.0300	0.0512	0.0300	0.116	0.0300
	(0.0309)	(0.0312)	(0.0309)	-0.110	(0.0309)
	(0.0414)	(0.0390)	(0.0414)	(0.140)	(0.0407)
ROE	-0.000114	-0.000568***	-0.000114	-0.00128*	-0.000114
	(0.000126)	(0.000128)	(0.000126)	(0.000582)	(0.000124)
	(0.000120)	(0.000120)	(0.000120)	(0.0000002)	(0.000121)
_cons	-0.0110	-0.467	-0.0110	0.309	-0.0110
	(0.0953)	(0.363)	(0.0953)	(0.323)	(0.0936)
Ν	168	168	168	168	168
Croups	21	21	21	21	21
Groups	21	21	21	21	21
F-stas/Wachi2 1760.56*		26.47	1760.56***	4.82***	16.50***
R-SQUARED 0.3947		0.4824	0.3947		
-					
Arellano-Bond AR(1)				-1.78	
Arellano-Bond AR(2)				-1.19	
Sargan test of overid				2.01	
Hansen test of overid				2.81	
Instruments				10	

Table 4.18: The determinants of leverage as measured by total debt ratio and ROE as measure of profitability

Standard errors in parentheses p < 0.05, p < 0.01, p < 0.001

4.4.16. The determinants of leverage as measured by total debt ratio and ROE as measure of profitability

The diagnostic statistics after evaluation in Table 4.18 indicated that the model is robust and was not weakened by many instruments as the groups are greater than the number of instruments. Results from the system GMM module showed a positive and significant TDR as a proportion of leverage and its lagged value. This suggested that leverage is persistent. These results are in line with those of Abubakar, et al. (2018) which revealed that leverage is persistent.

The researcher revealed that liquidity has an opposite and a weak connection to TDR as a proxy for leverage. This implies that as liquidity increases leverage decreases. The results agree with the pecking order theory which anticipates an opposite connection between liquidity and TDR. This result confirms Ghasemi and Ab Razak's (2016) findings which showed a negative relationship between liquidity and TDR. It is recommended JSE top-40 firms should effectively manage liquidity risk as it is an important element that assists in providing sustainability on profitability. The study found that firm size has a direct and remarkable connection with TDR. This implies that leverage is persistent. These results are consistent with Nawaiseh's (2015) findings that revealed a direct connection between firm size and leverage.

The study revealed that growth opportunity has an adverse and a weak connection with TDR. This implies that as the firm grows, financial leverage decreases. These results contradict the pecking order theory which postulates a direct connection between growth opportunity and leverage. In supporting these results are Ibrahim and Lau (2019) and Onofrei, et al. (2015) who anticipated the adverse connection between firm growth and TDR.

Moreover, the researcher revealed that TDR has an indirect and remarkable connection with ROE. This implies that as leverage decreases profitability increases. The findings agree with the pecking order theory which anticipated an indirect connection between TDR and ROE. These results confirmed those of Khalid, Rashed, and Hossain (2019) which showed the relationship between TDR and ROE to be negative. It is recommended that firms should lower their financing cost and use less amount of debt as doing so will increase equity value and firm profitability (Iqbal and Usman, 2018).

4.5. Conclusion

This chapter presented the findings from the use of the different models adopted in this study. Four models were used; DE, TDR, ROA and ROE were the dependent variables in the respective models. The diagnostic tests, system GMM test, descriptive analysis and correlation analysis were discussed. The results from each model were explained in details. The next section outlines the conclusion to the study, featuring the key discoveries, implications of the research, recommendations and suggestions for future studies.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

To sum up this research, this section provides the summary of findings and the general conclusion of the research project. Furthermore, this section examines the implications of the study and provides the recommendations thereof. Lastly, it gives suggestions for future exploration.

5.2. Summary of the findings

The research was mainly focused on a quantitative study and applied a GMM to address the hypothesis on the connection between liquidity risk, financial leverage and a firm's performance. This research outlined the contribution of the study to the existing body of knowledge in the area of study that has not been examined in the past. This research examined the connection between liquidity risk, financial leverage and firm performance of 21 firms selected from the top-40 listed firms, retrieved from the Iress INET BFA database.

The study utilised the panel data analysis, which incorporated the pooled effects, fixed effects (FE), random effects (RE) models, system GMM, and feasible generalised least squares (FGLS) models using Stata version 14 software. The study conducted the following diagnostic tests to set up the most suitable model for the study: Joint validity of cross-sectional individual effects, Breusch Pagan (1980) LM test for Random Effects, Hausman specification test, test for heteroscedasticity, and the test for cross-sectional dependence: Pesaran (2004) CD test.

The primary goal of the research was to examine the connection among liquidity risks, financial leverage and firm performance with evidence from top-40 JSE firms. The researcher tested the hypothesis to build the link between the dependent and independent variables to talk to the research goal by utilising the system GMM model for nine years' panel data, from 2011 to 2019.

A year-to-year data were extracted by utilising panel data in favour of time series data with the 189 observations. A quantitative research approach was utilised to achieve the study objectives. The secondary data pulled out from annual reports were collected. The panel data analysis from 2011 to 2019 was employed. The study sample contained only 21 firms and the total population size of the top 40 JSE listed firms. The dependent and independent variables were analysed using the system GMM to achieve the targeted study objective outlined in the first chapter.

The study concluded that both an increase and decrease in liquidity and financial leverage of top-40 JSE listed firms influences firm performance. The results reported in Chapter 4, Table 4.4 indicated that liquidity risk and firm size has negative and notable effects leverage as proxied by debt to equity ratio (DE). The hypothesis was in line with the findings of Wolmarans, et al. (2013), Marete (2015), Kyule (2015) and the trade-off theory which foresee that liquidity has negative influence on leverage.

The report from chapter 4, Table 4.4, showed a negative and remarkable connection between ROA (ROA) and debt to equity ratio (DE). The hypothesis is in line with the findings of Ahmed, et al. (2018) and agency cost theory which foresee an inverse connection between financial leverage and ROA. However, the growth opportunity of top-40 JSE firms positively and remarkably influences DE.

Table 4.6 and 4.12 results showed that DE positively and remarkably affects ROE. The results were in line with Aziidah (2017), Ahmed, et al. (2018), and agency cost theory which foresees an adverse connection between leverage and firm performance. Moreover, the results revealed a positive correlation between firm size and DE. These were in fulfilment with the findings by Rajput and Chawla (2019) who predict that firm size is directly related to DE. The findings from the study pointed that growth opportunity and DE are positively correlated, as supported by the findings of Rehman (2013).

Table 4.8 and 4.14 results showed that liquidity has an inverse and remarkable connection with ROA and ROE as a proxy for profitability. These results are supported by Maaka (2013) and liquidity-adjusted capital asset pricing which predicted an indirect connection between liquidity and ROA. Table 4.8 results also revealed a negative and remarkable connection between firm size and ROA. These results contradicted the discovery of Marete (2015) who found a direct connection between firm size and ROA. These were supported by the findings of Olalekan

(2018), who also found the same results. Furthermore, the study revealed an adverse and insignificant relationship between DE and ROA. These were in line with the findings of Ahmed, et al. (2018) and agency cost theory which predicted that financial leverage has an indirect influence on firm performance.

Table 4.10 findings indicated that liquidity, firm size and firm growth has an indirect and remarkable influence on ROA. These findings were in accordance with the findings of Ologbenla (2018); Nwanna and Ivie (2017); Ramli, et al. (2018) and trade-off theory which predict negative liquidity and ROA. The results also found that adverse and significant relationship between total debt ratio as measure of leverage and ROA. These results were in incompliance with findings of Bistrova, et al. (2011) and pecking order theory which suggested an adverse connection between leverage and ROA.

The results from Table 4.12 indicated that liquidity has an indirect influence on ROE as a proxy for profitability. These results are in line with Khalid, et al. (2019) and trade-off theory which predicted indirect connection liquidity and ROE. Table 4.12 results further revealed a direct and insignificant connection between firm size and ROE. These results were confirmed by Kibushi's (2015) findings, who also revealed a direct connection between firm size and ROE. In contrast, an adverse and insignificant was established on the relationship between firm growth and ROE as supported by the findings of Ramli, et al. (2018).

Table 4.14 results showed that TDR as a proxy for leverage, firm size has an indirect and remarkable influence on ROE. These results are in accordance with the findings of Udeh, et al. (2016); Onofrei, et al. (2015), and pecking order theory that anticipates inverse connection between TDR and ROE. In the same Table 4.14, results indicated that firm size has a direct and inconsistent influence on ROE, and the results were supported by Nawaiseh (2015).

Table 4.16 and 4.18 results indicated that liquidity has an indirect and remarkable connection with TDR as a proxy for leverage. These hypotheses are consistent with findings of Ahsan, et al. (2016), Ghasemi and Ab Razak (2016), and pecking order theory and agency cost theory that anticipate an indirect connection between liquidity and TDR. The results also posited an inverse and weak correlation between firm size and TDR. These results were supported by Onofrei, et al.'s (2015) findings. However, they contradict with trade-off theory which anticipates the positive connection between TDR and firm size. Furthermore, the results

indicated an adverse and remarkable connection between TDR and ROA. The results were in line with findings by Ahmed, et al. (2018) and agency cost theory which anticipates an indirect correlation between TDR and ROA. Moreover, the study revealed that firm size has a direct correction on TDR. Results are in accordance with Ibrahim and Lau's (2019) findings and pecking order theory that foresees the direct connection between growth opportunity and TDR.

Table 4.18 results indicated that TDR has an opposite and remarkable connection with ROE. These results were consistent with the Khalid, et al.'s (2019) findings and pecking order theory which revealed the opposite connection between TDR and ROE. The researcher found that growth opportunity has an inverse and a weak connection to TDR as supported by Lau (2019), Onofrei, et al. (2015). However, firm size has a direct and remarkable connection to TDR as supported by Nawaiseh (2015).

5.3. Implications of the findings

This research provided information about relationships between liquidity risk, financial leverage and firm performance of top-40 JSE listed firms. This will arouse the interest of major players in the field like researchers, institutions and policymakers. The findings of this study provided insight into liquidity, financial leverage and firm performance.

Various studies' findings revealed that liquidity has an adverse influence on leverage. In contrast, this study revealed an indirect and remarkable connection between liquidity risk and DE and TDR as a proxy for financial leverage. These findings could mean that as liquidity risk deteriorates the financial leverage of top-40 JSE listed firms as measured by DE and TDR will increase.

The study also found that liquidity risk, ROA and ROE as proxies for firm performance are adversely and remarkably related. These findings mean that a decrease in liquidity risk will increase ROA and ROE. This study did not consider some external elements that may influence profitability; for instance, interest rate, inflation rate and gross domestic product (GDP).

The study only focuses on the top-40 JSE listed firms because these companies contribute more than 80% of the market capitalization of all firms listed on the Johannesburg Security Exchange (JSE). Additionally, owing to differences in company size, culture, political stability,

and economic conditions, results may differ from other developing markets such as India and China.

The study took just nine years data to analyse. Year-to-year financial ratios, the existing data were collected from the Iress INET BFA database to ensure accuracy and reliability. The collected data were used to examine the connection between liquidity risk, financial leverage and firm performance. Owing to the availability of analytical data, a small sample of 21 firms of top-40 JSE listed firms was used.

The prime limitation of this research project was the utilisation of existing data, omitting the usage of the primary data. However, the research does help fill the gaps and contribute to the body of knowledge in developing markets such as South Africa.

5.4. Recommendations

This research on the connection between liquidity risk, financial leverage and a firm's financial performance was limited to on top-40 JSE listed firms for nine years from 2011 to 2019. The sampling size of the study was limited to top-40 JSE listed firms, which makes the sampling very simple. Further study should be conducted with an improved sample size to improve the correctness and credibility of the results. More studies should be conducted with the inclusion of financial services companies or the banking sector.

Future studies should focus on using a qualitative research approach in a similar topic which would give the perceptions of the other stakeholders such as investors, shareholders, managers and policymakers. Moreover, further studies can be conducted on this topic with the addition of control variables like interest rate, gross domestic products (GDP), and inflation using different methodologies.

The current study period for this research was for nine years from 2011 to 2019. Future studies could expand the number of years which will ultimately improve the number of observations. Lastly, future researchers can also use unbalanced data to improve consistency, precision, and reliability in the future.

5.5. Conclusion

The aim of this study was to investigate the connection between liquidity risk, financial leverage, and firm performance with specific reference to top-40 JSE listed firms for the period of nine years from 2011 to 2019. The system GMM model was used to find the relationship between dependent and independent variables. The study found an inverse and significant connection between liquidity risk and DE and TDR. The study further revealed an indirect and remarkable between liquidity risk and ROA and ROE. Moreover, the researcher discovered that both DE and TDR have an adverse influence on ROA and ROE.

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APPENDIX A: UNISA ETHICAL CLEARANCE CERTIFICATE



UNISA DEPARTMENT OF FINANCE, RISK MANAGEMENT AND BANKING ETHICS REVIEW COMMITTEE

Date: 18 December 2020

Dear Mr NL Matsoma

ERC Ref #2020/CEMS/FRMB/015 Name : Mr NL Matsoma Student #: 45287902 Staff #: 90243269

Decision: Ethics Approval from 21 December 2020 to 31 January 2024

Researcher(s): Name Mr NL Matsoma

E-mail address 45287902@mylife.unisa.ac.za, telephone 072 764 5452

Supervisor (s): Name Prof D Makina E-mail address makind@unisa.ac.za, telephone 012 429 4832

Working title of research:

The relationship between liquidity and financial leverage, firm's financial performance: evidence from Top40 JSE firms

Qualification: MCOM

Thank you for the application for research ethics clearance by the Unisa DFRB Ethics Review Committee for the above-mentioned research. Ethics approval is granted for the period 21 December 2020 to 31 January 2024

The **negligible risk application** was **reviewed** by the DFRB Ethics Review Committee 18 December 2020 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment



University of South Africa Preller Street, Muckleneuk Ridge, City of Tshwane PO Box 392 UNISA 0003 South Africa Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150 www.unisa.ac.za

The proposed research may now commence with the provisions that:

- 1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
- 2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the DFRB Committee.
- 3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
- 4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
- 5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
- 6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
- No fieldwork activities may continue after the expiry date (31 January 2024). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 2020/CEMS/FRMB/015 should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.

Yours sincerely,



Chair of DFRB ERC : Prof K Tsaurai E-mail: tsaurk@unisa.ac.za Tel: (012) 429-2140

URERC 25.04.17 - Decision template (V2) - Approve

Signature Executive Dean : Prof T Mogale E-mail: mogalemt@unisa.ac.za Tel: (012) 429-4805

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APPENDIX B: LANGUAGE EDITING CERTIFICATE



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