# MEDIATING EFFECT OF CASH FLOW ON THE RELATIONSHIP BETWEEN PORTFOLIO MANAGEMENT AND FINANCIAL PERFORMANCE OF INSURANCE FIRMS LISTED IN THE NAIROBI SECURITIES EXCHANGE, KENYA

BY

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A THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN FINANCE

SCHOOL OF BUSINESS AND ECONOMICS

MASENO UNIVERSITY

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# DECLARATION

## Declaration by the student

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

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# ACKNOWLEDGEMENT

## DEDICATION

This thesis is dedicated to my family. Thanks, for your great support!

# ABSTRACT

Globally, Financial Performance of listed insurance companies reflects steady growth, which has over time varied across economies. For developing economies like Africa, the performance has revealed weaker growth reflected by declining premium trends. Kenya's performance of listed insurance companies has been fluctuating. Despite its significant contribution to the national GDP, financial performance of these insurance firms generally remains low and unstable, as evidenced by aggregate profit and loss movement from 2011 to 2020; with Ksh.14,990,949, Ksh.13,104,366, Ksh.20,235,884, Ksh.17,232,664, Ksh.13,635,098, Ksh.12,832,644, Ksh.13,642,971, Ksh.7,269,263, Ksh.15,119,923, Ksh.6,388,958 respectively. Such poor financial economic value-addition, threatens economic growth. Literature demonstrates credible but inconsistent relationships between portfolio management and financial performance. Previous studies have tested the association between portfolio management, cash flows and firm's financial performance, for listed insurance firms in the NSE; focussing on either accounting-based or/and market-based performance measures, which fails to predict the value creation abilities of the firm. Despite knowledge on portfolio management and cash flow on financial performance, it remains desirable to determine Economic Value-Added outcome of cash flow and portfolio management for the listed insurance firms in Kenya. Whereas studies assume nonexistence of intermediaries, the interaction operates on cash flow platform. The purpose of this study was to evaluate the mediating effect of cash flow on the relationship between portfolio management and financial performance of insurance firms listed at NSE. Specifically, it sought to; determine the relationship between portfolio management and financial performance, cash flow and financial performance, portfolio management and cash flow and evaluate the mediating effect of cash flow on the relationship between portfolio management and financial performance of NSE listed insurance firms. Modern portfolio, pecking order and Agency theories guided the study, while Correlational research design was used. Target population comprised six listed insurance companies reviewed for 10 years. Panel multiple correlation was used to analyse data. Results revealed; positive and significant effect of portfolio size on financial performance at ($\beta = 0.5254$, $p = 0.0000$) implying that a unit increase in portfolio size leads to 52.54% increase in financial performance, negative but significant effect of Portfolio asset allocation at ($\beta = -0.4138$, $p = 0.0016$) implying that a unit increase in portfolio asset allocation results in 41.38% decrease in financial performance, and portfolio risk at ($\beta = -0.1317$, $p = 0.0632$) implying that a unit increase in portfolio risk results in a 13.17% insignificant decrease in financial performance. Cash flow has positive significant effect at ($\beta = 0.3314$; $p = 0.0021$) implying that a unit increase in cash flow results in 33.14% increase in financial performance and partially mediating the relationship between both portfolio size (indirect effect = 0.1622) and portfolio asset allocation (indirect effect = -0.08452) and financial performance. The study concludes that portfolio size and portfolio asset allocation are significant predictors of financial performance; while cash flow mediates the relationship between portfolio size, portfolio asset allocation, and financial performance. It is recommended that the NSE listed Insurance firms restructure portfolio management elements which will partially but significantly influence cash flow and in turn influence the firm's financial performance; to assist policy makers and structuring of portfolio management.

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# LIST OF ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| **ASE** | : | Amman Stock Exchange |
| **BLUE** | : | Best Least Squares Unbiased Estimators |
| **BOA** | : | Bank of Africa |
| **CAPM** | : | Capital Asset Pricing Model |
| **CBK** | : | Central Bank of Kenya |
| **CFOs** | : | Cash flows |
| **CFI** | : | Corporate Finance Institute (CFI) |
| **CH** | : | Cash Holdings |
| **CEO's** | : | Chief Executive officers |
| **CMA** | : | Capital Markets Authority |
| **CR** | : | Debt Equity Ratio |
| **DJIA** | : | Dow Jones Industrial Average |
| **EVA** | : | Economic Value Added |
| **FC** | : | Finance Charge |
| **FGLS** | : | Feasible Generalised Least Square |
| **GAAPS** | : | Generally Accepted Accounting Principles |
| **GDP** | : | Gross Domestic Product |
| **GMM** | : | Generalised Method of Moments |
| **IRA** | : | Insurance Regulatory Authority |
| **IPO** | : | Initial Public Offering |
| **IPS** | : | Im, Pesaran, Shin |
| **ISE** | : | Indonesia Stock Exchange. |
| **KSE** | : | Karachi Stock Exchange. |
| **LEV** | : | Leverage |
| **LLC** | : | Levin, Lin, Chu |
| **MBR** | : | Market to Book ratio |
| **MPT** | : | Modern Portfolio Theory |
| **MVPS** | : | Market Value per share |
| **NI** | : | Net Income |
| **NOPAT** | : | Net Operating Profit After Tax |
| **NSE** | : | Nairobi Securities Exchange |
| **NYSE** | : | New York Stock Exchange |
| **OCF** | : | Operating Cash Flow |

| | | |
|---|---|---|
| **OLS** | : | Ordinary Least Squares |
| **Q** | : | Tobin Q |
| **REITS** | : | Real Estate investment Trust |
| **ROA** | : | Return on Assets |
| **ROE** | : | Return on Equity |
| **ROI** | : | Return on Investment |
| **SE** | : | Shareholders Equity |
| **SSE** | : | Shanghai Stock Exchange |
| **SPSS** | : | Statistical Package for Social Sciences |
| **TCA** | : | Total Current Assets |
| **TCL** | : | Total Current Liability |
| **TVET** | : | Technical and Vocational Education and Training |
| **USE** | : | Uganda Securities exchange |
| **USA** | : | United nation of America |
| **USE** | : | Uganda Securities exchange |
| **VAFP** | : | Value Added Financial Performance |
| **WC** | : | Working Capital |

# OPERATIONAL DEFINITION OF TERMS

**Cash flow-** This is the amount of cash and cash-equivalents which the firm has that can be used to meet financial obligations as and when they fall due.

**Economic Value Added**- In this study EVA is defined as the difference between Net Operating Profit after Tax and finance charge.

**Financial performance-** Refers to financial soundness and robustness of the company.  It also refers to the profitability of the firm.

**Listed Insurance companies-** Are quoted financial intermediaries which offer direct insurance or reinsurance services, providing financial protection from possible hazards in the future to institutions and individuals.

**Portfolio-** Is a group of assets held by an investor with an aim of meeting certain investment objectives.

**Portfolio management-** Is the process of selecting and overseeing of a group of investments that meet the long-term financial objectives and risk tolerance of a client, a company, or an institution.

**Portfolio size -** Refers to the value of stocks, projects or investments that should be put together in order to form an optimal portfolio.

**Portfolio asset allocation-** Means spreading your capital among different types of investments with the main objective to minimize risk

**Portfolio risk-**Is the variance from returns of a portfolio. It also refers to the probability of loss or the percentage in which investor tolerates to compensate for their higher return

**Tobin Q -** In this current study, Tobin's Q is defined as the ratio of total asset value of a firm to total market value of a firm.

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# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

This chapter presents the concepts of portfolio management and cash flows and their relationship with economic value-added financial performance. The problem of study, study objectives, hypotheses that guided the study, the scope of the study, justification and the conceptual framework of the study are described in this section.

Financial performance of listed insurance companies globally reflects a steady growth that has over time varied across economies. The developed economies have reflected positive growth in gross premiums for life, non-life, or both segments; arising mainly from favorable economic conditions, developed financial systems and increased uptake of insurance services (Makau 2021). However, for developing economies in Africa, the performance reveals weaker growth, decline in premiums, and low penetration rate, as well as unstable profits (Rudden,2023). In Kenya, the performance of the listed insurance companies has over time been fluctuating, and remains low as evidenced from the industry profit and loss indicators for the 10-year period, from 2011 to 2020; with Ksh.14,990,949, Ksh.13,104,366, Ksh.20,235,884, Ksh.17,232,664, Ksh.13,635,098, Ksh.12,832,644, Ksh.13,642,971, Ksh.7,269,263, Ksh.15,119,923, Ksh.6,388,958 returns respectively (IRA2020). This is a pointer to poor value added into the economy thus threatening the growth of such economies. In the developed countries, the markets where securities are exchanged are significantly developed. However, for fairly developing countries like India and Pakistan, their Security exchange markets are fairly developed and reveal a departure from traditional and market based financial measures to value-addition (Kenyanya and Ombok, 2018). This is because firms concerned with value-addition produce more worthwhile results than those that are profit-oriented (Barbullushi, 2015).

The urge to have a good grasp of the concept of financial performance drivers which adds value to the economy has gone through enhancement more so in developing countries like Kenya whose companies are determined to offer competition to other global players in the enterprising world's business arena. More importantly, companies in economies that are still growing like Nairobi Securities Exchange (NSE) frequently face challenges of severe risk caused by poor portfolio management, poor cash flows, and declining profits; all of which threaten financial performance of firms (NSE, 2014). These challenges form the basis of their

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instabilities in the Nairobi Securities Exchange and affect their abilities to add value to the economy thus acting as a threat to potential investors who then shy away from investing their wealth. Nevertheless, empirical works point out that Economic value addition may dependent on specific firm factors like portfolio management and cash flow. Portfolio management involves designing a portfolio tailor made to suit an investor's risk tolerance, time frame, investment objects, with an aim of maximizing portfolio returns for a given level of risk. Lindsey (2015) notes that Portfolio management attempts to show an investor how to combine a set of assets to maximize their returns as well as minimize their risk.

Theoretically, Modern portfolio Theory has been used to explain that Investors are required to choose portfolios with numerous assets rather    than investing in individual assets, since choosing a portfolio of assets (diversification) can decrease the level of the risk exposure, while maintaining the expected level of profitability (Ngari, 2018).  The theory favours choice of optimal mix of assets based on an assessment of their individual tolerance to risk rather than individual asset hence improving financial performance (Nyora, 2015). In recent years, firms are forced to consider the portfolio composition because of the problem of information asymmetry for diversification purposes that assist in risk minimization and maximization of returns (Lindsey, 2015).   Consequently, portfolio size, portfolio asset allocation and portfolio risk as the key components of portfolio management have been located as the most significant financial investment instruments which determines the efficiency of the projects of a firm over a company's management team at the apex of such organizations; ((Amayo, (2018), Chong & Philips, (2013), Iraya (2018), (Nshimiyimana, Rwamashongo & Niyizigama, 2019)).

The elemental role of the portfolio size as one of the basics of portfolio management and how it influences the financial performance of a company has been given attention in the field of research. Empirical findings show inconsistent results on how portfolio size affects the company's financial performance. Kimani & Aduda, (2016) findings indicated that, a portfolio that is optimal should hold between 16 and 20 stocks. Kisaka, Mbithi and Kitu (2015), noted that optimal portfolio size lies between 18-22 stocks. Vaughn (2022) noted that anything under 20 is highly concentrated, and at that point, the firm will be exposing itself to single-security risk.   Chong &Phillips (2013) notes that while there are some criteria that would suggest a moderate-sized portfolio, the portfolio may not well be diversified, and consequently that owning individual stocks isn't optimal with fewer than 70

or more holdings. Li (2022) noted that the ideal portfolio size should be limited to 6 to 12 stocks while Byrne and Lee (2011), Auma (2013) were indifferent on portfolio size.

The impact of asset allocation on financial performance has been accorded empirical attention with Blanchett & Straehl (2018), Mokaya, chogi & Nyamute (2020), Ombima & Njiru (2018) showing that portfolio asset allocation significantly and positively influences financial performance. However, Salman, Mata, Kurfi & Ado (2020), in a study on the association of portfolio investment and banking financial performance in Nigeria showed a negative and significant impact of bond investment on the financial performance of the banking companies. Kothan & shanke (2019) study results showed a low correlation.

Makau & Jagongo (2018), stated that portfolio returns are determined by risk. They assert that the premium of a risk differs from one jurisdiction to another and is found predominantly huge in developing and emerging markets since such market are usually synonymous with volatility and risks. However, findings have been inconsistent in several studies on the effect of portfolio risk on financial performance of companies. Amayo (2018), Ndyagyenda (2020), Iraya & Wafula (2018), Mpumwire & Mulyungi (2018) & Kimani & Aduda (2016) in their studies showed a positive correlation between portfolio risk and financial performance. On the other hand, Kiptoo, Kariuki & Ocharo (2021), Kioko, Olweny & Ochieng (2019) showed a negative relationship. These studies used ROA, ROI or ROE which are accounting based measures of financial performance which fails to predict the firm's future value.

Literatures reviewed showed that portfolio management proxied by portfolio size, Portfolio asset allocation and portfolio risk may influence firm financial performance although unsystematically. However, majority of the literatures were anchored on performance measures that were accounting-based which considers the true value of a firm over-all assets. No known study was anchored on economic value-added performance across listed insurance companies in growing economies like Kenya. This requires attention.

Cash flow refer to the quantity of cash and cash equivalent which the company uses to finance the current expenditure and investment commitments as and when they fall due, but does not include non-cash transactions such as depreciation (Muraya, 2016). Factual information discloses that cash flow is core for the survival of any business, since its insufficiency can lead to subsequent business failure or hinder the firm's growth. It is an instrument which enables firms to make better plans, investment decisions and understand

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where to productively spend firm's money (Rivero, 2018). Zahid, Shaikh, Khan, Shah, Shaish. (2017) notes that portfolio management depends upon its respective cash flows which are essential in the process of mitigation of credit frictions. Most firms with high investment opportunities face the problem of information asymmetry as well as huge level of risk premium while low investment opportunities are more sensitive to investment and cash flows. Hakeem & Bambale (2016) notes that enough liquidity level positively relates with profitability of a company. The frequently used financial ratios which mirror a company's ability to fulfil its current obligations of a firm according to the above author are quick to acid test ratio and current ratios.

Despite the numerous studies that have been conducted by various researchers, Wahome (2017) states that firms with well-managed cash flows experience an increase in how they perform financially, while improper cash flow management leads to financial distress. Subsequently, a company needs to have proper management of cash inflows and outflows. Rahman (2020) notes that for a company that is growing speedily, it requires a significant investment in accounts receivable and inventory, which increases its working capital investment and therefore reduces the amount of free cash flow. Theoretically, the Pecking order theory (1984) has been used to explain that managers follow a hierarchy when considering sources of fund investment opportunities. Whereas a number of empirical tests have been conducted to assess the interaction between cash flows and how listed firms perform financially, no consensus has been arrived at on their direct contribution; due to mixed results. However, plausible relationships have been demonstrated based on study outcomes of Zahid (2017), Wahome (2017), Ogbeide & Akanjia (2017), Rahman & Sharma (2020), Wanjiku (2019), Amahalu & Ezechukwu (2017), Eyahuma & Miroga (2020), Ugo & Egbuhazor (2022), Abughniema (2020) and Muraya (2018); all of which studied the association between cash flows and firm financial performance.

Zahid et al. (2017), Rahman & Sharma (2020), Wanjiku (2019) Ogbeide & Akanjia (2017) and Amahalu & Ezechukwu (2017) studies showed positive significant relationship between cash flows and financial performance using ROE and ROA in measuring financial performance. Wahome (2017), Itan & Riana (2021) and Abughniema, Hilal, Aishatb & Hamdanc. (2020) showed mixed results for the association of cash flows and financial performance of insurance companies. Ayahuma & Miroga (2020) study showed a substantial effect on the connexion between cash flow activities and financial performance of Kenya's

commercial banks. Muraya (2018) reported that the correlation between profit after tax and cash flows from operations was insignificantly low.

Lewellen, K. (2016) noted that investment (portfolio management) and cash flows are indeed related, although both the strength of the relationship and its cause are the subject of much debate. He explained that a firm might invest more when cash flow is high for reasons such as; internal funds may be less costly than external funds, managers may overspend the cash available in the firm, and these cash flow may basically be correlated with investment opportunities. Kwenda & Vengesai (2018) notes that the Cash flow stream is essential to investors and that Investors pay attention to cash flow for investment decision purposes. They further explain that cash flow is directly measuring the operational strength of a firm to fulfil its day-to-day financial commitments. According to them, Firms with more uncertainty in cash flow will be associated with more risk, calling for a higher discount rate yielding a lower firm value. In this regard, firms generating high and stable cash flow are regarded as more valuable than low cash flow firms. Krueger & Wrolstad (2016) noted that using free cash flows to weight portfolios was the only technique that outperformed equally-weighted portfolios and provided the investor with positive, statistically significant returns. It was also found that when using free cash flows to weigh the portfolios, levels of free cash flows were more important than trends.

Ghafoor & Islamabad (2018), states that the management of Cash in business depends on the demand for cash in the company. The purpose of managing liquidity is to uphold a level of funds in the company to maximize the owner's wealth and fulfil the working capital requirements. They noted that Cash levels should be maintained to optimize the balance between costs and cash operating costs thereby ensuring that there are sufficient funds. According to Kantudu & Umar (2021), Firms that are financially constrained tend to under invest when the cost of raising external funds is high. This constraint is due to capital market imperfections, leading to high interest thus the cost of raising outside finance, forces companies to source funds internally. In these situations, firms with inadequate funds may have to waive profitable investments. Theoretically, agency theory has been used to explain that the separation of ownership and control brings about agency costs, thereby facilitating overinvestment. Managers in firms with excess CF have an excellent reason to overinvest in such funds (Lewellen, K. 2016).

Several studies have made efforts to determine the relationship between cash flow and portfolio management of listed firms and reported inconsistent results. However, conceivable relationships are shown: The studies Kwenda & Vengesai (2018), Kantudu & Umar (2021), Jiang (2016), Krueger & Wrolstad (2016), Nugroho (2020), Serrasqueiro et al (2019), Ghafoor & Islamabad (2018), Rokhmawati (2019), Bala (2017), Wang (2015)), attempted to analyse the relationship between cashflows and portfolio management. Kwenda & Vengesai (2018) findings showed Cash flow volatility negatively and significantly affects projects even for companies with increased cash flows and unrestrained firms. Kantudu & Umar (2021), Jiang (2016), Krueger & Wrolstad's (2016), Nugroho (2020), Ghafoor & Islamabad's (2018) studies showed a robust and positive inter connections of cash flow and overinvestment. Serrasqueiro et.al (2019) results indicated that the venture susceptivity to internal cash flows is greater in larger than in the smaller VC-backed SMEs. Rokhmawati (2019) also noted that although lower financially constrained firms had a chance of deciding their source of funding from any sources, they preferred to fund their investment using cash flows due to lower risk. Bala (2017) in his statistical investigation showed that the association of cash flows from operating, financing and investment activities all together or independently, and returns from stocks of investment financial Banks listed at Khartoum Stock Exchange were not statistically significant. Wang (2015) found a negative association between the quality of financial reporting on both under and over-investment.

The empirical cash flow literatures show the significance of cash flow in accelerating financial performance of companies. However, little consideration has been given to the consequence of cash flow on economic value-added financial performance. Several studies reviewed were anchored on ROA, ROI and ROE which is accounting-based measures of financial performance which play insignificant role in knowledge-based integrated markets.

Whereas literatures contextualized on the NSE attempted to connect cash flow activities to companies' financial performance, no known global-wide study conceptualized cash flows and financial performance using economic value-added financial performance measure under Kenyan insurance industry. The consequence of cash flows on financial performance is yet to be contextualized across listed insurance companies in the NSE. The present study seeks to bridge the gap by analyzing the impact of cash flows on financial performance of listed insurance companies in Kenya.

Khaoula (2006) notes that firms face more problems of information asymmetry, thus relying more on internal cash flows to fund investment opportunities, since it is cheap in comparison to external finance. The ability of firms to optimally exploit investment opportunities may significantly depend on the level of financing constraints faced (Amahalu & Ezechukwu, 2017). Gupta & Mahakud (2019) results showed that cash flow positively impacted the expenditure decisions of the company. Ugo & Egbuhazor (2022) in their study made a recommendation that pharmaceutical companies listed in Nigeria should maintain a viable cash flow management technique which makes such companies more efficient enhancing their financial performance. Gupta & Mahakud (2019) revealed that both cash flow and portfolio management are affecting financial performance of companies. However, what is not brought out clearly is whether cash flow can mediate the effect of portfolio management and financial performance (EVA).

Researches assessing the mediating effect of cash flows reported of cash flows mediating various relationships. Mwangi (2014) conducted a study on listed nonfinancial firms at the Nairobi Securities Exchange, Kenya and their financial performance proxied by Return on Equity and Return on Asset. This study established that internal cash flows did not significantly mediate the influence of funding decisions on performance of nonfinancial Companies. However, the study used traditional accounting-based measures of financial performance. Hakeem & Bambale (2016) examined how Liquidity mediates the relationship between Firm Performance and Dividend Payout in Manufacturing companies listed in Nigeria, they noted that there was a significant mediating role played by the variables.

Kimunduu et al. (2017) examined on the Intervening impact of Cash investments on Dividend Policy and Financial Performance. The results showed that Cash investments mediates this relationship hence the level of cash upheld by the firm describes the reason why some companies pay more and showed a positive significant relationship. From empirical studies the mediating effect of cash flows on portfolio management and financial performance of insurance companies listed in Kenya has never been given adequate attention.

For Securities Exchange, Kenya is the solely larger capital market through which companies trading on the platform by gaining accessibility to long-term financing (Kenyanya & Ombok, 2018). The companies that are listed are significant economic drivers with an average of 17.6% contribution of revenue to Gross Domestic Product (GDP) annually between 2003 and 2017 (NSE, 2018). Listed insurance firms set a standard for the measurement of non-listed

firms, because of their net assets base, which should not be less than Kshs. 100 million immediately before the public offer thus are considered to be larger than non-listed ones. Additionally, their financial statements are audited and published to the public thus more transparent. Moreover, according to the Central Bank of Kenya (2022), listed insurance firms in the country had an overall GDP growth rate declining to 4.8% in 2022, from 7.6% recorded in 2021. Regardless of the significant role they play in Kenya's GDP, their financial performance has generally fluctuated with low figures (Karinga, 2016; Makau & Ambrose 2017; Makau,2021; Muraya 2018). Insurance firms are financial intermediaries which offer direct insurance or reinsurance services, providing financial protection from possible hazards in the future. Under an insurance policy, insurance businesses consider to remunerate the policyholder for losses triggered by a pre-defined happening against a premium or a fee. They are a key component of the world financial system because they contribute to the economic development through their contribution of financial security, savings mobilization and promotion of indirect and direct investments (Kollie, 2017).

Insurance acceptance in Kenya remains low compared to other key economies with the insurance penetration at 2.4% according to 2020 Financial Stability Report (Central Bank of Kenya (CBK). The low penetration level, which is below the global average of 7.2%, is attributable to the fact that insurance uptake is still seen as a luxury and mostly taken when it is necessary or a regulatory requirement. According to insurance regulatory authority report (2019), global product (GDP) indicated a 2.6% weaker growth in 2019 in comparison to 2018, which had a 3.2% growth. USD 68.16billion of premium was reported in Africa, which accounted to a 1.08% of world insurance premium. This showed a 2% decline in premium compared to 2018. Kenya's economic growth in 2019 also reduced slightly by 0.9%, insurance penetration also declined to 2.34% in 2019 from 2.43% in 2018. Morara and Sibindi (2021), Wahome (2017) notes that despite increasing awareness of the value of insurance and attempts by insurance providers to increase their reach, this figure remains low, and these factors contributed to the reduced financial performance of insurance companies in Kenya.

Therefore, cash flow acts as an important determinant on how insurance firms' channel towards various investment opportunities. Studies on the influence of portfolio management on financial performance of companies have obliquely assumed that this association is without intermediaries. A different perception that the association can be intervened by

conceptual variables like internal cash flow have never been given attention. The mediating effect of cash flows on the relationship between portfolio management and financial performance of listed insurance companies at Nairobi Securities Exchange has been given little attention.

## 1.2 Statement of Problem

Literature on financial performance of listed insurance firms globally have revealed steady growth, in respect of positive gross premiums for life, non-life or both segments, due to favorable economic conditions and increased uptake of insurance services in such economies. For the developing economies, however, the performance reveals weaker growth, which at times reflects declining trends in premiums and low penetration rates, reflecting weak uptake of the respective premium policies. The performance of insurance firms listed in Kenya has over time been fluctuating, despite the contribution of insurance firms to the GDP of Kenya. Financial performance of these companies has greatly remained low as evidenced by the industry's profit and loss from 2011 to 2020. The data reveals Ksh.14,990,949, Ksh.13,104,366, Ksh.20,235,884, Ksh.17,232,664, Ksh.13,635,098, Ksh.12,832,644, Ksh.13,642,971, Ksh.7,269,263, Ks.15,119,923, Ksh.6,388,958 respectively. Progressively, there still remains anticipation of decrease in uptake, premiums and profits for the insurance companies for the coming years.

This is an indication of poor financial economic value-addition that is threatening the growth of the economy. Empirical results show credible relationships between portfolio management and financial performance which is inconsistent. Previous studies tested for the relationship between portfolio management and financial performance, cash flow and firm financial performance, for insurance companies listed at the Securities Exchange, Kenya; but focused on either the market-based performance measures or accounting-based measures, which failed in predicting the value creation capabilities of the companies. Whereas effect of portfolio management, cash flow on financial performance is known, its yet to be established the economic value-added (EVA) outcome of cash flow and portfolio management for the listed insurance firms in Kenya. Additionally, studies which investigated the role of portfolio management on financial performance of the companies have obliquely assumed that the association is without intermediaries. A different perception that the association can be mediated by contextualizing variables such as cash flow has never been given keen attention. The mediating effect of cash flow on the relationship between portfolio management and financial performance for insurance companies listed at Nairobi Securities Exchange has not

been given attention. The study therefore sought to analyse the mediating effect of cash flow on the relationship between portfolio management and financial performance.

## 1.3 Research Objectives

The general objective of the study was to establish the mediating effect of cash flow on the relationship between portfolio management and financial performance of insurance firms in Kenya.

The study's specific objectives were to:

i. To determine the effect of portfolio management on the financial performance of insurance companies listed in Kenya;

ii. To establish the effect of cash flow on financial performance of insurance companies listed in Kenya;

iii. To analyze the effect of portfolio management on cash flow of listed insurance companies in Kenya; and

iv. To evaluate the mediating effect of cash flow on the relationship between portfolio management and financial performance of insurance companies listed in Kenya.

## 1.4 Research Hypotheses

The Null Hypotheses included:

i. $H_{01}$ Portfolio management has no significant effect on financial performance of insurance firms listed in Kenya;

ii. $H_{02}$ There is no significant effect of cash flow on financial performance of insurance firms listed in Kenya;

iii. $H_{03}$ there is no significant effect of portfolio management on cash flow of listed insurance firms in Kenya; and

iv. $H_{04}$ cash flow do not have a mediating effect on the relationship between portfolio management and financial performance of insurance companies listed in Kenya.

## 1.5 Scope of the Study

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This research focused on the mediating effect of cash flow on the relationship between portfolio management and its implication on the financial performance of insurance firms. The subject area of this study was finance and subfield of corporate finance. According to CFI (2022) Corporate finance is the area of finance that deals with sources of funding, the capital structure of corporations, the actions that managers take to increase the worth of the firm to the shareholders, and the instruments and analyses used to distribute financial resources. Cash flow refers to cash and cash equivalents that meet the firms 'present expenditures as and when they fall due (Mwangi, 2014). The research data collection for six insurance companies listed was for the period 2011 – 2020. The base year 2011 was arrived at because of the following reasons; Foremost, it coincided with the end of secondary effects of the 2007/2008 global recession and financial mayhem originating in the developed world. Next, it signaled the starting of the recovery of the economic period as clearly mirrored by the improvement in the performance of the Nairobi Securities Exchange (NSE), for example there was a 40% rise in the capitalization of markets in 2010-2011, which surpassed the Kshs 1 trillion, with a 36% mean annual produce based on the 20 NSE Share Index. In regard to this, NSE became one of the greatest performers in equity markets in Africa subsequent to the Securities Exchange (USE) Uganda, which had a 53% index return. Lastly, the 2011 also marked the end of the second decade of Kenya's economic reforms. The termination year of 2020 is chosen because of the decline in firms' revenues, liquidity and profitability in 2020, that saw a number of these firms resort to either lay–offs or furlough of employees and closures due to Covid 19 pandemic. The data considered was secondary and was collected from the Insurance regulatory authority reports, NSE, Central bank of Kenya and individual company websites of the individual insurance firms listed at the Nairobi securities exchange. This gave 60 data points.

## 1.6 Justification of the Study

The industry of insurance provides to the economy: security, promotion and mobilization of funds of indirect and direct investments. The financial performance of listed insurance firms

is therefore very crucial because they commit to providing sustainable growth, compensation and take risks by making long term investments at varying market conditions in order to maximize their returns. Despite all these, their financial performance has remained low and unstable, which is a worrying situation that is affecting the financial system and weakening the Kenya's economy due to its contribution. This study will therefore provide insights to the managers on how portfolio management can be used as a diversification strategy to eliminate some business risks for a greater achievement of profit maximization objective. It will help managers to know how to allocate resources in a proper manner by deciding on an appropriate portfolio size, portfolio asset allocation and portfolio risk in order to maximize their returns. The study findings will provide literature to practice in a number of ways:

Foremost, studies which examined the role of portfolio management on financial performance of the companies have obliquely supposed that this association is without intermediaries. A different perception that the relationship can be intermediated by conceptualizing variables like cash flow have never been given attention and this study will break the ground. Secondly, unlike previous studies that assessed company's performance using market-based financial performance measures and accounting-based, the adoption of economic value-added financial performance measures will be helping shareholders in measuring company's performance using imminent oriented techniques that will then secure their portfolio investment choices. Thirdly the findings of this study will help insurance companies to come up with reasonable policies of portfolio management that are geared towards improving cash flows which then influences their financial performance. Fourthly the study will also contribute to literature through the provision of a link between cash flows, portfolio management and financial performance for the Kenyan insurance companies. Finally, the study findings will significantly impact decision making by individual investors interested in designing up portfolios that yield maximum returns and which can be used as a diversification strategy to eliminate some business risks to maximize financial performance. This finding of the study will also contribute to literature that will provide insight and relevant information to future researchers.

## 1.7 Conceptual Framework

The conceptual framework is a hypothetical rational structure of meaning that guides and directs the development of the study and helps the researcher to link the results to the prevailing body of knowledge" (Burns & Grove 2005). The conceptual frame work shows that the independent or explanatory variable (portfolio management) and the dependent or

outcome variable (Financial performance) are associated. Cash flows is a mediating variable which is assumed to influence the independent variable as well as dependent variable. This conceptual framework has been designed from Judd & Kenny (1981), James & Brett (1984) and Baron & Kenny (1986), who discussed the four steps in establishing mediation. Additionally, this has been used to adapt to the arrangement of Kenyanya & Ombok (2018).

**Independent Variable**

**Mediating variable**

**Dependent Variable**

$H_{03}$

$H_{02}$

**Cash flows**

- Cash and cash equivalents

**Portfolio management**

Portfolio size
- Value of stocks

Portfolio Asset allocation
- Proportion of total investment

Portfolio risk
- Variance from returns

**Financial Performance**
- EVA
- Tobin Q
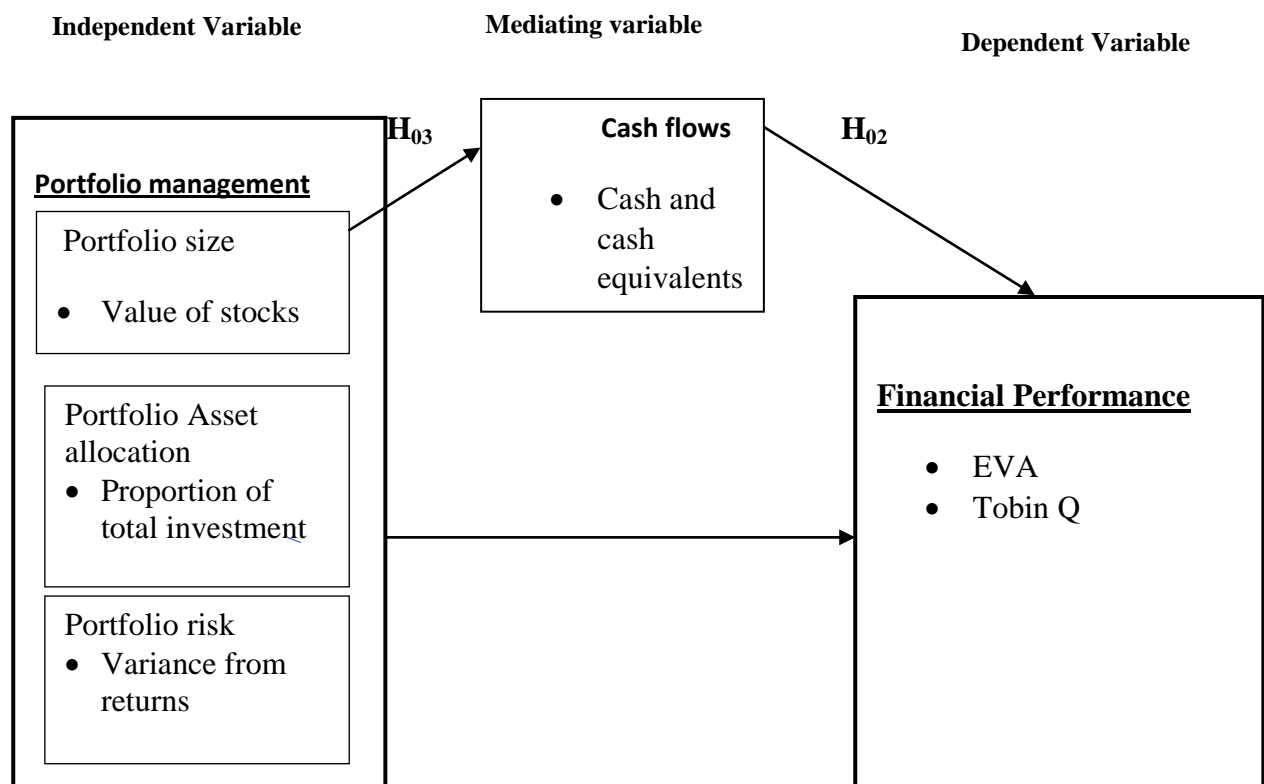
**Figure 1.1: Influence of cash flows on the Relationship between portfolio management and Financial Performance, adapted from Kenyanya and Ombok (2018)**

The variables conceptualized were adapted from Kenyanya and Ombok (2018) and modification to serve the purpose of the research. Kenyanya and Ombok (2018) studied on the intervening role of capital gearing on the Relationship between Composition of the board

and Intellectual Value-added Financial Performance. The study had relevance in developing the conceptual framework of the current study. The modified model of Kenyanya and Ombok (2018) in the current study plays a role in how portfolio management is operationalized. In the current study, the choice of portfolio management was specific and a replacement of the Board composition in Kenyanya and Ombok (2018) model. Portfolio management is operationalized as portfolio size, portfolio asset allocation and portfolio risk. while cash flows is operationalized as cash and cash equivalents. The selection of cash flow as a mediating variable was influenced by the pecking order theory that asserts that firms prefer internal cash flows in financing their investments rather than external sources due to transactions costs thereby affecting the financial performance of firms. Additionally, proper portfolio management enhances cash flow, and firms with adequate cash flow are able to capture emerging opportunities and viable short-term investments which has an influence on the financial performance of the firms. Moreover, its influenced by portfolio management and it has an influence on financial performance, hence a mediator variable. Kenyanya and Ombok (2018) measured firms' financial performance through Intellectual value-added financial performance measure (IVAFP). Modification was made to the above in the current study to Economic value added (EVA) and Tobin Q (Q) from the previous study of Bambale & Hakeem (2016).

# CHAPTER TWO
# LITERATURE REVIEW

## 2.1 Introduction

This chapter provides information on the literature review. Foremost, a theoretical review is presented concentrating on theories that explain subjects to do with the determinants of the financial performance of insurance companies. Furthermore, an empirical review of the literatures that have been done about the influence of cash flows on the relationship between portfolio management and financial performance is carried out.

## 2.2 Theoretical Literature

The research adopted three theories; Modern portfolio, Pecking order and Agency theory.

### 2.2.1 Modern Portfolio Theory

Modern portfolio theory (MPT) is a theory of investment that was introduced by an economist called Harry Markowitz in the 1952, which focuses on maximizing the expected return of a portfolio for a certain level of portfolio risk, or an equivalence of less risk for a given level of expected return, by thoroughly selecting proportions of a variety of assets, Hailu and Tassew (2018). Other scholars who have made contributions to this theory are: Kierkegaard, Lejon & Persson (2006), Omisore (2012), Jones (2017), Calderini Reyck, Lockett, Cockayne Moura & Sloper (2018).

Calderini et al, (2018) asserts that MPT allows determination of specific mix of investments that generate the greatest return for a given risk level. This theory is a concrete method of selecting investments in order to maximize their overall returns (financial performance of a firm) within an acceptable level of risk. Nyora (2015) extended the theory by stating that the insurance firms in Kenya have been seen combining different securities and investing in them like, investing in bank deposits, government securities, the real estate business and also mutual funds. Thus, the theory suggesting that investors may make improvements to the execution of the portfolios by allocating their investments into different classes of investment vehicles and industrial sectors with no expectations of reacting in the same way where there is emergence of new information.

Several studies that have anchored their theoretical groundworks on Modern Portfolio Theory include; Kierkegaard, Lejon & Persson (2006), Omisore (2012), Jones (2017), Calderini et al. (2018) who seem to agree that portfolio size, portfolio asset allocation and portfolio risk are important issues that the management of the firm are concerned with.

Omisore, I., Yusuf, M.& Christopher, N. (2012) states that MPT theory is a high-level investment decision technique that helps an investor to, estimate, classify and control both amount and kind of the of expected return and risk. He states that the MPT mathematically formulates the concept which diversifies investments, aimed at choosing a pool of investment vehicles which bears jointly lower risk when compared to any individual asset. He continues to state that portfolio management should be considered when assessing the effectiveness of an investment and firm's return. This indicates that portfolio management is an elemental and significant constituent in the assessment of financial performance of a firm. According to Kierkegaard, K. Lejon, C & Persson, J. (2006) MPT develops a framework where, any expected return is composed of various future outcomes and are thereby risky, and this relationship between risk and return can be optimized through diversification. This theory helps in the identification of the practices which are helpful to a firm in improving its financial performance with respect to portfolio management and specifically portfolio size, portfolio asset allocation and portfolio risk. The theory is thus helpful in examining the direct interaction between the elements of portfolio management and firms' financial performance of firms.

### 2.2.2 Pecking Order Theory

The proponents of the Pecking order theory were Stewart Myers and Nicolas Majluf in 1984. This theory states that managers follow a hierarchy when considering sources of fund investment opportunities: first, through the company's reserves, next by debt, and choosing equity financing as a last resort. this theory arises from the concept of asymmetry of information and the existence of transaction costs. Retained earnings (internal financing) comes directly from the company and minimize information asymmetry. Internal financing is the cheapest and most convenient source of financing unlike external financing, like equity or debt financing where the firm must incur fees to obtain external financing.

Khaoula (2006) cited this theory and made a deduction that optimal cash level cannot be reached. Financing and investment decisions can be as a result of cashflow. In regard to this theory, equity shares are very expensive to be issued to the public by most firms because of asymmetries in information. Therefore, companies fund their investments and projects principally with internally generated cash, then by debt and lastly with equities. When working cash is increased, companies use them to fund innovative viable capital expenditures, to recompense outstanding amounts, to accumulate cash and disburse

shareholders returns. When reserves are too low to fund new investments, then new debt issues can be made by firms. While Tong & Green (2005) supported the pecking order hypothesis and demonstrated that a conventional model of corporate capital structure can explain the financing behaviour of Chinese companies, Gurnarsih & Hartadi (2017) in their study on the listed companies in Indonesian Stock Exchange did not support the theory. Moreover, Celik & Yildirim (2020) admonished that the pecking order theory is not valid for low and high-leverage firms. They argue that when internal cash is insufficient to finance investment expenditures, high leverage firms prefer equity financing for high investment levels while low-leverage firms prefer to borrow as their first choice. While the pecking order Theory has not yet received clear support, the theory lays an appropriate theoretical background for the current research by connecting cash flow, portfolio management and firm financial performance since it suggests that for the firm to make any investments, cash is crucial which in turn influences financial performance.

### 2.2.3 Agency Theory

The theory was formulated by Jensen & Meckling (1976). Agency theory states that the separation of ownership and control brings about agency costs due to conflicts of interest among the company's owners and the managers. Various scholars who made contributions to the theory are: Fakhroni (2018), Lewellen, K. (2016), Kantudu & Umar (2021), Kargar & Ahmadi (2013) and Kenyanya & Ombok (2018). According to Fakhroni (2018) agency problem concerning cash flow indicates that conflicting interest among the managers and shareholders is associated to the company's cash flow, and can lead to managers conducting expropriation behaviour by using the company's cash flow. Managers, therefore, advantage themselves and cost the firm by using the company's cash flow. Kargar & Ahmadi (2013) contributed to the theory by stating that more internal cash enables managers to avoid market control. In this situation, they do not need the shareholders' agreement and they are free to decide about the investments at their will which results to agency costs. According to Lewellen, K. (2016), it is because of the separation of ownership and control that leads to agency cost, management may invest in projects for selfish reasons, which are helpful from the management viewpoint but may not be appropriate to the shareholders of the company. Kantudu & Umar (2021) contributed to the theory by stating that excess cash at the management's disposal after exhausting all expected investments provides a significant chance for the manager's abnormal behaviour. The agency cost explanation is more so for companies with CF. they continue to state that the agency cost problem of CF is a problem

between management and shareholders of the firm related to the company's usage of its CF. according to Kenyanya & Ombok (2018), when there is separation between ownership and control, directors usually follow their personal-interest at the expense of value added to shareholders, thus generating agency costs. They state that agency costs arises where the principal is monitoring the expenses experienced by agents, costs incurred when making up contractual agreements between the agent and the principal and the subsequent outstanding loss. While the Agency Cost theory has yet to be indisputably acknowledged, it lays a significant theoretical framework for the current study as it links cash flows and portfolio management since it proposes that agency cost is influenced by cash flows, which has an impact on portfolio management.

### 2.2.4 Concept of Portfolio Management

A portfolio is a group of assets held by an investor to meet certain investment objectives, (Kimani &Aduda, 2016). The main objective is the maximization of portfolio return for a given risk level. A portfolio may comprise stocks, bonds, credit, real estate, processing plants, service industries, and bank accounts. According to Makau & Jagongo (2017), Portfolio management involves designing a portfolio tailor made to suit investor's risk tolerance, investment objects and time frame. In addition, the issues of selectivity and diversification are addressed through portfolio management. This is done by putting your money into different investments that have a low or negative correlation to each other, by spreading your money among a variety of investments that may rise and fall at different times (Makau &Jagongo, 2017). Portfolio management attempts to show an investor how to combine a set of assets to maximize the assets returns as well as minimize the assets risk. Portfolio management is the science and art of choosing and managing a group of investments that meet the long-term financial objectives and risk tolerance of a client, a company, or an institution, (Lindsey Marymount 2015). Over time, portfolio management has been used by insurance firms as a means of improving their financial performance.

Portfolio management is very important for greater financial performance because it can be used as a diversification strategy to eliminate some business risks since there are factors to consider that affect the success of the project, and thus the organization, as well as unexpected benefits from the investment, (Lindsey,2015). According to Iraya (2014), Portfolio management is a process which involves identification and specification of investment goals and constraints, the development of investment strategies and portfolio

composition decided in detail. Its where portfolio managers initiate portfolio decisions while traders implement such decisions, measurement and evaluation of performance and monitoring of market conditions. The process of portfolio management highlights the process of portfolio creation and insists on flow of actions needed to understand the risk preferences of the investor in asset allocation and choice to performance appraisal.

Through emphasis of the series, it maintains order on how an investor creates a portfolio for or any other person. Literature suggest that unpredictable economic conditions affect the financial abilities of firms in developing countries, (Mwangi, 2014). Portfolio management is very important for greater financial performance within the insurance firms because it can be used as a diversification strategy to eliminate some business risks (Lindsey, 2015). For a greater achievement of profit maximization objective, insurance companies have used portfolio management by developing different scheme structures which became the standard for various competition (Regulatory report, 2017). Three elements for portfolio management have been brought forth eminently in most literatures researched; portfolio size, portfolio asset allocation and portfolio risk.

Most studies show that there is an inverse relationship between the value of securities forming up a group of assets and the portfolio risk. According to Nshimiyimana et.al. (2019), the number of stocks that make up a portfolio is very important because of the risk factor in every investment. Therefore, it is very important to understand the value of securities that need to be put together to have an efficient portfolio. Various studies have been conducted but there is still an argument on how many assets should form up an optimal portfolio for an investor to realize maximum returns (Kimani &Aduda, 2016). Byrne & Lee (2011), in their study, noted that larger portfolios are assumed to have greater diversification potential than small portfolios. Additionally, greater diversification is associated with lower risk and it is assumed that larger portfolios will have decreased return variability compared to smaller portfolios. Chong &Phillips (2013), They noted that while there are some criteria that would suggest a moderate-sized the portfolio isn't well-diversified, and consequently that owning individual stocks isn't optimal with less than 70 or more stocks, the greatest criteria will support the likelihood of minor to reasonable stocks being able to population performance. From the research done, there is no clear picture concerning the optimal portfolio size, the gap which this study seeks to find.

The most important investment decision one makes is on how to allocate a portfolio. The decision on the asset classes you invest in and the proportion of your portfolio allocated to each class will be the principal determinant as to whether you achieve your financial goals or not (Rotblut,2022). Kenyanya & Ombok (2018) noted that asset allocation is a relationship between returns on assets and risk. Higher returns can only be achieved through diversification, where the firm or an individual can apportion his resources on various asset types to minimize risks. An optimal mix in the allocation of resources and the nature of the relationship existing between the returns of the assets forming up the portfolio are important factors for the realisation of more returns (Kenyanya & Ombok, 2018). Some risk exposure is usually included in most investments made up of capital appreciation to get the desired return. The firm must be indifferent between transferring the resources to the future, and investing today, especially for best ventures that show profit margins, as long as a suitable discount rate is decided upon (Kimeu, 2015).

According to Shauna (2022). In his paper how to Achieve Optimal Asset Allocation, stated that each asset class has its level of return and risk, investors should consider their risk tolerance, investment objects, time horizon, and money available to invest as the basis for their asset composition. All of this is important as investors look to create their portfolios. To create a balance of an investment portfolio, asset allocation is a very vital. It's one of the main factors that lead to overall returns even more than selecting individual stocks. Establishing an appropriate asset mix of stocks, bonds, cash, and real estate in a portfolio is a dynamic process. As such, the asset mix should reflect the goals of a firm at any point in time, (Catalano, 2021). Dissimilar asset classes behave contrarily during different market environments. The relationship between two asset classes refers to asset correlation. Stocks and bonds are held together with one another because they are generally negatively correlated, meaning when stocks go down, bonds tend to go up, and vice versa. This correlation between assets offers a diversification benefit that helps lower overall portfolio volatility and risk. Since most investors have a risk-averse attitude, this concept becomes progressively important. It is widely accepted that choosing an asset allocation is more important over the long term than the specific selection of assets, (Flood, 2022).

Nyora (2015) noted that the asset mix of an insurance company's investment portfolio varies over time based on different influences, including both macroeconomic and industry-specific factors. The industry trends, state of the global economy, political events, and the market also

impact investment management decisions. It's therefore worthwhile to examine portfolio management and how it influences the insurance companies listed at NSE, financial performance. Nyora also notes that the number of holdings contributes to the degree of its diversification within the portfolio.

Liem (2015) notes that portfolio risk is the only factor used to explain the weight of the benefit of a portfolio compared to an individual stock. Portfolio risk is the possibility that the combination of assets or components, within your investments, fails to meet financial objectives. Each investment in a portfolio has a different risk, and those investments with higher returns, are normally associated to having higher risks. Risks of the bi-asset portfolio are reliant on the proportions of each asset, their standard deviations, and the relationship (or covariance) between the assets' returns. As the number of assets in a portfolio increase, the correlation among asset risks becomes a more important determinate of portfolio risk. The main portfolio risk includes market risk (systematic and unsystematic) (Ngari, 2016). Makau & Jagongo (2018), stated that revenues from a group of assets usually depend on risk. To reduce risks related to the distinct securities in the group of assets, companies investing opt for diversification where various securities with negative correlation are assorted in the portfolio to maximize returns while minimizing risk. However, the risk premium changes from one nation to another and is noted to be predominant and high in evolving and developing markets because of the volatility and risk associated with such markets.

### 2.2.5 Concept of Cash Flow

This is defined as the quantity of cash or cash equivalent which a company receives or gives out by the way of payments. It also refers to the quantity of cash and cash equivalents, but does not include non-cash transactions such as depreciation (Muraya, 2016). Most researchers have noted that cash flow is very critical to any business. Inadequate cash flow is one of the main reasons why businesses struggle and eventually fail, it thus affects the firm's ability to grow and its financial performance. It is important because it enables firms to make better plans and decisions and understand where to spend the firm money (Rivero, 2018). Firms with well-managed cash flows experience increases in their performance financially, while poor control might result into financial distress (Wahome,2017), thus, a company needs to control cash outflows and inflows properly. Some factors increase or decrease cash flows in the firm, for example as operating cash flow begins with net income, and any changes in

net income would affect cash flow from operating activities. When earnings decline or costs increase, with the resulting factor of a decrease in net income, the result will be a decrease in cash flow from operating activities. Activities that show a reduction in assets result in a surge in cash flow. Dealings that show a rise in liabilities results in an increase in cash flow. activities that show a reduction in liabilities result in a diminution in cash flow. Cash flows are also affected by the growth rate of a business. If a company is growing speedily, then it requires a significant investment in accounts receivable and inventory, which increases its working capital investment and therefore reduces the amount of free cash flow (Rahman, 2020).

### 2.2.6 Financial Performance of Listed Insurance Companies

For firms, financial performance involves making profit and maximizing these profits with an intention of improving the shareholders returns. It is a term that is associated with the returns of a business and it's an end result of an activity (Charnoz, 2018).

Eshna (2022) in his article on understanding concepts and importance of financial performance, described Financial Performance as the act of evaluating the outcome of a company's operations and policies and that it is stated in financial terms. This term is also employed in measuring the financial soundness, robustness of the company and thus it can be used as a measure to make comparison of companies in the same sector. A firms' performance financially is very important because it communicates to the stakeholders about its over-all well-being. It's a snapshot of its economic health. Trade creditors are interested in the liquidity of the firm thus carefully monitoring the appraisal of firm's liquidity, Bond holders are interested in the cash-flow ability of the firm and they are very careful on the appraisal of firm's capital structure, the major sources and uses of funds, profitability over time, and projection of future profitability. The Investors are interested in present and expected future earnings as well as stability of these earnings and thus very careful with the appraisal of firm's profitability and financial condition, (Eshna, 2022). There are key financial performance indicators which are tools for measuring and tracking progress in essential areas of company performance. These indicators provide stakeholders with a general picture of the overall health of your business. These indicators include operating Cash Flow (OCF), Working Capital (WC), Current Ratio (CR), and Debt to Equity Ratio (DER) among others. All these have been deemed to be the most significant indicators.

Financial performance is among the measures firms adopt in evaluating how well they use their resources in generating income. The performance of the firms financially can be measured using measures like operating income, earnings before interest and taxes, and value of net asset, (Gonga,2017). Care (2016) asserts that ratios in finance are employed in making a wholesome valuation of financial performance of a firm, and also used in the evaluation of a company's performance vis-à-vis its competition within the industry. Other ratios such as profitability and liquidity are usually used. These ratios also help in measuring the progress of achieving the targeted goals. Return on assets (ROA) is usually adopted in measuring performance. According to Amayo (2018), ROA points at how management is efficient; their effectiveness and efficiency in converting assets into earnings. It is computed at by dividing net returns by the total assets. It's the most accurate measuring tool, although critics inform that a performance measure should not be based on the size of an asset but rather return on equity, thus ROE is the critical in measuring the performance of the firm financially which is computed by taking net returns (NI) and dividing it by average share-holders equity (SE) (Makau & Jagongo, 2018).

According to Karanja (2013), changes in price levels does not influence the adoption of profitability ratios. Karanja asserts that the greatest convenient method of gauging performance is through financial performance as it incorporates analysis of time series. This is because the actual value of returns is not influenced by the fluctuating rates of inflation. Karanja (2013) also noted that Return on Assets (ROA) is computed by dividing Net returns after Taxes by Total Assets. ROA signals efficiency of the management, their effectiveness and efficiency in transforming assets into income. The higher ratios point at good performance by the companies. Consequently, financial performance refers to gradation to which objectives of finance are achieved and the procedures of measuring the yield of a company expressed in monetary terms. It's an important and qualitative influence on performance and innovation process of an organization. Onchiomba (2018) noted that there are different measures of profitability used in measuring the performance of a company such as the current asset to current liabilities ratios (CR), the Return on Equity (ROE) and Return on Assets (ROA). He asserts that the ROE is a ratio of finance which compares profitability of a company to the total sum of invested shareholder's investment or those existing on the statement of financial position. Most investors look for their benefits on their investments. An enterprise with a high return when compared to equity is able to generate more internal cash. Accordingly, the company is better when ROE is high and this also means that the company

is generating its profits. Therefore, financial performance, generally refers to the process by which firms determine the financial wellness of the company (Deitiana & Habibuw, 2015).

Ishaq et al. (2021) notes that Tobin Q is the economic theory of investment behaviour which measures the performance of a business firm. 'Q' is the proportion of the price of the market of the existing shares (share capital) to the cost of replacement of the total assets. In this current study, Tobin's Q is defined as the proportion of the total equity book value to total equity market value of a firm. The current study uses Tobin's Q because it is a very relevant and expressive variable for measurement of firm's financial performance, A low Q (between 0 and 1) means that the replacement cost for replacing a firm's assets is more than the amount of the security. This implies the stock is undervalued. Conversely, a high Q (greater than 1) implies that firm's stock is more expensive than the replacement cost of its assets which implies that the stock is overvalued (Mule & Mukras, 2015).

CFI (2019) notes that Economic value added is a measure that reveals the financial performance of a business based on its residual income. It explains the worth that a company creates with the help of the invested funds and boost the generated returns for shareholders. EVA is an attempt to not just figure out the accounting profit of an organization, but to put a shilling amount on the actual economic value created by the company. This provides an account on the abilities of the firm to manage well its cash and how it is doing at obtaining capital investments as reasonably as possible, and how it selects and right uses of that capital. EVA is related to the concept of value creation and therefore it is more appropriate than classical indicators such as ROI, ROA and ROE (Osaimi, 2019). In this study EVA is described as the difference between Net Operating Profit after Tax (NOPAT) and finance charge (FC).

Most researchers have used ROA, ROI and ROE as measures of financial performance which have been criticised greatly because of them being accounting-based measures and they are believed to be reflecting historical values which may have lost their actual nature by being restricted by accounting conventions. Economic value-added financial performance measure is procreated by the urge to substitute the market-oriented and accounting-oriented measures of performance of finance. Exponents of Economic value- added based company performance measures are on the argument that the market-based and accounting-based financial performance measures are not enough tools to evaluate a company's performance because they are anchored on financial statements which are not reflecting true and fair value

of total assets of a company as they exclude intangible assets, (Kenyanya & Ombok, 2018). Moreover, the accounting-oriented measures of performance of finance lacks the capability of determining the fair and true value of either tangible or intangible assets of a company since they are measuring past value creation capabilities. However, value-based measures focus on the future value. Therefore, the adoption of economic value-added financial performance measure will aid in measuring and predicting the future value abilities of listed insurance firms at NSE.

### 2.2.7 Portfolio Management, Cash Flows and Financial Performance of Insurance Firms

Firms face more problems of information asymmetry, thus relying more on internal cash flows to fund investment opportunities, since it is cheap in comparison to external finance. The ability of firms to optimally exploit investment opportunities may significantly depend on the level of financing constraints faced, Kimunduu (2017). Studies conducted revealed a direct relationship between cashflows and portfolio management. That the level of investment realised by firms requires a suitable amount of cash which then influences financial performance. This means that investments done by firms depend on the cash flows available (Wahome, 2017). From the empirical study, no study on portfolio management has used cash flow as a mediating variable. Previous studies [(Mwangi, 2014; Danjuma *et al.* (2015); Hakeem & Bambale (2016) and Kimunduu (2017)] show credible relationships, though they do not agree in the mediating effect of cash flows on other variables. However, the studies were on the assumption that there exists a direct relationship. The different angle that the relationship can be mediated by contextualized variables like cash flows has been given minimal attention. Expectation is that cash flow will mediate the relationship between portfolio management and financial performance.

### 2.3 Empirical Literature Review

This part deals with several studies that have examined how cash flows influence the relationship between portfolio management and financial performance.

### 2.3.1 Portfolio Management and Financial Performance

The impact of portfolio management on financial performance of a company has been popularized in various studies on theoretical framework and corporate finance practice. Theoretical and empirical research in this part was primarily driven by the Markowitz portfolio theory which later developed into the modern portfolio theory. Several researches

on the influence between portfolio management and financial performance has shown inconsistent results.

Kioko and Ochieng (2020) studied the Effect of Portfolio Diversification on the Financial productivity of Investment Companies trading at the Securities Exchange, Nairobi. The study aimed at establishing the influence of portfolio diversification on financial performance of listed investment companies in Kenya. They used descriptive research methodology. The collection of secondary data was for a 6-year period from (2014 - 2019). The findings showed a negative relationship that is insignificant between investments in bonds and return on investments across all investment companies trading at the Securities Exchange, Nairobi. Equity investments and return on investments registered a significant positive relationship across the investment companies trading at Nairobi Securities Exchange. Investments in mutual fund had an insignificant negative relationship with return on investments across investment companies trading at the Securities Exchange, Nairobi. Investments in real estate has a significant, positive influence with paybacks on investments across investment's firms at Securities Exchange, Nairobi. This research provided a great insight thought it was limited only to investment firms and used only accounting based measures which are assumed to depend on historical data that may not provide effectual results.

In Rwanda Mpumwire & Mulyungi (2018) conducted research on the influence of Portfolio Management and Financial Performance across the Banking Industry. The general purpose was to analyse the impact of portfolio management on the financial performance across banking industry. Correlational research methodology was adopted where collection of primary data was for a population of 80 employees out of which a sample of 79 employees was selected and analysed using inferential statistics. The results showed existence of correlation that was positive between portfolio management and financial performance of commercial banks. This study was significant since it contributed to the body of knowledge as it examined how the financial performance of banks engaging in portfolio management was affected. Its limitation was that it focused on the Rwandan economy alone. The study also concentrated only on one development bank. Therefore, its results cannot be generalised to the Kenyan economy.

Ngari (2018) examined the impact of portfolio management on profitability of commercial banks in Kenya. The researcher examined eleven commercial banks in Kenya that were listed within (2014-2017) period. The study took tenor, sector concentration liquidity, deposit-mix

and financial assets as independent variables and profitability of commercial banks as outcome variable. The researcher adopted a descriptive research methodology where secondary data was used and analysed through a regression model. The study reported that the liquidity held by a commercial bank and sum of financial assets had an influence that was significant on the profitability while sector concentration tenor, and deposit mix did not significantly affect the profitability of banks in Kenya across the study period. However, only commercial banks were explored and the influence of portfolio management and financial performance of listed insurance companies was not explored. This study sought to bridge the gap.

In the examination of portfolio optimization and its impact on Kenyan commercial banks performance, Amayo (2018) considered asset allocation, diversification and risk management as predicator variables and commercial banks performance as the outcome variable. Descriptive research methodology was adopted and Primary data sourced from a population of 215 with a sample size of 139 employees of senior managers in Kenya. Data was analysed using inferential and descriptive statistical analysis. The results showed a relationship between asset allocation and performance in Kenyan commercial banks that was positive and significant. And a positive significant influence between portfolio risk management and performance in commercial banks in Kenya. The study used the accounting based financial performance measure and focused on commercial banks only, thus effect of portfolio management on financial performance of listed insurance companies not studied.

Ombima & Njiru (2018) examined the impact of investment portfolio of Kenyan life insurance firms on its financial performance. The methodology adopted in the study was descriptive research. The study included all insurance firms with operations in Kenya. The population targeted in the study was 26 Kenyan life insurance firms. The researcher involved 26 life insurance companies of which 113 senior management from finance and investment departments were included. 75 senior managers were selected as a sample by the use of proportionate stratified random sampling. Data collection sheet and questionnaires were used to collect data with analysis done using inferential and descriptive statistics. Study used mean, standard deviations, frequencies and percentages as descriptive statistics. Correlation and regression techniques were adopted in the establishment of the nature of the relationship between financial performance and investment portfolios. Statistical Package for Social Sciences (SPSS) version 25 aided in data analysis. The conclusions made by the researcher

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were that financial performance was influenced by investment portfolio of insurance firms in Kenya. Mortgage investment explained 45.3% of financial performance of insurance companies while bond investment influenced 49.3% of financial performance of insurance companies. Equity investment influenced 71.6% of financial performance of life insurance companies. Moreover, equity investment, investment in mortgage and investment in bonds had R squared value of 0.731) showing that they accounted for 73.1% of the total variation insurance firm's financial performance. The study generalized all the insurance firms and therefore listed insurance firms were not specifically explored. This study therefore sought to analyze listed insurance firms listed at NSE.

Kimeu (2015) studied the impact of portfolio composition on the financial performance of investment companies trading at Securities Exchange, Nairobi. The researcher adopted a descriptive research methodology. The collection of secondary data was for three years (2012-2014). Ordinary least squares (OLS) and multiple regression (linear) was used to analyse data. The results showed that bonds investment and real estate positively influenced the financial performance of investment firms trading at the Nairobi Securities Exchange positively. The study considered three years period suggesting that the longer-term effect of portfolio composition on financial performance was not comprehensively explained. The study also focused on investment firms only. Therefore, the study failed to analyze the effect of portfolio management on the financial performance of insurance listed firms.

Auma (2013) conducted a study on the influence of holding portfolio and financial performance of insurance firms in Kenya. The researcher used a methodology that was descriptive, where all insurance firms that operated from 31st December 2012 were considered. Secondary data was used. A panel multiple regression technique aided the study. The findings showed that portfolio and financial performance had a strong relationship that was positive. The findings further revealed that stock investment had a negative influence with financial performance of insurance industry.

Blanchett & Straehl (2018). In their study titled No Portfolio Is an Island incorporated nonfinancial assets -industry-specific human capital, region-specific housing wealth, and pensions into a traditional portfolio optimization. In their study, the researchers demonstrated that industry specific human capital, region-specific housing wealth, and pensions have statistically significant exposures to certain asset classes and risk factors, and investors should consider them when building portfolios. Through a series of optimizations, the

researchers compared the asset allocation differences between portfolios that were only optimized for financial assets versus portfolios that considered total wealth. They determined that the optimal allocation varies materially when vocation, location, and pension benefits are considered, with average asset class differences exceeding 20 percent. They did this by using a single period model portfolio optimization routine. This research was very unique though it concentrated more on non-financial assets that could affect the asset allocation of the investors and returns, and also used a single period model whose results may be biased.

Mokaya, Chogi & Nyamute (2020) conducted a study on the Effects of Asset Allocation of Unit Trust Schemes in Kenya, on their Financial Performance of. A descriptive research methodology was used where secondary data was collected for a 5-year period. The linear multiple regression analysis was used to evaluate the association of the variables. The proportion of the composition of different asset classes to the fund value was used as the independent variables. The control variable was fund age, and Sharpe ratio was used to measure investment yields and that represented the outcome variable of the study. The findings indicated that asset allocation had a significant influence on the performance of a fund. Although the study showed that asset allocation significantly influences the performance of a fund., the findings cannot be generalized to represent other companies since only unit trusts were considered in the study.

Salman et al. (2020) studied on the influence of portfolio investment on the financial performance of the banking sector in Nigeria. The researcher aimed at investigating the correlation between the portfolios investment and profitability in the banking sector, Nigeria. The ex-post factor was adopted as a research methodology and the firm taken as the unit of analysis. Study population comprising of 15 commercial banks were considered out of which a sample size of 14 banks was taken. Panel data methodology was adopted in the analysis of data with the help of Economic-Views version nine using the three models; random effect without effect, and fixed effect. The findings revealed a negative significant impact between bond investments and return on the asset while a positive and insignificant effect was reported between cash reserve and financial performance. The study also indicated that treasury bills had an insignificant and negative impact on financial performance with R-Squared of 0.097225 and Adjusted R-squared 0.084046 This results conflicts that of Kioko and Ochieng (2020) who noted a positive and significant effect of investment in bonds. The study is of great importance but it was carried out in Nigeria and on the banking sector, thus

its results may not be conclusive to the Kenyan economy and in the non-banking financial sector, also the current study is different as of the Salman et al. (2020) study because financial performance is measured by EVA and not ROA.

Hailu & Tassew (2018) carried out research on the effects of diversification of investment on profitability of Commercial banks in Ethiopia. The purpose of the research was to examine effect of diversification of investments of 17 Ethiopian Commercial Banks on financial performance from 2013-2017 period. The research approach applied was Quantitative research methodology with analysis of data aided by the use of Random Effect regression model. The study finding showed that loan portfolio and size, investments, financial assets, insurance, of investment had significant positive effects on financial performance of Ethiopian banks. The results showed that investment in numerous assets affects the financial performance of Ethiopian commercial banks positively. R-squared of 0.534296 and Adjusted R-squared 0.491959. This study findings cannot represent the influence of portfolio management on financial performance since financial performance was measured using ROA unlike EVA which will be used in the current study.

Kothari & Shanken (2019) of the united states of America (U.S), examined whether and how the availability of indexed bonds might affect investors' asset allocation decisions. They used historical yields on conventional U.S. Treasury bonds and an inflation-forecasting model to produce a series of hypothetical indexed bond returns. They found that the real (inflation-adjusted) returns on indexed bonds are less volatile than the returns on otherwise similar conventional bonds. They also noted that the correlation with stock returns is much lower for the indexed bonds. The study was based in the U.S and thus its results may not be generalized to the Kenyan economy, also the period was 10 years from 1997-2003, which may not be applicable considering the economic changes in the economy.

In china, Li (2022) studied on Portfolio Size and Risk Diversification. The study took the Stock Market in China as an example. The study selected twenty different stocks from SSE 50 index as samples for its empirical analysis and took monthly return of these twenty stocks from 2015-2019 as the study object. Based on the modern portfolio theory and Markowitz mean-variance model, the relationship between stock portfolio in China and risk diversification and the degree of diversification was studied. The results showed that the risk of portfolio decreases as portfolio size increases; when the size enlarges to a certain degree, the change of risk tends to be stable, and diversification risk reaches 88.45% when the

portfolio size is twelve stocks. Thus, in order to disperse portfolio's risk and safeguard a certain return, the ideal portfolio size should be limited to 6 to 12 stocks. However, the China stock market listed firms were studied as opposed to Kenyan listed insurance firms.

The study with findings which are consistent to findings of Hailu & Tassew (2018) is Liem (2015) who investigated on Portfolio risk management and capital asset pricing model, on the viability of stock investment through management of portfolio risk and the real application of Capital Asset Pricing Model (CAPM). In his study he examined different aspects of portfolio risk management, the role of diversification in investment, general knowledge about Capital Asset Pricing Model as well as its contribution in investment evaluation. He also reviewed some basic academic knowledge, principles and related theories in order to support deep comprehension about the study. Using quantitative research along with deductive approach in which primary and secondary sources applied. The findings showed that optimizing portfolio by minimizing the risk plays an important role in investment decision.

Chowdhury (2015) disagrees with what Hailu and Tassew (2018) and Liem (2015) noted. In his research on Diversification and Portfolio Performance of the Pharmaceutical Sector of Bangladesh noted that although the effects of diversification hold the portfolio performance, of this sector was not satisfactory. The key objective of the researcher was to check while adding new securities to the portfolio if the effects of diversification took place for the pharmaceutical sector, and also to check how the performance of the new portfolios formed. Sharpe ratio and Modigliani risk-adjusted performance was used to evaluate portfolio performance. The study concentrates on pharmaceutical sector and not listed insurance companies additionally Panel data was not used to realize the study objectives, that makes this present study different.

Kimani and Aduda (2016) evaluated the impact of portfolio size on the financial performance of Kenyan investment firms' portfolio. They used a descriptive research methodology; the population of the study of 90 companies with a sample size of 45 firms was considered. A 5-year period data from secondary sources was collected and used. The Statistical Package for Social Sciences (SPSS) was used by the researcher in the generation of both descriptive statistics and inferential results. To establish association between size of portfolio and performance of investment companies, regression analysis was used. In their findings, they noted that investments companies from Kenya had injected larger volume of reserves in stocks, tailed by real estate with the lowest being investments in money market and bonds.

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Their results also showed that the portfolios of stocks produced the highest returns followed by money markets and returns from bonds while real estate portfolio generated the least. The results of the study indicated that an ideal portfolio should have between 16 and 20 stocks. This study used ROA and Standard deviation in measuring financial performance which differs with present study which used EVA in measuring financial performance. This study agrees with Bhattacharjee (2017) study which showed that balanced equity remains more preferred form of investment in the current market situation. The limitation of this study is that it only focused on equity investments.

Kisaka, Mbithi & Kitu (2015) carried out a study on Determination of Optimal Portfolio Size at the Nairobi Securities Exchange. The study intended at establishing the optimal portfolio size for investors on the Nairobi Securities Exchange in Kenya. The study considered using secondary data that consisted monthly security returns of over a five-year period (2009 to 2013). Mean variance optimization model was adopted. The study sample size was 43 companies out of a population of sixty listed firms. Random selection of securities was used for forming various portfolios and the portfolio risk was calculated. The study showed that portfolio risk decreased as the composition of securities in the portfolio rose beyond the optimum portfolio size and risk exposure started increasing again. The best portfolio size in the Nairobi Securities Exchange was found to range between 18 and 22 securities. This study disagrees with Vaughn (2022) who in his research noted that any stocks under 20 in a portfolio are highly concentrated, and this exposes a firm's investment to single-security risk, other experts say that somewhere between 20 and 30 stocks is the optimal point for manageability and diversification for most portfolios of individual stocks.

Chong and Phillips (2011) conducted research on Diversification and Portfolio Performance of the Pharmaceutical Sector of Bangladesh and had a different view from what Kimani and Aduda (2016); Kisaka et al. (2015) and Vaughn (2022). He conducted research on portfolio size using a sophisticated sampling technique by randomly constructing stock portfolios which were compared to portfolios using all the underlying population and evaluated using 18 different measures. The data employed for the study were daily closing prices of common stocks listed on the New York Stock Exchange (NYSE) which covered the period 2003 to 2010. They noted that the optimal portfolio size depended greatly on the criterion being used to judge the adequacy of diversification. This research focused on pharmaceutical sector which was in Bangladesh and its applicability in the Kenyan financial market may be biased.

Zanfelicce and Rabechini (2021) conducted research on the effects of risk management on project portfolio success – proposal of a risk intensity matrix. The study aimed to understand how the risk management influences the project portfolio success. Two methodological approaches were used in the research: a bibliometric survey followed by a case study. The results showed a low intensity of project portfolio risk management and concluded that risk management causes little influence on the portfolio success of the company studied.

Nyaseta, Iravo & Wanjala (2020) studied on the Moderating Role of Management of Portfolio Risk of Water Service Boards, Kenya on Performance. The specific objects of the study were determining the effects of portfolio management practices of a project on the performance of water service boards, Kenya. The researcher used a cross-sectional survey research methodology where primary data was used with a target population of 1310 participants. The results showed that prioritization and selecting a project were major management of portfolio practice affecting performance of water service boards. Project evaluation had significant effect on performance of water service boards in Kenya. The findings showed that management of portfolio risk moderates the association between project management practices of portfolios and performance of water service boards, Kenya. The study however failed to analyze effect of portfolio management on financial performance of listed insurance companies

Ndyagyenda (2020) studied on credit risk management and financial performance of the Bank of Afrika (BOA). The researcher used a case study technique, considering both qualitative and quantitative techniques. It was noted that the Bank have differentiated geographically not only in Kenya but into other neighbouring countries like Tanzania. The bank had several branches within the country amounting to 35, among which 14 branches are up country and 21 branches are in the central. A conclusion was made that credit appraisal determines survival and profitability of a bank. Management of Credit risk and performance of the bank had a positive association. Adjusted R Square had a value of 0.978, indicating that there was a variance of 97.8% on banks' performance caused by changes in mode of client appraisal, control of credit risk and diversified risk at a confidence level of 95%. However, the study used a case study whose results may be biased if generalised.

Kiptoo, Kariuki & Ocharo (2021) conducted a study on the connection between management of risk and the financial performance of insurance firms, Kenya. The aim of the study was to analyse correlation between management of risk and the financial performance of insurance

companies in Kenya from 2013–2020. The collection of data was from fifty-one Insurance companies licensed as from 31 December 2020 to operate in Kenya. Regression technique was applied and the outcomes showed that management of risk had a significant impact on financial performance of insurance companies. Credit risk had a negative and significant effect on financial performance. This result disagrees with Ndyagyenda (2020) who stated a positive relationship between credit risk and financial performance of the bank of Africa. This study concentrated generally on all insurance firms as opposed to listed insurance firms and thus it failed to determine the association between the effect of portfolio management and financial performance of listed insurance firms.

Iraya & Wafula (2018). Studied on whether Performance of Balanced Mutual Funds in Kenya are affected by Portfolio Diversification Effect. The researcher used descriptive research methodology on the weekly mutual funds' performance of, using sampled size of seven balanced mutual funds in 2013. Secondary data sourced from Capital Market Authority offices and from each mutual fund was used. Returns of a portfolio were established by calculating variations in balanced fund prices prevailing at the Nairobi Securities Exchange (NSE). However, diversification was established using degree of diversifiable Risk from the Performance. Ordinary Least Squares (OLS) multiple linear regression equation was adopted in the study. Age and size of the fund were the control variables of the study. The findings showed that diversifiable Risk and Performance of balanced mutual funds had a positive association. This study was limited to performance of Mutual Funds and thus failed to analyse the influence of portfolio management on the financial performance of insurance companies trading at NSE.

Kioko, Olweny, & Ochieng (2019) carried out research to explore how financial risk influences the profitability of commercial banks trading at NSE, Kenya. The independent variables were; market risk, credit risk, risk from operations and liquidity risk, while financial performance was the outcome variable. Targeted population of the research were all 44 commercial banks in Kenya with a sample of 11 commercial banks listed were picked for the study. The research period was for the period of 5-years, between 2014-2018. The descriptive design methodology was adopted. Data from secondary sources was from reports generated annually, and published bank's financial statements for the 11 commercial banks. Data analysis was done by use of multiple regression model. Coding of data collected was done using SPSS and fed to the collection instrument of excel. The results of the research showed

that liquidity risk had an insignificant negative impact on financial performance, while operational risk, credit risk and market risk had a negative significant impact on financial performance. The financial risk had negative significant effect on financial performance. This study recommended that managers of commercial banks to decrease their operating expenses so as to grow their shareholders wealth which will lead to operational risk management. A conclusion was made that the association existing between financial risk and financial performance of commercial banks is significantly negative. This study focused on commercial banks trading at NSE and failed to investigate the impact of portfolio management on the financial performance of insurance companies trading at NSE.

Aliu, Pavelkova & Dehning (2017), conducted research which aimed to evaluate the level of risk and return on risk trade-offs for the companies in the Czech automotive industry. A formula for differentiation and computation of returns using ROA were used on the annual basis for ten years 2005 to 2014. The yields and risk computations were done on the group of assets of manufacturers of automotive industry, next the auto suppliers' group of assets, then lastly the manufacturers and suppliers were taken together. The findings of the examination showed that moving from suppliers to manufacturers, on average decreased the correlation coefficient. While increasing suppliers and manufacturers when they are joined into one portfolio. The greatest differentiation benefit was realised in the auto supplier's collection. The maximum risk was identified for the manufacturer's portfolio, while the lowermost in the auto supplier's portfolio. When manufacturers joined suppliers, the level of risk decreased in relation of manufacturers risk alone. Nevertheless, the minimum risk and the maximum risk-return trade-off were attained in supplier's portfolio. This study concluded that Portfolio management remained as a science without clear answers on the portfolio construction and that diversification of risk cannot be perfectly attained by having investments in the same sector However, this study was based on the Czech Republic automotive industry and its results applicability in Kenya may be biased.

Kimani & Aduda, (2016) studied the impact of portfolio management on financial performance of companies listed at NSE. The findings indicated that an optimal portfolio should hold between 16 and 20 stocks. Kisaka, Mbithi and Kitu (2015), notes that the portfolio size that is optimal ranges between 18-22 stocks. Vaughn (2022) noted that anything under 20 is highly concentrated, and at that point, the firm will be exposing itself to single-security risk. Chong &Phillips (2013 notes that while there are some

criteria that would suggest a moderate-size, the portfolio isn't well-diversified, and consequently that owning individual stocks isn't optimal with fewer than 70 or more holdings. Li, C. (2022) noted that the ideal portfolio size should be limited to 6 to 12 stocks while Byrne and Lee (2011), did not specify the portfolio size.

The impact of asset allocation on financial performance has been given attention by Blanchett & Straehl (2018), Mokaya, chogi & Nyamute (2020), Ombima & Njiru (2018) noted that portfolio asset allocation significantly and positively influences financial performance. Blanchett & Straehl (2018) research was very unique though it concentrated more on non-financial assets that could affect the asset allocation of the investors and returns, and also used a single period model whose results may be biased. Mokaya, chogi & Nyamute (2020) study was only based on Unit Trust Schemes in Kenya. Although the study determined how asset allocation significantly influences the performance of a fund, the findings do not represent other companies since only unit trusts were considered in the study. Ombima, & Njiru (2018) studied on life insurance companies in Kenya. This study provided a great insight though the study generalized all the insurance firms and therefore listed insurance firms were not specifically explored. On the other hand, Salman et al. (2020) studied the association between the portfolio investment and financial performance of the banking sector, Nigeria. Their studies showed that investment in bond had a significant negative effect on financial performance of the banking firms. This study is of great importance but it was carried out in Nigeria and on the banking sector, thus its results may not be conclusive to the Kenyan economy and in the non-banking financial sector, also the current study is different from Salman et al. (2020) because financial performance was represented by EVA and not ROA. Kothan & shanke (2019) in their study examined whether and how the availability of indexed bonds might affect investors' asset allocation decisions. The results showed a low correlation. This study was based on the US treasury and concentrated only on inflation indexed bills. Its results therefore may not be generalized to the Kenyan economy since Kenya is a developing country. The study was based in the U.S and thus its results may not be generalized to the Kenyan economy, also the period was 10 years from 1997-2003, which may not be applicable considering the economic changes in the economy.

The studies reviewed indicates that the influence of portfolio management on financial performance was inconclusive while Amayo (2018); Ndyagyenda (2020); Iraya & Wafula (2018); Mpumwire & Mulyungi (2018) & Kimani & Aduda (2016) showed a relationship

that is positive between portfolio risk and financial performance, Kiptoo, Kariuki & Ocharo (2021), Kioko, Olweny & Ochieng (2019). Kiptoo et al (2020) reported a negative influence of credit risk and financial performance. Most of these studies used ROA, ROE or ROI which are accounting based measures of financial performance. Makau &Jagongo (2018), stated that returns from a portfolio depends on risk.

### 2.3.2 Cashflows and Financial Performance

Cash flow is the amount of cash and cash-equivalents which the firm has that can be used to meet financial obligations as and when they fall due. This has been given attention both theoretically and in empirical studies. The studies have generally reported that cash flows have relationships with financial decisions (Serrasqueiro et al. 2019) and affects companies' returns. Empirical studies have not clearly shown that cash flows influence performance of companies.

In Pakistani a study was conducted by Zahid et al. (2017) who studied on the connection between cash flow and investment under low and high investment opportunities of 167 Pakistani non-financial manufacturing companies trading at Karachi Stock Exchange for 2004-2013. Tobin's Q was employed to capture the investment opportunities and sales were taken as controlled variables. A model of panel regression was used to determine the association between Tobin's Q, sales on investment and cash flow. It was found out that in cases of high investment opportunity firms, the correlation of cash flow and investment was positive and significant while under low investment opportunities companies, this relationship was also positive but insignificant. This study concentrated only on non-financial manufacturing companies trading at Karachi Stock Exchange for 2004 to 2013 but provide no information about the financial sector such as insurance firms, banks and services sector, therefore its applicability in the Kenyan economy may be irrelevant, also the study used accounting and market-based measures as opposed to EVA which this study intends to use. Therefore, the effect of cash flows on the financial performance of listed insurance companies, Kenya was not studied.

In Kenya Wahome (2017) also conducted an investigation on the effect of free cash flows on investment by the Kenyan insurance firms. The researcher considered correlational research methodology of all the insurance firms with operations in Kenya, which amounted to 62 companies. Secondary data was sourced from the annual financial statements of insurance firms. The study period was for 2012 - 2016. The results showed a relationship that was

positive between free cash flow and investment by insurance firms in Kenya and that firms with well-managed cash flows experience increases in their financial performance, while poor cash flow management leads to financial failure, hence negatively influence the financial performance of firms. A conclusion was made that higher cash flows have significant relationship with better firm performance ($\beta$ = .511, *R* =*.624 R2* = .326). Listed insurance firms were not specifically investigated in this study. Additionally, the current study will use a different research design.

Ogbeide and Akanjia (2017) scrutinised the correlation of insurance firms between cash flows and financial performance in a developing economy– Nigeria. The data for the years 2009-2014 was used, the sample selected consisted of twenty-seven insurance firms listed in Nigeria were selected as sample size. The researcher used both inferential and descriptive statistics in determination of associations among the variables. The study used Pooled Ordinary Least Square where secondary data was collected for 2009-2014. The inferences showed that cash flows influenced the financial performance of insurance firms' and was significant statistically. Financing activities Cash flow raised the performance of the sampled insurance firms financially, operating activities cash flow was seen to meaningfully raise the insurance firm's financial performance in the examination period, but was not statistically significant. Study recommended that managers in insurance firms to frequently vary the levels of spending cash in order avoid financial crisis as well as cash flow situations that are negative. The concern that insurance firms need to deem for suitable investment valuation is when insurance coverage is being taken up by customers. The cost benefit analysis should be carried out accruable thereto. This study however only used ROE which is accounting based to measure investment opportunities and future value-creation potential of companies could not be ascertained. Also, study focused on Nigeria failed to analyse influence of cash flows on financial performance insurance companies trading at NSE, Kenya.

Rahman & Sharma (2020) investigated on the impact of operating cash flows of manufacturing and insurance firms in Saudi Arabia on the financial performance. Data was collected from the firm's yearly reports and considered Return on Equity (ROE) and Return on Assets (ROA) as outcome variables, CFs as an independent variable, Leverage (LEV) and firm size (SIZE) as control variables. Their results reported a significant positive relationship between financial performance and cash flows from operations, with negative relationship for leverage and size. The results of the study showed that cash flows from operations among

manufacturing and insurance companies in Saudi Arabia affects performance of firms financially. However, the study used accounting-oriented measures of financial performance which never show future value creation potential of companies. Also, the study focused on manufacturing firms, therefore listed insurance firms have not been investigated.

Eyahuma & Miroga (2020) evaluated the impact of cash flow activities on financial performance of commercial banks, Kenya. The research population encompassed; credit managers, head office accountants, branch managers, branch accountants and operations managers of all the commercial banks in Kakamega County. These banks were; Diamond trust bank, Barclays bank, Standard Chartered bank, National bank, Co-operative bank, Bank of Baroda, Kenya Commercial bank, Family bank, Equity bank, Bank of Africa, and. The research used descriptive technique. The population targeted for this investigation consisted of 160 respondents with a sample size of 114 respondents. Secondary and Primary data where descriptive statistics on demographic information of the respondents was used to search their characteristics in terms of percentages and frequencies. The findings revealed that cash flow activities significantly affected profitability of the firm. The study was limited on commercial banks only and therefore listed insurance firms were not investigated.

Wanjiku (2019) analysed the impact of free cash flow on financial performance of companies in the manufacturing sector listed in Securities Exchange, Kenya. Researcher adopted a descriptive survey; the targeted population were all manufacturing firms trading at NSE. Data for the period (2013 –2017) was secondary in nature. SPSS (Statistical Package for the Social Sciences Ver.25) aided data analysis. Inferential statistics was used to draw conclusions. In measuring financial performance, return on asset was used. The results showed a positive and significant impact between operating activities cash flows and financial performance, a positive and significant relationship between investing activities and financial performance and a positive and significant impact between financing activities cash flow and financial performance. Study used ROA which is an accounting-based measure as opposed to EVA and focused on manufacturing firms only, thus the relationship between cash flow and financial performance of listed insurance firms has not been carried out.

Ugo & Egbuhazor (2022), studied the impact of management of cash flow of pharmaceutical industry in Nigeria on financial performance, The researcher adopted the ex post facto research methodology. The pharmaceutical companies included in the study were ten

according to Exchange Group in 2021, Nigeria. Data were collected from the yearly reports of the designated pharmaceutical companies listed for the years 2011 to 2020. Pairwise Granger Causality tests and multiple regression analysis were adopted in the analysis of the data collected and helped by Economic Views 10 statistical software. The study discovered an insignificant positive outcome of operating cash flow on liquidity. Also, it showed an insignificant positive result of investing cash flow on liquidity. And finally, it showed a significant negative impact on financial cash flows on the liquidity among pharmaceutical companies in Nigeria. The study concentrated on pharmaceutical industry in Nigeria and the applicability of its results may be biased for other sectors in different countries. Therefore, listed insurance firms were not analysed.

In a study, association between cash flows and financial performance of investment companies trading at Nairobi Securities Exchange, Muraya, (2018) stated that connection between cash flows from operating activities and returns after tax was minimal and insignificantly correlated. This study disagrees with Wanjiku (2019) who reported that operating cash flows positively and significantly affected financial performance. The researcher adopted descriptive research methodology in describing the relationship between independent and outcome variables, secondary data was used with a population of the investment companies which were trading at Nairobi Securities Exchange, (5 companies). Net cash flows from financing activities, operating activities and investing activities were the research models used in the study as the independent variables. Net operating income and ROE were the dependent variables considered in the measurement of profitability. Microsoft Excel spreadsheets was used in computation of these ratios where data was sourced from the audited financial statements of the investment companies quoted in the Nairobi Securities Exchange for years 2012-2016. Statistical Package for Social Sciences (SPSS) aided in data analysis which generated descriptive and inferential statistics. The study used accounting based financial performance measures and focused on investment firms, thus listed insurance firms were not studied.

In Nigeria, Amahalu & Ezechukwu (2017) investigated on the degree at which financial performance is affected by cash holding of listed insurance firms in Nigeria. Relating to purposes of the study the study's hypotheses were formulated; Ex-post facto research methodology and time-series data were used and the researcher sourced data from fact books of account and yearly reports of the listed insurance companies under study. Multiple

regression and Pearson coefficient of correlation were used to test the formulated three-hypothesis with the help of STATA 13 statistical software. Findings showed that cash holding (proxy by cash to total book value of assets and cash) positively and statistically affected financial performance (proxy by ROE, ROA, and Tobin's Q) at 5% significant level. To prevent loopholes in mismanagement of funds, it was recommended that, insurance companies should manage adequately how they can finance their re-invests. Moreover, the study used accounting and market based financial measures as opposed to EVA and focused on Nigeria. Therefore, its results cannot be generalized to the Kenyan economy.

Abughniema et al. (2020) conducted a study that investigated the influence of free cash flow on the performance of firms at Amman securities Exchange (ASE). The study sample comprised 100 firms of all the Jordanian market sectors in over six (6) years from 2010-2015. Numerous magnitudes of cash flow were studied and different three measurements of performance were used (Market Value Per Share MVPS, Tobin's Q and ROA). Using panel data regression, the findings showed that free cash flow affected solely ROA and market value per share, and statistically negative significant impact on performance using ROA and MVPS measurement. Cash flow operation had a positive and statistically significant results with performance using ROA and MVPS indicators. The study used accounting and market based financial performance measures which were based on historical data that fails to detect the future abilities of the firms.

Itan & Riana (2021) studied the effect of statement of cash flow on firm value for Indonesian firms quoted at Indonesia Stock Exchange. The study sampled 1,236 participants that included every sector excluding sectors of finance for the period 2015 - 2019. The model used was fixed effect model, which was considered to analyse panel data. The study used EViews 10 application to help the regression process. The results of this study displayed that investing activities cash flow ratio and financial activities cash flow ratio had significant and negative impact on firm's worth, while the operating cash flow from operating activities ratio significantly and positively affected the firm's worth. Furthermore, the outcomes also indicated that dummy for operating activities and dummy for investing had no effect on firm worth. Also, the dummy for financing was the same as financing cash flow ratio that greatly affected the firm value. Ratio and board size holding, besides managers showed a relationship that was significant to the firm value, while the director dummy that was independent had a

positive and significant impact on firm value. This study used accounting ration (cash flow ratio and current ratio) and did not investigate the financial sector.

Studies reviewed on the relationship between cash flow and companies' financial performance showed inconsistent relationship between the variables. Zahid, 2017, Wahome,2017; Ogbeide & Akanjia, 2017; Rahman & Sharma, 2020; Wanjiku, 2019; Amahalu & Ezechukwu, 2017; Eyahuma &Miroga,2020; Ugo & Egbuhazor,2022; Abughniema,2020 and Muraya,2018) provided insights on the influence of cash flows and firm financial performance. Zahid et al. (2017) shows a relationship that is positive and significant between cash flows for Pakistani and non-financial manufacturing quoted at Karachi Stock Exchange. The researcher however sampled listed non-financial manufacturing firms only. Ogbeide & Akanjia (2017) study showed a positive significant relationship on the relationship between cash flows and financial performance of insurance firms in Nigeria, using ROE. Wahome (2017) showed mixed results on the association between free cash flows and financial performance of insurance companies. Listed insurance firms were not specifically investigated in this study and generalisation of this results would be biased to listed insurance firms. Rahman & Sharma (2020) showed a positive impact between working cash flow and financial performance of insurance and manufacturing firm at Saudi market. However, the study focused on manufacturing firms, therefore listed insurance firms were not investigated.

Ayahuma & Miroga (2020) study showed a significant effect between cash flow activities and financial performance of commercial banks, Kenya. This study was limited to commercial banks only and therefore listed insurance firms were not investigated. Wanjiku (2019) showed that financing activities positively and significantly affected financial performance. Study used ROA which is an accounting-based measure. Ugo & Egbuhazor (2022) revealed mixed results on how cash flow affected financial performance. The study focused on pharmaceutical firm in Nigeria and applicability of its results may be biased for other sectors in different countries. Muraya (2018) reported an insignificant relationship between cash flows from operating activities and profit after tax. The study used accounting based financial performance measures and focused on investment firms only.

Amahalu & Ezechukwu (2017) showed positive relationship on the level at which holding cash influences financial performance of listed insurance companies in Nigeria. The study used accounting and market oriented financial measures (ROA, ROE and Tobin Q) and

focused on Nigeria. Therefore, its results cannot be generalized to the Kenyan economy. Abughniema et al. (2020) this study showed mixed results on the influence of free cash flow on the performance of firms quoted at Amman Stock Exchange (ASE). The study used accounting and market based financial performance measures which were based on historical data that fails to detect the future abilities of the firms. On the other hand, Itan & Riana (2021) conducted a study that was intended to analyse the effect of cash flow statement on firm value in Indonesia companies trading at Indonesia Stock Exchange.

Empirical cash flow studies reviewed showed the significance of cash flow in accelerating performance of companies financially. However, a demonstration is made that the impact of cash flow on economic value-added financial performance has been given little attention. Studies reviewed focused on use of ROA, ROE and ROI which is accounting and market-oriented financial performance measures which are less meaningful in the integrated markets. While studies done on NSE attempted to link cash flow activities to companies' financial performance, not any known market-wide study conceptualized cash flows and financial performance using economic value-added financial performance measure in the insurance industry, Kenya. Effect of cash flows on financial performance has not been therefore analyzed in the context of listed NSE insurance companies. The current study seeks to bridge the knowledge gap by evaluating the impact of cash flows on financial performance of insurance companies listed, Kenya.

### 2.3.3 Relationship between Cash Flow and Portfolio Management

Studies conducted revealed a direct relationship between cash flow and portfolio management. That the level of investment realised by firms requires a suitable amount of cash. This means that investments done by firms depend on the cash flows available (Wahome, 2017). Zahid, Shaikh, Khan & Faiz (2017) investigated the association between cash flow and investments of 167 Pakistani non-financial manufacturing companies trading at Karachi Stock Exchange during the period 2004-2013. Tobin's Q was adopted to capture the investment opportunities. A panel regression model was used to investigate relationship of cash flow, sales on investment and Tobin's Q. It was found out that in cases of high investment opportunities companies, the association of investment and cash flow were positive and significant while under low investment opportunities firms, this relationship was also positive but insignificant. Zahid et al (2017), investment depends upon its respective cash flows which are essential in the process of mitigation of credit frictions. Firms with minimum investment opportunities have more sensitivity of investment and cash flow

whereas companies with maximum venture opportunities face the challenges of information asymmetry as well as large level of risk premium.

Kwenda & Vengesai (2018) studied the relationship between variability of cash flow and behaviour of investments in African listed firms. Descriptive statistics was used, and correlation analysis done. A dynamic model for panel data was employed and was estimated with the difference and system Generalized technique of Moments estimation method on 815 African non-financial firms that were listed. The approximation methods control for heteroscedasticity, autocorrelation, heterogeneity dynamic panel bias, and endogeneity were used. Different volatility measures were employed; one that seizures innovations, which was forward looking in cash flow instabilities, the other for capturing effect of the possible correlation between cash flow levels and volatility mechanically, coefficient of variation and the exponential weighted moving average. The findings revealed that volatility of Cash flow had a significant and negative effect on investments even for companies with much cash flows and unrestrained volatility cash-flow firms were correlated with mean low African investment firms. These results also showed that cash flows are not the only important factor influencing decisions on investment, but also unpredictability of the cash flows which had a substantial comportment on levels of investment for companies in African. Cash flow unpredictability had a substantial influence that was negative on investments even for companies with greater levels of cash flows and unrestrained companies. African companies should aim at reliability of the cash flows but more so in realising increased cash flows, and sustainability of solid levels of investment. This study is of great insight though it generally investigated African-listed firms and used a descriptive research design which cannot be used to establish cause and effect relationships. The present study is unique in that it will use correlational research design that fills this gap.

Kantudu & Umar (2021) conducted research on the Free Cash Flow and Investment Efficiency of Manufacturing Companies quoted in Nigeria. The research intended to determine the connection between investment efficiency and free cash flow of quoted manufacturing companies. The researcher used an explanatory research design. To measure free cash flow and investment efficiency, an accounting-based model developed by Richardson (2006) was employed. Study population consisted of all quoted manufacturing companies in Nigeria. Also, purposive sampling technique was employed to arrive at forty-eight companies for 2008-2018. Hence, it revealed a positive and robust association existing

between free cash flow and overinvestment. The study used accounting-based model in measuring the investment efficiency of companies which fails to predict the future creation abilities of a firm. Additionally, the study only concentrated on manufacturing firms in Nigeria, thus insurance firms listed in Kenya were not investigated. Besides, the current study will use EVA which makes it different.

Jiang (2016) studied the relationship between the tenure of the CEO's and efficiency of firm's investments. The study focused on examining how the tenure of CEO's influences efficiency of a firm's investment. The population of the study included 5420 CEOs that took office between 1980 and 2009 and a sample for the years 2008-2014 of the A-share companies was considered. a cross-section model was used in this study. The study used the model of Vogt's, and the model of Richardson's to find if there lies a positive association amongst over-investment and cash flow which is superior in the initial years of the tenure of the CEO's. They also concluded that Over-investment is more in the initial years than in the advanced years of service of the CEO's, the conclusions also indicated that over-investment raises as the firm's cash flow generated internally grows. The researcher used cross-sectional data instead of panel data which contains more information, more efficiency and more variability, which the present study seeks to use. The study focused on examining how the tenure of the CEO's influences the efficiency of a firm's investment in Kenya and therefore listed insurance firms in Kenya were not specifically studied.

Krueger & Wrolstad (2016) researched Portfolio Allocation Using Free Cash Flows and Other Methods. Study aimed at examining methods to allocate money invested in shares of common stock within one's portfolio. The Stocks issued by firms in the Dow Jones Industrial Average (DJIA) were chosen to be the sample. Twenty-three of the thirty stocks in the DJIA were a component of the index for the entire 2000 to 2010 sample period. Portfolio allocations were updated on an annual basis as information from the prior year were used to form portfolios for the subsequent. The levels method and trend method were used for incorporating fundamental firm information into the investment process for the period 2001 to 2010. The results showed that using free cash flows to weight portfolios was the only technique that outperformed equally-weighted portfolios and provided the investor with positive, statistically significant returns. It was also found that when using free cash flows to weight the portfolios, levels of free cash flows were more important than trends. The study is of great insight but focused only on the Stocks issued by firms in the Dow Jones Industry,

thus generalising its results to other economies may be biased. Additionally listed insurance companies in Kenya were not specifically investigated.

Nugroho (2020) conducted research on the analysis of cash holding on sensitivity of investment cash flow in Indonesia. The researcher aimed at examining the influence of cash holding and external financing on sensitivity of investment-cash flow. The research used a quantitative approach. Secondary data was used which came from domestic and foreign publications, journals, survey results, and others. The sampling technique used in the study was the purposive sampling method, where samples were chosen according to the suitability of sample characteristics and specified sample selection criteria. The study used 116 samples of non-financial firms trading at Indonesia Stock Exchange from 2008-2017. This study used panel data that combines time series data and cross-sectional data. The research method used panel data regression by using a fixed effect model to estimate investment cash flow sensitivity. The study revealed that cash holding positively and significantly affected investment-cash flow sensitivity. Additionally, that external financing also positively and significantly affected investment cash flow sensitivity. The findings showed that financing from external sources substitutes internal funding to finance their investment; therefore, the companies have to manage finances well to their investment to increase the value of the firm and maximize shareholder wealth. This study provided practical evidence only to non-financial public companies in Indonesia and thus listed insurance companies in Kenya were not specifically investigated.

Serrasqueiro et.al (2019) investigated the influence of Investments on Cash Flows in VC-Backed SMEs generated Internally. The study purposed to analyse the influence of investment on cash flows generated internally. Data from 900 unlisted VC-backed SMEs entry across Western Europe countries from the Amadeus database by Bureau van Dijk for the period between 2010 and 2015 was used. The research sample was decomposed into two sub-samples: 570 smaller VC-backed SMEs, and 330 larger VC-backed SMEs. Panel data models were used, and the initial panel data estimator, specifically the GMM system (1998) proposed by Blundell and Bond (1998) estimator, to capture the dynamic investment behaviour of VC-backed SMEs was employed to achieve the objective. The results revealed that cash flows stimulate the investment in smaller and larger VC-backed SMEs. Also, that the investment sensitivity to internal cash flows is greater in larger than in the smaller VC-backed SMEs, however, investment is more sensitive to cash flows in larger than in smaller VC-backed SMEs. They also noted that smaller VC-backed SMEs, which present a lower

level of cash flows, seems to be forced to rely on debt to fund their investment in fixed assets. This study focused on VC-Backed SMEs in Western Europe and thus listed insurance firms in Kenya were not analysed.

Ghafoor & Islamabad (2018) conducted research on the effect of Cash Flows on Investment; Evidence from Textile Sector of Pakistan. The goal of the research was to find the importance of the cash flow generated internally by a firm on its decisions towards investment. Descriptive research methodology was used, the researcher utilized sample data of 50 companies in textile companies, and annual data for variables was collected from 1999 to 2014. Panel regression was used and the multiple linear regression method was used to test the hypothesis. Two models were tested with dependent variables of Inventory and Fixed Assets. In both models, the independent variables were Free Cash Flow and Market to Book Ratio. The results of both models were significant except for the impact of the Market to Book Ratio on Fixed Assets. The findings of the study showed that Free Cash flows positively and significantly impacted Inventory whereas MBR showed a negative impact on inventory. The results also showed that investment and cash flow are strongly linked after controlling for a firm's investment opportunities. This study concentrated on textile industries in Pakistan and thus listed insurance firms in Kenya were not investigated. Additionally, the study used descriptive research methodology, current study used correlational research methodology that makes it more unique.

Rokhmawati (2019), examined the influence of cash flow of a Firm on Investment Decision Moderated by Financial Constraint and Mispricing. The researcher aimed at evaluating the influence of cash flows on investment decisions that were moderated by financial constraints and mispricing. The study population were all the quoted-manufacturing companies in Indonesia for period 2014 to 2016. Samples were chosen based on the available data that was available of the firm's audited-financial reports during the three years. The study used moderated regression analysis where mispricing and financial limits were used as moderating variables, the study determined that financial limitations deteriorate the impact of cash flow on investment. They also noted that although firms that were constrained financially had a chance of deciding their source of funding from any sources, they preferred to fund their investment using cash flows due to lower risk. Additionally, they indicated that mispricing has no moderating role as a variable. In this condition, overvalued firms are indifferent to choosing the source of funding. In conclusion, when mispricing and financial limitations are

employed as controlling variables, they weaken the influence of cash flow on investment. It means that firms with lower financial constraints and overvaluation prefer to use external funding by issuing new common stocks because it provides a lower cost of capital. The study focused on listed manufacturing firms in Indonesia and its results will be biased if generalized to the listed insurance companies in Kenya.

Bala (2017), examined the association between Cash Flows and Returns from Stock, a case of the Khartoum Stock Exchange Financial Investment Banks. The study aimed at investigating the association between returns from stocks and the cash flows of financial investment Banks trading at KSE. The researcher employed analytical approach in the analysis of annual financial reports of Investment Banks that were the for the years 2010-2015 in testing the study's hypotheses assisted by SPSS software and analysing data using Spearman correlation coefficient. The statistical investigation showed that the relationship between cash flows from all activities (financing, operating and investment) was not statistically significant, whether jointly or separately, and the returns from stocks of investment Banks (financial) trading at Khartoum Stock Exchange. The study recommended that cash flows statements need a specialized cognizance since it is providing vital, quality information that echoes a company's potential in meeting its commitments and perform its duty as an ongoing firm, that is beneficial to users in decisions making. This study focused on the Khartoum Stock Exchange Financial Investment Banks. Therefore, listed insurance firms in Kenya were not analysed.

Wang (2015), researched on the Quality of Financial Reporting, Free Cash Flow, and Investment Efficiency. This study based on the perspective of firm's agency conflicts to examine the correlation between quality of financial reporting and efficiency in investment and to analyse interaction effect between quality of financial reporting and free cash flow on efficient investment. 3,726 samples of Chinese listed firms during the period 2008–2012 were used. Descriptive statistics and correlations for the measures of investment efficiency were used. This study found a negative association between quality of financial reporting and both underinvestment and overinvestment. Additionally, it was noted that quality of financial reporting is more strongly related to overinvestment for firms with large free cash flow, which suggests that financial reporting quality can reduce information asymmetry arising from agency conflicts between managers and investors. The researcher adopted descriptive research methodology and concentrated on Chinese-listed firms only. The current study uses

a correlational research design and will concentrate on listed insurance firms in Kenya, this makes it different.

## 2.3.4 Mediating effect of Cash Flows on Portfolio Management and Financial Performance

Empirical evidence points that firm financial performance is reliant on portfolio management and cash flows. Kimunduu et al. (2017) studied the Intervening Impact of Holding Cash on the influence of Dividend Policy and Financial Performance in Kenya. The population of study was 46 companies that were quoted in Kenya, the selected firms for the study sample were 31 for analysis using purposive technique of sampling. Data from financial statements was collected from the relevant companies in the Capital Market as well as Nairobi securities exchange and respective company websites and e library facilities. Data obtained was panel and longitudinal for the years 2005 - 2015. Using a statistical software known as STATA, inferential analysis was executed using models of regression on the variables which was found with (p-value $<.05$) implied to be statistically significant. The model of Multiple regression resulted in a (p $<.05$), an adjusted $R^2$ = .0688 and F = 26.11. This indicated that OCF could explain 6.88% of disparities in cash holdings (CH). Regression coefficient ($\beta$) value of OCF as 0.278 for test of the slope had a P value of (-0.000). It was concluded that OCF significantly predicated the dependent variable (p $<$ .05) and exhibits a significant influence between OCF and holdings cash. The study did not consider cash holding in regard to portfolio management, it only focused on cash holding and financial performance. Furthermore, the study generally investigated companies quoted at the NSE and was not specific to listed insurance firms, thus listed insurance firms were not specifically investigated.

Danjuma et al. (2015) in their study on the intervening effect of management of cash on the relationship between Liquidity and Capital Structure of SMEs in Jimeta, Adamawa State, Nigeria. The researchers also investigated the mediating impact of management of cash and the relationship of liquidity and capital structure. 365 copies of questionnaires were administered to 366 SMEs with a sum of 310 copies of questionnaires responded to in totality and were appropriately filled. Data collection was through primary sources. A sampling technique of using clusters was employed in the study and units of analysis in all clusters were chosen using purposive sampling. Use of frequencies, mean, and standard deviation was done for Descriptive statistics while Pearson's correlation coefficient, multiple regression and

Sobel test were used for inferential statistics. The findings revealed that there was a significant positive relationship between management of cash and capital structure, management of cash and liquidity and liquidity and capital structure at a correlation of 0.657, 0.640 and 0.657 respectively, significant P 0.01 level (2-tailed) and df = 309. The regression analysis supported the correlation analysis, to find out the unpredictability in the relationship and was found that 43.1% and 41% of the unpredictability in both management of cash and liquidity can be explained by the capital structure of the firm and 43% of the variability in liquidity can be explained by the firm's cash management. The Sobel test and Kenny and Baron procedure were used for testing the effect mediation of management of cash on the relationship between liquidity and capital structure. The results indicated a partial mediation between the variables. The limitation of this study is that an independent research technique was used and the results from this study are not panel but rather cross sectional. It was recommended that further studies to consider other methods and consider panel data. This study did not investigate the mediating effect of cashflows on portfolio management and financial performance.

Mwangi (2014) conducted a study on the impact of funding decisions of non-financial Companies in Kenya quoted in the Nairobi Securities Exchange on performance. One of the objectives was to determine the mediating effect of cash flow generated internally on the relationship between financial gearing, circulating capital management policy and dividend policy and non-financial companies, listed in the NSE. Non- experimental explanatory design of research was used where all the 42 quoted companies in Kenya that were non-financial were chosen. Secondary data attained from annual financial reports of respective listed non-financial companies and from Nairobi hand books of Securities Exchange for the years 2006-2012 was used. The study used models of panel data; random effects made the base of the outcome of the description of Hausman tests in evaluating the effect of funding decisions of non-financial companies quoted on the NSE on performance. The effect of mediation on cash flow generated internally was tested using the procedural regression approach by engaging the process of Baron and Kenny (1986). Feasible Generalized Least Square (FGLS) regression outcomes revealed that financial gearing had a significant negative relationship with return on equity (ROE) but a negative insignificant association with return on assets (ROA). Increased aggressiveness in policy of financing had a positive effect on both measures of performance while increased aggressive policy of investing was found to affect performance positively. Dividend policy had an insignificant negative influence on

ROE but a statistically 'significant positive impact on ROA. The study determined that the interaction between the decision of financing components had a significant impact on performance. Additionally, the conclusions of mediation test of Sobel-Goodman indicated that available cash flow had no mediating effect on the correlation between decisions of financing and performance of non-financial firms listed in the NSE. The use of accounting-based measure (return on assets, ROA) to measure firm financial performance did not however reveal the value-creation abilities of the firms. Additionally, the study does not reveal the influence of portfolio management practices in influencing listed firm financial performance implying that the specific role of portfolio management elements and cashflows in influencing listed firm's financial performance was not analysed.

Fiume & Della (2020), studied on the relationship between cash flows and economic performance in the digital age: an empirical Analysis was carried out on the relationships between cash flows of numerous management scope and economic performance, using a comprehensive sample of Italian listed firms during the 2008-2017 period. They used Amadeus of the Bureau Van Dijk platform, which already shows reclassified and easily comparable financial statements database to collect all the balance sheet data necessary to conduct the research. Correlation and multiple regression analysis were used to assess if cash flow proxies could be strong predictors of future cash flow and, consequently, of business performance. The results indicated that cash flows from investments appear to be the most appropriate for correctly categorising the most profitable firms in the medium-long term. However, the study failed to analyse the mediating effect of cashflow on portfolio management and financial performance.

Gupta & Mahakud (2019) studied on the effect of financial development on corporate investment in relation to their impact on constraints of financing. This aim of the research was to determine the influence of financial growth on the -cash flow investment sensitivity over all the level of financial limitations, group affiliation and size of the company. This study applied a generalized system method of moments (GMM) valuation technique which precisely is a dynamic model of panel data. The approximation results showed that cash flow influences positively the decision to invest by the firm, which indicates that most companies in India have inadequate funds. Moreover, they observed that increases in finance reduce the investment-cash flow sensitivity and the impact of growth in finance is more important for independent and small size firms. The outcomes of the study were robust for the period and,

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for both financially stable and unstable firms. This study contributes to the present literature by investigating the influence of financial growth on the role of cash flow in defining investments considered by firms India, which is an unknown matter from an evolving perspective of the market. Serrasqueiro et al. (2019) in their study analysed the influence of investments on cash flows generated internally in SMEs after VC financing. The results showed that cash flows stimulate the investment in both smaller and larger VC-backed SMEs. They noted a relationship that was positive between cash flow that was internally generated and investment. Bundotich & Maina (2020) examined the effect of diversifying a portfolio, on management of cash flow of TVET organizations in the County of Uasin Gishu, Kenya. The study outcomes indicated a relationship that was significant between portfolio diversification practices and cash flow management of TVET institutions ($\beta$=0.182, p$\leq$0.05).

The mediating role of cash flow from the reviewed literature shows that sparse studies have been done on this variable. The studies reviewed indicate that while Kimunduu et al. (2017) studied to establish the Intervening Effect of Holdings Cash on the influence of Dividend Policy and Financial Performance in Kenya. The study indicated a significant relationship between variables. But the study did not consider cash holding in regard to portfolio management, it only focused on cash holding and financial performance. Furthermore, the study generally investigated listed firms at the NSE and was not specific to listed insurance firms, thus listed insurance firms were not specifically investigated. Danjuma et al. (2015) in their study on the intervening impact of management cash on the relationship between Liquidity and Capital Structure in Small and Medium Enterprises found a mediation that was partial between the variables. The limitation of this study is that it only used one methodology research approach and the findings from this research were cross sectional. This study did not investigate the mediating effect of cashflows on portfolio management and financial performance. Mwangi (2014) conducted a study on the effect of financing decisions on performance of non-financial Companies listed in the Nairobi Securities Exchange Kenya. The study indicated that internal cash flow available had no mediating impact on the relationship between variables. Return on assets (ROA) use in measuring the financial performance of a firm failed to reveal the firms value-creation capabilities. Additionally, the study does not reveal the influence of the practices of portfolio management in determining the listed firm's financial performance indicating that the certain role of portfolio management elements and cashflows in affecting listed firm's financial performance was not evaluated. Other researchers Gupta & Mahakud (2019); Serrasqueiro et al. (2019) and

Bundotich & Maina (2020) investigated on cash flows and portfolio management but not with financial performance thus the mediating effect of cash flows on portfolio management and financial performance has not been analysed.

## 2.4 Literature Review Summary

The literature review has revealed that studies exploring the relationship between portfolio management and Economic value-added financial performance for listed insurance firms at the NSE are not known. Evidence on the effect of cash flow in determining financial performance for insurance listed firms in NSE is also minimal, the tests on the relationship between cash flow and portfolio management are also varied. The review has demonstrated that little is known concerning the mediating role of cash flows on the relationship between portfolio management and financial performance using EVA among listed insurance firms in the NSE.

# CHAPTER THREE
# RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter brings on board the research design and methodology of the study; it provides a full explanation of the research design, the variables of research as well as a wide explanation of the population and its choice.

## 3.2 Research Design

According to Mwangi (2014), research design is a structure and plan of an analysis of a phenomenon so perceived as to get responses to the objectives of the study. The design involved the general arrangement that was carried out throughout the research. It encompassed a highlight of what was to be performed by the researcher from hypotheses writing and their functioning implications to the end of the analysis of data.

Selecting of a research paradigm is the first step in conducting research, (Wayongah, 2019) which involves both methods and theories used in the study. Mwangi (2014) notes that there are mainly two paradigms which are applied in research; qualitative and quantitative. the qualitative research is considered experimental and constructivist, whereas the quantitative paradigm is termed as the positivist and traditional. Positivism relies on the hypothetical deductive method to verify a priori hypotheses that are often stated quantitatively, where functional relationships can be derived between causal and explanatory factors (independent variables) and outcomes (dependent variables) as stated by (Park, Konge, & Artino, 2020). This study was based on the positivism paradigm because the canon of deduction was followed as explicated by positivism: this involved deriving first, hypotheses from a theory then collecting data to make a sample representative and testing it empirically to reject or support the hypotheses. The present study depended on the quantitative methods of research as an outcome of these methodological considerations. This was because the data collected was measurable in quantitative terms. Following positivism design, the study used a correlational research design which assisted in determining and establishing of the relationship between variables with the help of statistical analysis and also the degree of the relationship among variables using statistical data was analyzed. Associations between and among a number of facts was identified and interpreted in this type of design. (Grand Canyon University,2021). Data was collected from the six quoted insurance companies for the years 2011 – 2020 from the yearly reports of the individual companies. To analyse data, Panel regression analysis was used on the collected data. Therefore, this design assisted in

establishing the relationship between cash flow, portfolio management and financial performance of quoted insurance companies.

## 3.3 Study Area

The research was done in the Securities Exchange (NSE) located in Nairobi city, Kenya on longitude 36049 south and latitude 1017', east, (Kenyanya & Ombok, 2018). Established in 1954 as Nairobi Stock Exchange, the Nairobi Securities Exchange (NSE) is the leading stock exchange in East Africa offering world class trading facilities for both its local and foreign investors expecting to gain exposure to the country's growing economy. The stock exchange is based in Nairobi, Kenya as the capital city. Nairobi Metropolitan is considered as a county and county where the head offices of Kenya and county of Nairobi are located. it is on a 1700 metres altitude above sea level. It covers 684 square kilometres (Mule & Mukras, 2015) with an approximate population of 4.3 million inhabitants in 2019 (Kenya National Bureau of Statistics, 2019), in the Great Lakes region of African after Dar es Salam in Tanzania, Nairobi is the largest and second city by population. The metropolitan is a home to both Kenyan businesses as well as international organisations and companies. In Sub-Saharan Africa It's one of the strong-growing economies. The NSE operates under the control of the Capital Markets Authority of Kenya, and is governed by an 11-member board of directors. In 2014, consequent to its successful IPO to raise Ksh 627 million, the NSE demutualized and became listed on the main board of its own exchange. In the present NSE offers a platform that enable a trading of different securities and it has plans of introducing a trading platform for derivative Products. Nairobi Stock Exchange has classified listed firms into Eleven (11) sectors which makes up a total of sixty-three (63) listed firms. In spite of these growths, firms listed in the Exchange still vary from those in exchanges that are developed in areas of cash flows, portfolio sizes, asset allocations, portfolio risk and financial performance which makes it a special area for study (Regulatory report, 2020).

## 3.4 Target Population

The six insurance companies listed in Kenya made up the population of this study for the years 2011-2020 which gave 60 points of data. The NSE (2022) report indicated that, six insurance companies in Kenya were listed as at 20th February 2022. Listed insurance firms were chosen because of the vital role they perform in the Kenya's economy and are therefore a sample representation of the other insurance companies in Kenya, they contribute averagely 17.6% of Gross Domestic Product (GDP)

### 3.5 Sampling Frame

A Census method of sampling was used in this research, which involved the entire population of all the listed insurance firms at the NSE. This methodology increases quality of the data collected by including timely, economic value, relevant and valid information for the study (Baffour & Valente,2012).

### 3.6 Data Collection

This section involved choice of sources of data and data collection procedures.

### 3.6.1 Sources of Data

Only secondary data was used for the purposes of this study. This data was tracked from the yearly financial reports of all the listed insurance firms from 2011-2020. The data gathered was on portfolio management elements of portfolio size, portfolio asset allocation and portfolio risk, cash flow and financial performance. The data was gathered from published yearly financial statements that were audited and were available in the NSE Manuals collected from the Capital Market Authority library, the Central bank of Kenya and NSE, IRA the website. Annual financial reports were used for collecting secondary data because, they are statutory reports that enable easy evaluations since they are produced on yearly basis by all companies (Kenyanya & Ombok,2018).

### 3.6.2 Instruments of Data Collection

Secondary data was gathered on the research variables using document review technique. The data collection sheet (Appendix V) was used to collect the data on the variables.

### 3.6.3 Data Collection Procedure

The researcher got a letter of authority to carry out research from the National Commission for Science, Technology and Innovation (NACOSTI) after receiving authorization to the field by the University and University Ethics Review Committee (MUERC), (Appendix I). The extractions of data for variables were done from annual reports, historical stock prices and financial statements of the listed insurance companies in the NSE from the years 2011 to 2020. The statement of comprehensive income, statement of financial position, the statement of cash flows and notes to the financial statements were the exact financial statements from which data was extracted. The researcher used a document review form presented in appendix 5 to excerpt and assemble the required data from the financial statements for analysis. The raw data was then standardized by using log to base 10 with the help of Microsoft Excel spreadsheet software.

### 3.6.4 Reliability and Validity Test for Data Set

Data derived from financial statements that are audited and published and that have been prepared by use of generally accepted accounting principles (GAAPs) were deemed to be reliable because in their preparation postulates, conventions, standards and accounting principles, are universally adopted. The data series was subjected to unit root tests before empirical estimations were done, this was in order to determine their orders of integration that is, their stationarity conditions. Any non-stationary series at any levels, was transformed until it attained the stationarity condition. Baltagi (2001), noted that properties and behavior of a series can strongly be influenced by stationarity or otherwise of a series. To test for unit roots, in panel data, two methodologies that are common can be used; the Levin, Lin, Chu (LLC) and Im, Pesaran, Shin (IPS). In LLC, the assumption is that there is a common unit root process across all cross-sections, but IPS assumes that there are individual unit root processes (Baltagi, 2001). However, both procedures examine the (non-stationarity) or null hypothesis of a unit root against stationarity or alternative hypothesis of no unit root. In this study, both procedures were applied for purposes of robustness.

Unit root tests were carried out to establish the non-stationarity, constantly changing or moving statistical properties throughout time, of the time series variables. Unit root tests were conducted for portfolio size operationalized by value of stocks, portfolio asset allocation operationalized by proportion of total investment, portfolio risk operationalized by variance from returns, financial performance operationalized by EVA and Tobin's Q. The unit root tests also helped establish whether the variables possessed unit; roots or if shifts in time caused changes in the distribution.

**Table 3.1: unit root test for the variables**

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| **Null: Unit root (assumes common unit root process)** | | | | |
| Levin, Lin & Chu t* | | | | |
| Cash Flow | -6.5575 | 0.00152 | 1 | 60 |
| Eva | -2.38506 | 0.01700 | 1 | 60 |
| Portfolio Asset Allocation | -1.7454 | 0.02143 | 1 | 60 |
| Portfolio Size | -1.9343 | 0.02510 | 1 | 60 |
| Tobin's Q | -5.4323 | 0.02510 | 1 | 60 |
| Portfolio Risk | -1.3982 | 0.00850 | 1 | 60 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | | | | |
| Cash Flow | -3.07054 | 0.0011 | 1 | 60 |
| Eva | -1.90420 | 0.0284 | 1 | 60 |
| Portfolio Asset Allocation | -3.07814 | 0.0010 | 1 | 60 |
| Portfolio Size | -2.4481 | 0.0072 | 1 | 60 |
| Tobins_Q | -2.1770 | 0.0343 | 1 | 60 |
| Portfolio Risk | 2.2713 | 0.09884 | 1 | 60 |

**Source: Field Data, 2023**

As shown in Table 3.1, the Levin-Lin-Chu test revealed $p \leq 0.05$ for all the variables. Hence, all the statistics were significant at levels. These findings imply that the null hypothesis that the series of variables have a unit root was rejected. Thus, it was determined, the series were stationary. That is, the statistical properties were not changing through the period under review. The use of the Levin-Lin-Chu test as a panel unit method in the present study is its significantly greater power compared to standard unit root tests for time-series. Table 3.1 shows IM, Pesaran and Shin W-statistics were at $p \leq 0.05$, implying statistical significance at the test level, except for portfolio risk. These findings led to the rejection of the null hypothesis of IPS test, which is that the series included are non-stationary. The rejection of the IPS null hypothesis confirms the series or some of them were stationary or converging to their means over time.

### 3.7 Data Analysis and Presentation

Correlation analysis and panel multiple regression was used in this study to analyse the influence of the variables on financial performance of quoted insurance companies. Panel Multiple regression method was used to test the effect of the variables on the financial performance of the quoted insurance companies. The statistical significance of the model was tested at a significance level of 5%. The analysis of panel data method has three strategies;

the random effects model, fixed effects model, and the pooled model. As indicated by Kenyanya & Ombok (2018), in the pooled model, different time periods data is taken into a single large cross-section and approximations done using the simple regression method. Nevertheless, simple linear regression technique does not produce the best estimators since it does not make full use of the vital benefits offered by the nature of panel data and therefore, a choice between the models of fixed and the random effects, for more reliable results had to be made. The assumption made about the probable association between the separated or specific error component cross-section and the regressors brings the difference between the fixed effects and random effects approaches. The fixed effects model permits for heterogeneity amongst the companies by letting each company to have its own intercept value. To make the decision, the Hausman test was carried out with the null hypothesis being that the preferred or use model has random effects.

**Table 3.2: Results for the Hausman test**

| Variable | Fixed | Random | Var (Diff) | Prob. |
|---|---|---|---|---|
| Portfolio Size | 0.421220 | 0.87254 | 0.00081 | 0.0036 |
| Portfolio Asset Allocation | 0.359833 | 0.30356 | 0.00012 | 0.0198 |
| Portfolio Risk | 0.042983 | 0.04565 | 0.000625 | 0.3089 |
| Eva | 0.354333 | 0.33356 | 0.00224 | 0.0008 |
| Tobin's Q | 0.012143 | 0.04565 | 0.00235 | 0.0034 |
| R-squared | 0.151202 | Mean dependent var | | 5.032582 |
| Adjusted R-squared | 0.022253 | S.D. dependent var | | 0.223876 |
| S.E. of regression | 0.163483 | Akaike info criterion | | 0.757661 |
| Sum squared resid | 4.510837 | Schwarz criterion | | 0.968476 |
| Log likelihood | -7.367282 | Hannan-Quinn criter. | | 0.705943 |
| F-statistic | 3.32184 | Durbin-Watson stat | | 1.131888 |
| Prob(F-statistic) | 0.014076 | | | |

**Source: Field Data, 2023**

Table 3.2. shows a Hausman test which was conducted to evaluate whether the statistical model corresponds to the data used. The null hypothesis for Hausman test was that the preferred or use model has random effects. Since the p-value for most of the variables, except portfolio risk, was $p \leq 0.05$, the null hypothesis was rejected. Thus, it was concluded that the model has fixed effects, except for portfolio risk, which has varying slopes and intercepts across groups. It was therefore assumed that the variables, as shown by their coefficients (intercepts and slopes), had a constant effect on the outcome or dependent variable.

## 3.8 Model Specification

To conform to prior mediational studies, the study adopted the model used by Kenyanya & Ombok (2018) with some modifications. The Board composition that formed the independent variable in the Kenyanya & Ombok (2018) study were replaced in this study with Portfolio management elements, while firm financial performance which was measured using VAIC replaced with EVA and Tobin Q. The following panel data regression models were mathematically tested:

**Model 1: To analyse the effect of portfolio management on the financial performance of insurance firms listed in Kenya.**

$$EVA_{it} = \alpha_{01} + \beta_{11}X_{1it} + \beta_{12}X_{2it} + \beta_{13}X_{3it} + \mu_{it} + \mathcal{E}_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{(3.1)}$$

$$TQ_{it} = \alpha_{011} + \beta_{11}X_{1it} + \beta_{12}X_{2it} + \beta_{13}X_{3it} + \mu_{it} + \mathcal{E}_{it=} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2)$$

**Model 2: To establish the relationship between cash flow and financial performance of insurance firms listed in Kenya**

$$EVA_{it} = \alpha_{02} + \beta_{21}CF_{it} + \mu_{it} + \mathcal{E}it \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.3$$

$$TQ_{it} = \alpha_{022} + \beta_{21}CF_{it} + \mu_{it} + \mathcal{E}it \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.4$$

**Model 3: To analyse the relationship between cash flows and portfolio management of listed insurance firms in Kenya.**

$$CF_{it} = \alpha_{03} + \beta_{31}X_{1it} + \beta_{32}X_{2it} + \beta_{33}X_{3it} + \mu_{it} + \mathcal{E}it \ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.5$$

To examine the mediating effect of cash flow on the relationship between portfolio management and financial performance, the four steps in establishing mediation discussed by Judd & Kenny (1981), James & Brett (1984) and Baron & Kenny (1986) were followed. According to Baron and Kenny (1986), mediation can be tested using four steps; first, regressing the dependent variable on the independent variable, second, regressing the mediator on the independent variable; third, regressing the dependent on the mediator. Step three involves using the dependent variable as the criterion variable in a regression equation and independent as mediator variable or predictor. Fourthly regressing the dependent variable on both the independent variable and the mediator. To establish that the mediator completely mediates the independent and dependent relationship, the effect of the independent variable on the dependent variable controlling for Mediator variable should be

zero. This means that the independent variable in the first two models is expected to show statistical significance, in the third model, the mediator and outcome variable should be correlated, while the fourth model is expected to show statistical significance of the mediator variable and the insignificance of the independent variable. The effect of the independent variable on the dependent variable must therefore be less in the third equation than in the second. Therefore, to test mediation, the following models were employed:

**Model 4: To evaluate the mediating effect of cash flow on the relationship between portfolio management and financial performance of insurance firms listed in Kenya.**

$$EVA_{it} = \alpha_{04} + \beta_{41}X_{1it} + \beta_{42}X2_{it} + \beta_{43}X_{3it} + \mu_{it} + \varepsilon it \quad \text{.................................................3.6}$$

$$TQ_{it} = \alpha_{044} + \beta_{41}X_{1it} + \beta_{42}X2_{it} + \beta_{43}X_{3it} + \mu_{it} + \varepsilon it \quad \text{.................................................3.7}$$

$$CF_{it} = \alpha_{03} + \beta_{31}X_{1it} + \beta_{32}X2_{it} + \beta_{33}X_{3it} + \mu_{it} + \varepsilon it \quad \text{.................................................3.8}$$

$$EVA it = \alpha_{05} + \beta_{51}X_{1it} (CF)^{-1} it + \beta_{52}X2_{it} (CF)^{-1}it + \beta_{53}X_{3it} (CF)^{-1}it + \mu i + \varepsilon it; \quad \text{............3.9}$$

$$TQ_{it} = \alpha_{055} + \beta_{51}X_{1it} (CF)^{-1} it + \beta_{52}X2_{it} (CF)^{-1}it + \beta_{53}X_{3it} (CF)^{-1}it + \mu i + \varepsilon it; \quad \text{..............4.0}$$

**For each model and where applicable;**

$X_1 =$ Portfolio size

$X_2 =$ Portfolio Asset allocation

$X_3 =$ Portfolio risk

CF= cash flows

EVA= Economic value added

TQ= Tobin Q

**i**= Insurance firms (1-6)

**t**= Time (2011-2020)

$\alpha$= is the regression constant

$\beta_1$, $\beta_2$, $\beta_{3\&}$ $\beta_4$ = coefficients of the independent variables in the regression model.

$\mu_{it} =$ The unobservable individual heterogeneity.

$\varepsilon it =$ the error term

$(CF)^{-1}it$: The mediating effect of cash flows on portfolio elements for firm $i$ during time $t$.

The results which were anticipated from the output included; complete mediation (where the independent variable has no effect on the dependent variable when the mediator is controlled), partial mediation (when the independent variable has a reduced effect on the dependent variable when the mediator is controlled), or no mediation (when the independent variable has no significant relationship with the mediator variable). The independent variable in the first two models were expected to show statistical significance, in the third model, the mediator and outcome variable were expected to be correlated, while the fourth model was expected to show statistical significance of the mediator variable and the insignificance of the independent variable. The effect of the independent variable on the dependent variable was therefore to be less in the fourth equation than in the second equations.

The Judd and Kenny (1981) difference of Coefficients approach and the conservative Sobel-Goodman tests were used to obtain and test for significance of the indirect effect respectively. As observed by Mwangi (2014), the Sobel-Goodman test is a specialized $t$ test that provides a method to determine whether the reduction in the effect of the independent variable after including the mediator in the model, is a significant reduction and therefore ascertain whether the mediation effect is statistically significant.

### 3.9 Assumptions for Linear Regression Analysis Testing

Before regressing data for analysis, data was checked to avoid violation of the assumptions of panel regression model as affirmed by wayongah (2019). This is to ensure that the data produces best least squares unbiased estimators. According to Mwangi (2014), the common tests that should be conducted include types of variables, normality, multicollinearity, homoscedasticity, and autocorrelation.

### 3.9.1 Types of Variables

Field (2000), stated that for reasonable empirical deductions from sample data, the independent variables must be either quantitative or categorical and the dependent variable must be continuous, quantitative or unbound. This condition is satisfied for the present study since elements of portfolio management, cash flow and financial performance measures are all quantitative. This signifies that the type of variables does not violate the requirements of regression analysis in this regard.

### 3.9.1.1 Measurement of Portfolio Management

In this study, Portfolio management refers to the choice and overseeing of a group of investments that meet the long-term financial objectives and risk tolerance of a client, a company, or an institution. Portfolio management was measured by its elements of Portfolio size, Portfolio asset allocation and Portfolio risk. To remain consistent with previous studies Kimani et al. (2017), Chong & Phillips, 2013; Li (2022). Portfolio size was measured as the value of stocks (Sum of all the investment vehicles the firm had) and thus the study measured using the value of stocks, while Asset allocation was measured by the proportion of asset value on total investment (Mokaya et al. (2020); Hailu & Tassew,2018). On the other hand, Portfolio risk was measured by the variance from returns in accordance to Makau & Jagongo (2018), Amayo (2018), Ndyagyenda (2020), Iraya & Wafula (2018), Mpumwire & Mulyungi (2018) & Kimani & Aduda (2016).

### 3.9.1.2 Cash flow

From the empirical research, most researchers have been able to measure cash flow using cash and cash equivalents; Mwangi (2014), Muraya (2018), Amahalu et.al (2017) used cash and cash equivalents. To remain consistent with the prior researchers, the present study measured cash flow using cash and cash equivalents. This measure is preferred because firms with a healthy amount of cash and cash equivalents can reflect positively in their ability to meet their short-term debt obligations.

### 3.9.1.3 Financial Performance

Economic value added (EVA) and Tobin Q was used to measure financial performance of insurance companies quoted at the Securities stock exchange market. EVA was calculated by subtracting Finance Charge from the Net operating income after tax and Tobin Q was measured as the proportion of the total equity book value to total equity market value of the insurance companies quoted at the NSE. Most researchers have used ROA, ROI and ROE as measures of financial performance which have been criticised greatly because of them being accounting-based measures and they are believed to reflect historical values that may already have lost their actuality due to restrictions by accounting conventions. The Economic value-added financial performance measure has been procreated by the need to replace the accounting-based and market-based financial performance measures. Exponents of Economic value- added based firm performance measures argue that the accounting-based and market-based financial performance measures are not sufficient for the evaluation of firm

performance since they are based on financial statements that do not reflect true value of total company's assets due to their exclusion of intangible assets, (Kenyanya & Ombok, 2018).

### 3.9.2 Testing for Normality of Residuals

The researcher undertook a normality test to determine the data was obtained from a normally distributed population. Normality was then analysed using a histogram of standardised regression- residuals along with the statistics summary for financial performance of the quoted insurance firms. The histogram of residues is a graph used to illustrate the shape of the probability density function (PDF) of a random variable. Skewness, kurtosis and the Jarque-Bera (JB) test of normality were scrutinized. Skewness measures the degree of asymmetry of the distribution while kurtosis measures the relative flatness or peakedness of the distribution relative to the normal distribution.



| Series: EVA | |
| --- | --- |
| Sample 1 60 | |
| Observations 60 | |
| | |
| Mean | 6.813192 |
| Median | 6.851510 |
| Maximum | 7.287370 |
| Minimum | 5.566090 |
| Std. Dev. | 0.307353 |
| Skewness | -1.271542 |
| Kurtosis | 6.031150 |
| | |
| Jarque-Bera | 39.13787 |
| Probability | 0.000000 |
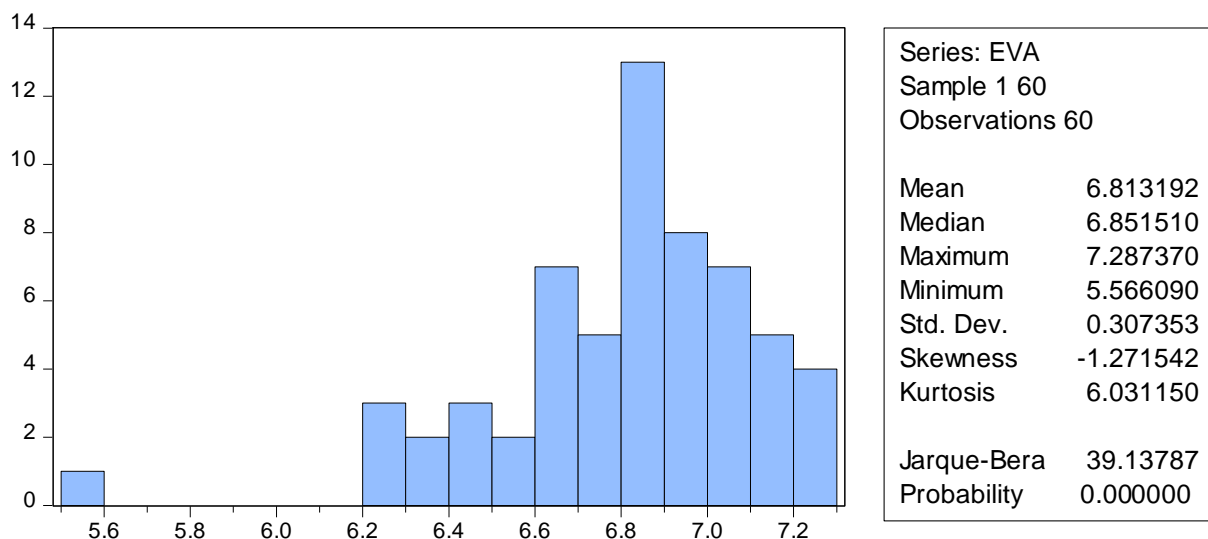
**Figure 3.1: Normality test results (EVA)**
**Source: Field Data, 2023**

The figure 3.1 shows a Skewness value of -1.2715 meaning more values are to the tail or right side of the distribution, making the left tail longer. Since the null hypothesis of normality test is that, the sample data follows a normal distribution, the p (0.000) where p $\leq$ 0.05, the alternative hypothesis of the normality test was rejected. The skewness value of -1.2715 is acceptable since it falls within the generally acceptable range of +3 and -3. Hence, it is ascertained, the data was obtained from a normally distributed population. Similarly, the Kurtosis value of 6.0311 is within the generally acceptable values of -10 and +10. Thus, it is

concluded, through transformation, data moved closer to being from a normally distributed population. Therefore, the assumption for normality of data was met.
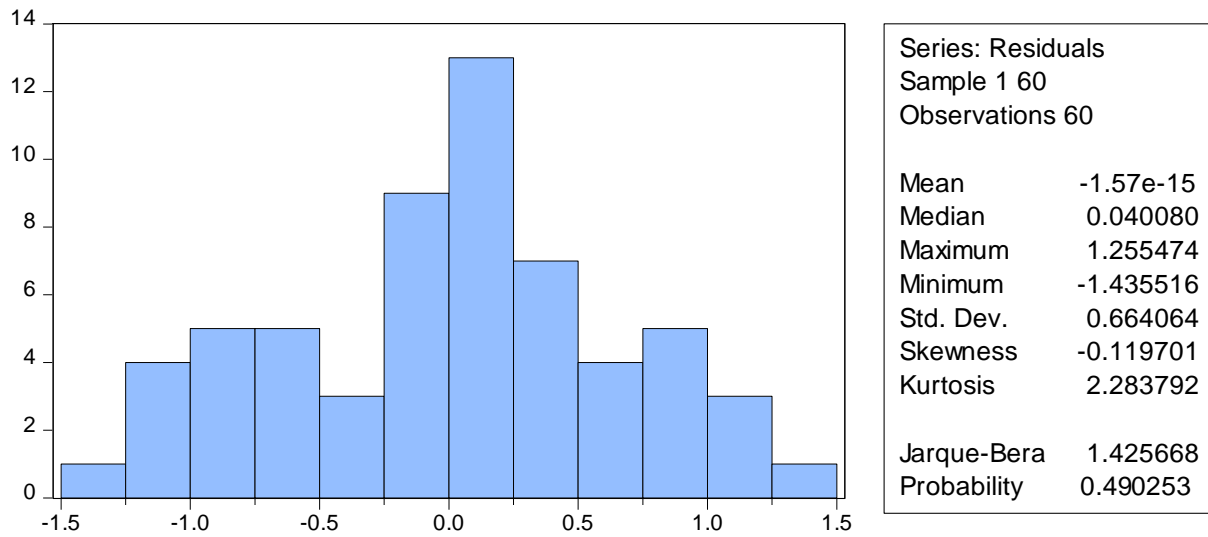


**Figure 3.2: normality test results (Tobin Q)**
**Source: Field Data, 2023**

The figure 3.2 shows a Skewness value of -0.1197 meaning that the data is negatively skewed. The skewness value of -0.1197 is acceptable since it falls within the generally acceptable range of +3 and -3. Hence, it is ascertained, the data was obtained from a normally distributed population. Similarly, the Kurtosis value of 2.2838 is within the generally acceptable values of -10 and +10. Thus, it is concluded, through transformation, data moved closer to being from a normally distributed population. Therefore, the assumption for normality of data was met.

### 3.9.3 Testing for Multicollinearity

Multicollinearity test was conducted to establish any correlation between the independent variables of the study.

**Table 3.3: Variance inflation factors for the independent variables**

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| C | 0.647697 | 618.1130 | NA |
| Portfolio Size | 0.012893 | 673.3567 | 1.446987 |
| Portfolio Asset Allocation | 0.015540 | 8.839240 | 1.420304 |
| Portfolio Risk | 0.004830 | 2.294840 | 1.070441 |

**Source: Field Data, 2023**

As shown in table 3.3 on multicollinearity tests results, the Centered Variance Inflation Factors (VIF) values are less than 4.0 for all the independent variables, implying the absence of multicollinearity. These values mean that the independent variables do not have collinearity and are independent. The absence of multicollinearity implies reliable statistical inferences because the statistical significance of the variables was not undermined.

### 3.9.4 Heteroskedasticity Test: White

The researcher conducted a heteroskedasticity test to check whether the model or equation used may not explain some of the patterns in which the dependent variable responded to changes in the independent variables.

**Table 3.4: Heteroskedasticity Test: Breusch-Pagan-Godfrey**

| | | | |
|---|---|---|---|
| F-statistic | 0.171145 | Prob. F (3,56) | 0.9154 |
| Obs*R-squared | 0.545112 | Prob. Chi-Square (3) | 0.9089 |
| Scaled explained SS | 2.556817 | Prob. Chi-Square (3) | 0.4651 |

**Source: Field Data, 2023**

Heteroscedasticity shows that a population has unequal variance in the range of sampled data. As shown table 3.4 the p-value is higher than 0.05, implying absenteeism of heteroscedasticity. The absence of heteroscedasticity means the population used in the study has equal variance, implying the results of the regression analysis may be valid.

### 3.9.5 Autocorrelation

The researcher conducted an autocorrelation test to check for the degree of correlation of the same variables for two consecutive periods.

**Table 3.5: Breusch-Godfrey Serial Correlation LM Test**:

| | | | |
|---|---|---|---|
| F-statistic | 1.708709 | Prob. F (2,52) | 0.1911 |
| Obs*R-squared | 3.700010 | Prob. Chi-Square (2) | 0.1572 |

**Source: Field Data, 2023**

Based on the prob. Chi-Square value of 0.1572 that is higher than 0.05, the researcher fails to reject the null hypothesis that there is no autocorrelation.

# CHAPTER FOUR
## RESULTS AND DISCUSSIONS

### 4.1 Introduction

This chapter presents the results of the analysis of data from the study's sample and discusses these findings in line with the aim and objectives of the study, research questions and hypotheses. The descriptive statistics on the study variables are presented first before their effects are examined. Afterward, the effect of portfolio management on financial performance, and that of cash flow on firm financial performance are presented with the discussions. Finally, results and discussion on the mediating effect of cash flow on the relationship between portfolio management and financial performance of listed insurance firms are presented.

### 4.2 Descriptive Statistics of the Study Variables

Descriptive statistics on the variables was conducted to provide the summary on the measures of central tendency, measures of dispersion and Jarque Bera test to show the kurtosis and skewness of the data variables.

**Table 4.1: Shows the descriptive statistics of the study variables of portfolio management elements, cash flow and financial performance (EVA & TOBIN Q).**

|  | Portfolio Size | Portfolio Asset Allocation | Portfolio Risk | Cash flow | EVA | Tobin Q |
|---|---|---|---|---|---|---|
| Mean | 7.389622 | 0.707290 | 0.515408 | 6.622952 | 6.813192 | 0.854957 |
| Median | 7.403900 | 0.749098 | 0.332750 | 6.627415 | 6.851510 | 0.698970 |
| Maximum | 8.065260 | 1.528306 | 2.590160 | 7.235220 | 7.287370 | 2.685740 |
| Minimum | 5.998410 | 0.060482 | 0.000910 | 6.077470 | 5.566090 | 0.017729 |
| Std. Dev. | 0.345819 | 0.312081 | 0.485982 | 0.275461 | 0.307353 | 0.782494 |
| Skewness | -1.033673 | 0.436049 | 1.751139 | 0.171772 | -1.271542 | 1.209182 |
| Kurtosis | 6.236153 | 3.223583 | 7.079124 | 2.548275 | 6.031150 | 3.448487 |
|  |  |  |  |  |  |  |
| Jarque-Bera | 36.86651 | 2.026356 | 72.26302 | 0.805195 | 39.13787 | 15.12405 |
| Probability | 0.000000 | 0.363063 | 0.000000 | 0.668581 | 0.000000 | 0.000520 |
|  |  |  |  |  |  |  |
| Sum | 443.3773 | 42.43738 | 30.92447 | 397.3771 | 408.7915 | 51.29740 |
| Sum Sq. Dev. | 7.055851 | 5.746264 | 13.93455 | 4.476833 | 5.573474 | 36.12548 |
|  |  |  |  |  |  |  |
| Observations | 60 | 60 | 60 | 60 | 60 | 60 |

**Source: Field Data, 2023**

Table 4.1 reveals that the mean of portfolio size is 7.389622 with a maximum and minimum of 8.065260 and 5.998410 respectively. Since portfolio size was measured as value of stock, it implies that on average, the listed insurance firms in NSE have a portfolio size of 7.389622 stocks. The skewness figure of -1.03367 shows that most firms have portfolio size that is higher than the mean of 7.389622. This mean value obtained compares consistently with that of

Li, (2022), who noted that the ideal portfolio size should be limited from 6 to 12 stocks. This mean value however contradicts that of Kimani &Aduda, (2016) who noted that a well performing portfolio should hold between 16 and 20 stocks and Kisaka, Mbithi and Kitu (2015) who noted that optimal portfolio size lies between 18-22 stocks. Results obtained in Table 4.1 further indicates that the mean of portfolio asset allocation is 0.707290 with maximum and minimum of 1.528306 and 0.060482 respectively. Portfolio asset allocation was measured by the proportion of the value of the asset to total investment and this means that on average the listed insurance firms in the NSE have a mean asset value of 0.7073 over the total investment. The skewness value of 0.436049 obtained shows that most insurance listed firms have portfolio asset allocations that are positively skewed. These results are in tandem with that of Mokaya et.al (2020) who found a mean of 0.68 in their allocation to fund age. However, it contradicts that of Ombima & Njiru (2018) who reported a mean of 4.12. Results presented in Table 4.1 further show that mean portfolio risk is 0.515408 with maximum and minimum of 2.590160 and 0.00091 respectively. Portfolio risk was measured by the variance from returns and this means that on average, listed insurance firms in the NSE have a portfolio risk of 0.515408. The skewness value of 1.751139 obtained shows that most listed firms have portfolio risk that is less than the mean of 0.515408. These results contradict that of Amayo (2018), Ndyagyenda (2020), Iraya & Wafula (2018), Mpumwire & Mulyungi (2018) who presented a mean of 3.6 for portfolio risk. Additionally, the mean of cash flows in Table 4.1 is 6.622952 with the highest and lowest being 7.235220 and 6.077470 respectively. Cash flow was measured using cash and cash equivalents and this means that on average, cash flow of quoted insurance companies in NSE is 6.622952. The skewness value of 0.171772 indicates that most listed insurance firms have their cash flows oscillating around the mean of 6.622952.

Table 4.1 further more shows that the mean of financial performance (EVA) is 6.813192 and 0.854957 respectively for EVA and Tobin, with the maximum of 7.287370 and 2.685740 and minimum of 5.566090 and 0.017729 for EVA and Tobin Q respectively. the standard

deviation was highest for financial performance (TOBIN'S Q) and portfolio risk 0.782494 and 0.485982 respectively. These standard deviation values imply that these variables were more dispersed from the mean than the other variables. On the other hand, with 0.312081, 0.275461, 0.307353 and 0.345819 portfolio asset allocation, cash flow, financial performance (EVA) and portfolio size were most clustered around the mean. The kurtosis values shows that data for portfolio risk, portfolio size and financial performance (EVA) had the most outliers while cash flow, portfolio asset allocation, financial performance (TOBIN'S Q) and cash flows had the least outliers. Table 4.1 further shows that financial performance (EVA) and portfolio size were negatively skewed while financial performance (TOBIN'S Q), portfolio asset allocation, portfolio risk and cash flows were positively skewed. The cash flow P value of 0.668581 indicates an insignificant influence. This could be for the fact that, increasing portfolio size involves pooling out working capital of the firm which hinders the firm to invest in other opportunities that arise periodically thus lowering the financial performance.

## 4.3 Effect of Portfolio Management on the Financial Performance of Insurance Firms Listed at the NSE

The first objective of the study sought to determine the effect of portfolio management on the financial performance of insurance firms listed in the NSE. Table 4.2 presents results on the correlation between Portfolio management and financial performance of insurance firms listed at the Nairobi Securities Exchange (NSE).

**Table 4.2: Correlation of Portfolio management with EVA for Insurance Firms Listed at NSE**

**Correlation**

| Probability | Portfolio Size | Portfolio Asset Allocation | Port Risk | Cash flow | EVA | Tobin Q |
|---|---|---|---|---|---|---|
| Portfolio Size | 1.000000 | | | | | |
| | ----- | | | | | |
| Portfolio Asset Allocation | 0.515681 | 1.000000 | | | | |
| | (0.000) | ----- | | | | |
| Port Risk | -0.161254 | 0.087777 | 1.000000 | | | |
| | (0.218) | (0.505) | ----- | | | |
| Cash Flow | 0.483978 | 0.007962 | -0.264238 | 1.000000 | | |
| | (0.000) | (0.952) | (0.041) | ----- | | |
| EVA | 0.408108 | -0.133558 | -0.340481 | 0.296986 | 1.000000 | |
| | (0.001) | (0.309) | (0.008) | (0.021) | ----- | |
| TOBIN_Q | 0.394188 | 0.174623 | -0.260722 | 0.464244 | -0.013314 | 1.000000 |
| | (0.002) | (0.182) | (0.044) | (0.000) | (0.920) | ----- |

**Source Field Data, 2023**

Correlation analysis was conducted to determine the directionality and the magnitude of the influence between the independent variables, mediating variable and the dependent variable. Correlation analysis shows the direction, strength and significance of the relationships among the variables of study, (Mule & Mukras,2015). Since portfolio management was operationalized by portfolio size, portfolio asset allocation and portfolio risk, results in table 4.2 shows a moderate positive significant correlation between portfolio size and financial performance measured by economic value added (EVA) for the NSE-listed insurance firms, ($r$ = 0.4081; $p$ = 0.0012),  the value of 0.4081indicates a moderate positive correlation between portfolio size and economic value added (EVA) for the NSE-listed insurance companies for the 10-year period sampled in the study.  This means that a 40.81% increase in portfolio size, results in a corresponding increase of 40.81% in financial performance of listed insurance firms. On the other hand, there is a weak positive correlation between portfolio size and financial performance (Tobin Q) with ($r$ = 0.3942; $p$ = 0.0018) which is significant. These findings also mean that whereas the financial performance of the NSE-listed insurance companies increase with an increase in the portfolio size, the influence or change is rather small. Nonetheless, the correlation is significant at 95% confidence level.

Therefore, it may be concluded, there is correlation between portfolio size and financial performance of NSE-listed insurance companies (EVA). These results are consistent with empirical literature, Kimani &Aduda, (2016); Kisaka et al. (2015); Mpumwire & Mulyungi (2018); Ngari (2018), who noted a relationship that was positive between portfolio size and financial performance of firms. However, the findings contradict those by Auma (2013) who found that there is a negative relationship between portfolio size and the overall financial performance of the insurance industry.

Additionally, results in Table 4.2 reveals that portfolio asset allocation and firm financial performance (EVA) are negatively but insignificantly correlated ($r = -0.1336$; $p = 0.3090$) implying that a unit increase in portfolio asset allocation, would result to a 13.36% decrease in financial performance. However, there is an insignificant but positive association between portfolio asset allocation and financial performance (Tobin Q) with ($r = 0.1746$; $p = 0.1821$) indicating that a unit increase in portfolio asset allocation would result to a 17.46% increase in financial performance. The difference in result is because, the factors absorbed in Tobin Q are different from those absorbed in EVA. This is in agreement with prior literature by Salman, Mata, Kurfi & Ado (2020), in a study on the influence of portfolio investment and financial performance of the banking sector, Nigeria found an insignificant but negative effect of treasury bill investment on the financial performance of the banking companies. It also agrees with that of Kothan & shanke (2019) who on examining whether and how the availability of indexed bonds affected investors' asset allocation decisions, noted a low correlation. The study however contradicts that of Blanchett & Straehl (2018), Ombima & Njiru (2018), Mokaya et.al (2020), who noted a significant and positive effect of portfolio asset allocation on the financial performance of firms.

Table 4.2 further displays a low negative significant correlation between portfolio risk and financial performance (EVA) for the listed insurance firms in the 10-year period sampled. ($r = -0.3405$; $p = 0.0078$) implying that 34.05% increase in portfolio risk leads to a 34.05% decrease in the financial performance of listed insurance firms at the NSE. Similarly, a decrease in the portfolio risk is likely to cause an increase in the financial performance of NSE-listed insurance firms. these results are in tandem with those of Kiptoo et.al (2021), Kioko, Olweny & Ochieng (2019) who showed a negative relationship between risk and financial performance. It however contradicts that of Amayo (2018), Ndyagyenda (2020),

Iraya & Wafula (2018), Mpumwire & Mulyungi (2018) & Kimani & Aduda (2016) who reported a positive relationship between portfolio risk and financial performance.

Table 4.2 furthermore, shows values of 0.2970 and 0.4642 for the correlation between cash flow operationalised by cash and cash equivalents, and financial performance operationalised by (EVA) and Tobin Q respectively. These values indicate weak and moderate positive correlation of the influence of cash flow on the financial performance respectively. That is, EVA and Tobin Q increase as cash flow increase for the NSE-listed insurance companies. There is also a positive significant correlation between Tobin Q and EVA with P values 0.0212 and 0.0002 < 0.05 for the studied insurance companies respectively.

To realise results for the first objective, a null hypothesis, H01, assuming the absence of relationship between portfolio management and financial performance of insurance firms listed in Kenya was formulated. Multiple regression analysis was then conducted to establish the effect of portfolio management on the financial performance. Table 4.3 presents the results.

**Table 4.3: Effect of Portfolio management on Financial Performance (EVA)**

Dependent Variable: EVA
Included observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 3.291070 | 0.804797 | 4.089319 | 0.0001 |
| Portfolio Size | 0.525422 | 0.113550 | 4.627246 | 0.0000 |
| Portfolio Asset Allocation | -0.413772 | 0.124660 | -3.319214 | 0.0016 |
| Portfolio Risk | -0.131718 | 0.069496 | -1.895326 | 0.0632 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.368290 | Mean dependent var | | 6.813192 |
| Adjusted R-squared | 0.334449 | S.D. dependent var | | 0.307353 |
| S.E. of regression | 0.250742 | Akaike info criterion | | 0.135559 |
| Sum squared resid | 3.520818 | Schwarz criterion | | 0.275182 |
| Log likelihood | -0.066776 | Hannan-Quinn criter. | | 0.190173 |
| F-statistic | 10.88277 | Durbin-Watson stat | | 1.447043 |
| Prob(F-statistic) | 0.000010 | | | |

**Source Field Data, 2023**

Table 4.3 provides results on the effect of portfolio management on financial performance as measured by EVA. The constant (C), is the y-intercept in the regression analysis (with the generated coefficient of 3.2911), set to establish the magnitude of the impact of changes of

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independent variables, consisting of portfolio size, portfolio asset allocation and portfolio risk on financial performance (EVA).

Based on the model: EVAit = $\alpha_{01}$ + $\beta_{11}X_{1it}$ + $\beta_{012}X2_{it}$ + $\beta_{13}X_{3it}$ + $\mu_{it}$ $_+$ $\varepsilon$it) the results fitted on the model reveals that: Financial performance EVAit= 3.2911 + 0.5254$X_{1it}$ -0.4138$X_{2it}$ - 0.1317$X_{3it}$. It implies that the regression equation would only predict an EVA of 3.2911 if the portfolio size is equal to zero. On the other hand, the value that multiplies the predictors of EVA is 52.54% for portfolio size. This means that a unit increase in portfolio size would result in 52.54% increase in the financial performance (EVA) of the NSE-listed insurance companies. Most importantly, at (p= 0.0000<0.05) implying there is a statistically significant relationship between portfolio size and financial performance of the NSE-listed insurance companies. Therefore, this results in Table 4.3 show that portfolio size is a significant positive predictor of financial performance (EVA), ($\beta = 0.5254$, $p = 0.0000 \leq 0.05$).

This result is concurrent with the findings of Kimani &Aduda, (2016) who evaluated the influence of the size of a portfolio on the financial performance of investment companies' portfolios, in Kenya; and found a significant and positive effect of portfolio size on the financial performance. Kisaka et.al (2015) in carrying out a study to determine Optimal Portfolio Size on the Nairobi Securities Exchange, in Kenya, established a positive influence of portfolio size on financial performance of listed firms at the NSE. These results on the other hand contradicts the findings by Auma (2013), in his study on the correlation between Holding Portfolios and Financial Performance of Insurance firms in Kenya; who found a negative influence of portfolio size and the overall financial performance of the insurance industry. The results reveal that listed insurance firms at the NSE could differ in financial performance based on the portfolio size, because an increase in portfolio size will result in an increase in financial performance. This result supports the Modern Portfolio Theory by Makowitz (1952) who proposes that portfolio size influences the financial performance of the firm.

Additionally, Table 4.3 shows the value of portfolio asset allocation of -0.4138. This means that a unit increase in portfolio asset allocation translates into a 41.38% decrease in the financial performance (EVA) of the NSE-listed insurance companies, at P value of 0.0016, p < 0.05; showing statistically significant effect between portfolio asset allocation and financial performance of the NSE-listed insurance companies. The results therefore reveal that portfolio asset allocation is a significant negative predictor of financial performance ($\beta$ = -

0.4138, p = 0.0016) ≤ 0.05, implying that a unit increase in the value of portfolio asset allocation results to a decrease of 41.38% in financial performance of listed insurance firms. This implies that changing the proportions of the assets value over the total investment by insurance firms listed at the NSE, would lower their financial performance by 41.38%.

These results support prior empirical findings, Salman, Mata, Kurfi & Ado (2020), who studied on the relationship between the investment portfolio and banking financial performance in Nigeria and found out that investment portfolio had a significant but negative effect on financial performance. On the other hand, this result contradicts that of Amayo (2018) who studying on the Portfolio Optimization and Its Effect on Performance of Banks in Kenya, his findings revealed that there was a significant positive relationship between asset allocation and performance in commercial banks in Kenya, Mokaya et.al (2020) conducted a study on the Effects of Asset Allocation on Financial Performance of Unit Trust Schemes in Kenya, and results showed that asset allocation positively and significantly influences the performance of a fund. Moreover, Hailu and Tassew (2018), carried out research on the impact of investment diversification on financial performance of commercial banks in Ethiopia, and the results showed that investment in numerous assets positively affects the financial performance of commercial banks in Ethiopia.

This result indicates that portfolio asset allocation is a major determinant of the listed insurance firm's financial performance in allocation of resources to different classes of investments. When portfolio asset allocations are increased, there is a likelihood of resulting in a reduction in the firm's profitability, thus insurance firms listed at the NSE should consider optimal asset allocations for greater financial performance.

Furthermore, Table 4.3 shows the constant (C) of 3.2911 which is the value that the regression equation would predict for financial performance (EVA) if the portfolio risk was equal to zero. The value of -0.131718 shows a negative effect between portfolio risk and financial performance. It further shows that a unit increase in portfolio risk will lead to a 13.17% decrease in financial performance (EVA). The p value of 0.0632 P ≤ 0.05, implies statistically insignificant correlation between portfolio risk and financial performance (EVA) of the NSE-listed insurance companies. That is, there is a linear relationship between portfolio risk and financial performance (EVA). This result is consistent with findings by Kioko, Olweny, & Ochieng (2019) who in examining how financial risk influences the financial performance of commercial banks listed in the Nairobi Stock Exchange in Kenya,

found out that liquidity risk had a negative insignificant effect on financial performance. However, Kiptoo, Kariuki & Ocharo (2021), who conducted a study on the relationship between risk management and the financial performance of insurance firms in Kenya, the purpose of the study was to analyse the correlation between management of risk and the financial performance. The results showed that credit risk negatively and significantly affects financial performance, Kisaka et al. (2015) in their study showed that portfolio risk decreased as the number of securities in the portfolio rose but beyond the optimal portfolio size the risk started increasing again.  On the other hand, this study contradicts that of Ndyagyenda (2020), Iraya & Wafula (2018), Amayo (2018) who reported findings that showed a positive relationship between portfolio risk and financial performance.

These results indicate that portfolio risk will not have an impact on the financial performance of insurance firms listed at the NSE.  This is because insurance firms are affected by factors such as liquidity growth, leverage, Growth rate of the company, age of company, size of company and volume of capital, thus though portfolio risk has a negative effect, it's not significant in influencing these firms' financial performance.

To achieve further relationship outcomes on the variables tasted under the first objective, a multiple regression analysis was conducted to establish the effect of portfolio management on the financial performance (Tobin Q). This was necessary to confirm the results obtained from Table 4.3.  Table 4.4 presents the results.

**Table 4.4: Effect of Portfolio Management on Financial Performance (Tobin Q)**

Dependent Variable: Tobin
Included observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -4.959276 | 2.312472 | -2.144578 | 0.0363 |
| Portfolio Size | 0.807682 | 0.326269 | 2.475510 | 0.0164 |
| Portfolio Asset Allocation | 0.021182 | 0.358192 | 0.059137 | 0.9531 |
| Port Risk | -0.328311 | 0.199689 | -1.644116 | 0.1058 |

| | | | |
|---|---|---|---|
| R-squared | 0.195343 | Mean dependent var | 0.854957 |
| Adjusted R-squared | 0.152236 | S.D. dependent var | 0.782494 |
| S.E. of regression | 0.720474 | Akaike info criterion | 2.246525 |
| Sum squared resid | 29.06862 | Schwarz criterion | 2.386148 |
| Log likelihood | -63.39575 | Hannan-Quinn criter. | 2.301139 |
| F-statistic | 4.531625 | Durbin-Watson stat | 0.792641 |
| Prob(F-statistic) | 0.006492 | | |

**Source Field Data, 2023**

Table 4.4 provides information on the effect of portfolio management on financial performance as measured by Tobin Q.

Based on the model: $TQ_{it} = \alpha_{044} + \beta_{41}X_{1it} + \beta_{42}X2_{it} + \beta_{43}X_{3it} + \mu_{it} + \mathcal{E}it$ the results fitted on the model reveals that: Financial performance $TQit = -4.9592 + 0.8077X_{1it} + 0.0212X_{2it} - 0.3283X_{3it}$. The results show significant positive effect between portfolio size and financial performance with a coefficient of 0.8077 at P value $0.0164 \leq 0.05$ positive and significant. The constant C reveals that the value of Tobin Q as a measure of financial performance changes by -4.9593, if the independent variables, including portfolio size, were at zero. The coefficient value of 0.8077, indicates that the unit increase in portfolio size leads to 80.77 % increase in financial performance (Tobin Q) at P value $0.0164 \leq 0.05$; implying a significant but positive relationship between portfolio size and financial performance. The R-squared value of 0.1953 shows that portfolio size, portfolio asset allocation and portfolio risk together explain 19.53% of the financial performance of listed insurance firms in Kenya. To this effect regression model explains 19.53% of the variability in the financial performance (Tobin Q) of the insurance firms used in the study. Conclusively, it may be stated, portfolio size has a strong positive effect on the financial performance of insurance firms listed at the Nairobi Securities Exchange Market.

Further findings of the study reveal that financial performance of NSE-listed insurance companies in Kenya, depends on the portfolio size of a firm. It's evident that the portfolio size held by a company in its portfolio structure depends on many factors. However, the unaccounted-for performance portion is explained by other factors which though not considered under this study, would otherwise account for significantly strong positive relationship between portfolio size and financial performance, consistent with Makau & Jagongo (2017) who on examining on the Impact of Portfolio Diversification on Financial Performance of Investment Firms Listed In Nairobi Securities Exchange noted that these factors include country of investment, investment time horizon and conditions of the market. A possible explanation of the relationship between portfolio size and financial performance of the listed insurance companies is the current trend of diversification, which is linked with long-term returns. When a portfolio is diversified well it helps reduce the risk of focusing on a single investment, industry or product. However, Basu (1997), studied on the Investment performance of common stocks in relation to their price-earnings ratios and established the association between growth in stock numbers and company value test of the efficient market hypothesis, advises that insurance companies often consider the increased cost of holding

many or increasing portfolio sizes. These costs may further explain the correlation between portfolio size and financial performance of NSE-listed insurance companies in Kenya. These findings are similar to that by Ngacha (2009) who examined a Comparative Study on Performance between Value and Growth Stocks and found out that value portfolios performed better than growth portfolios.

Subsequently, results from table 4.4 shows that a unit increase in portfolio asset allocation would result in to an increase in financial performance by 2.12% (Tobin Q), at P value 0.9531 indicating an insignificant impact of portfolio asset allocation on financial performance (Tobin Q) for the NSE-listed insurance firms. This finding show that the portfolio asset allocation positively affects financial performance of the NSE-listed insurance firms in Kenya. Portfolio asset allocation has been shown to affect financial performance through various avenues. Kamwaro (2013) in examining the Impact of Investment Portfolio Choice on Financial Performance of Investment Companies in Kenya, established that the choice of investment portfolio positively affects financial performance of investment companies. Further, Kimani and Aduda (2016), in examining the effect of portfolio size on the financial performance of portfolios of investment firms in Kenya, observed that investments, real estate and holding firms had the biggest allocations of funds in stocks in Kenya, however Kimani and Aduda (2016) used ROA and standard deviation as indicators of financial performance. Salman et al. (2020), in analysing the relationship between the investment portfolio and banking financial performance in Nigeria found a negative effect of portfolio asset allocation on the financial performance of the banking firms. These findings contradict that of the present study.

The findings on the relationship between portfolio asset allocation and Tobin's Q highlights the importance of asset allocation to companies and investors. Most importantly, the correlation shows that achieving and maintaining the right formula for asset allocation is perhaps the most important action or decision for long-term investors. Kimani and Aduda (2016), argues that the right formula is critical in allocating resources to bonds, cash or stock.

Furthermore, Table 4.4 results reveal negative but insignificant relationship between portfolio risk and financial performance (Tobin Q), with a coefficient of -0.3283, implying that a unit increase in portfolio risk causes a 32.83% decrease in financial performance (Tobin Q) of the NSE-listed insurance companies; with a P value of $0.1058 \leq 0.05$. This shows an insignificant effect between portfolio risk and financial performance. The findings

established that portfolio risk, as a measure of portfolio management, influences Tobin Q and EVA, albeit to different degrees. For instance, concerning these Tobin Q Coefficient value is -0.3283 while EVA -0.1317. Generally, higher values of portfolio risk imply bigger deviations of the returns for a given portfolio from expected values or rates. In other words, higher portfolio risk indicates low returns, implying poorer financial performance.

The findings of these study on the relationship between portfolio risk and financial performance yield similar results to that of Berrada (2021); whom in analysing the variance after-effect distort stock returns, established that portfolio risk influences the average and volatility of firms' and investments' returns. Furthermore, he explains that fluctuations in portfolio risk are associated with increased volatility of returns from investments. Koski (1998) in an article on the relationship between increases in return variance and bid-ask spread and price discreteness found similar results to the present study findings in which he asserts that, controlling the other factors, variance of daily returns increased significantly with stock dividend. That is, portfolio risk increases with stock split or stock divide.

This study is consistent with that of Kiptoo, Kariuki & Ocharo (2021), Amayo (2018) who showed a negative relationship between risk and financial performance. On the other hand, the results contradict that of Mpumwire & Mulyungi (2018), Hailu and Tassew (2018), Nyaseta, Iravo & Wanjala (2020) who noted a positive relationship between portfolio management and financial performance. Unlike the present study, which used EVA and Tobin Q as measures of financial performance, these other studies used ROA, ROE and other accounting-based measures as indicators of financial performance. The present study also confirms the modern portfolio theory, which attempts to maximize portfolio expected return for a certain amount of portfolio risk, or equivalently less risk for a given level of expected return, by carefully choosing the proportions of various assets.

The results on the relationship between portfolio management and financial performance (Tobin Q) reveals that portfolio asset allocation and portfolio risk are insignificant in measuring the over valuation or under valuation of the firm's stock value. This means that in explaining financial performance, Tobin Q is insignificant since it relates more on the stock prices rather than financial performance, making economic value added more useful in measuring financial performance. Therefore, the results of the regression analysis and the equations derived from the original regression model led to the rejection of the null hypothesis ($H_{01}$) that: There is no significant relationship between portfolio management and

financial performance of insurance firms listed in Kenya; Instead, the alternative hypothesis that: There is a significant relationship between portfolio management and financial performance of NSE-listed insurance firms in Kenya is accepted.

## 4.4 Effect of Cash flow on the Financial Performance of Listed Insurance Companies

To achieve results for the second objective, a null hypothesis, H02, assuming that cash flow has no effect on the financial performance was formulated. Multiple regression analysis was conducted to establish the effect of cash flow on the financial performance. Table 4.5 presents the results.

**Table 4.5: Regression Analysis for Cash flow and financial performance (EVA)**

Dependent Variable: EVA

Included observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 4.618543 | 0.927329 | 4.980480 | 0.0000 |
| Cash Flow | 0.331370 | 0.139899 | 2.368647 | 0.0212 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.088201 | Mean dependent var | | 6.813192 |
| Adjusted R-squared | 0.072480 | S.D. dependent var | | 0.307353 |
| S.E. of regression | 0.296005 | Akaike info criterion | | 0.435882 |
| Sum squared resid | 5.081890 | Schwarz criterion | | 0.505694 |
| Log likelihood | -11.07647 | Hannan-Quinn criter. | | 0.463190 |
| F-statistic | 5.610488 | Durbin-Watson stat | | 1.150083 |
| Prob(F-statistic) | 0.021205 | | | |

**Source Field Data, 2023**

Table 4.5 provides information on the effect of cash flow on financial performance as measured by EVA. Based on the model: $EVA_{it} = \alpha_{02} + \beta_{21}CF_{it} + \mu_{it} + \mathcal{E}it$ the results fitted on the model reveals that: Financial performance $EVAit = 4.619 + 0.3314CF_{it}$

The constant C in table 4.6185 shows that the value of financial performance (EVA) would change by 4.6185 if cash flow were held at zero. On the other hand, a unit change in cash flow would result in 33.13% changes in financial performance (EVA). Moreover, the (p) value of 0.0212, which is $p \leq 0.05$, implies statistically significant correlation between cash flows and financial performance (EVA). The fact that cash flow has significantly positive relationship with an impact on the financial performance of the NSE-listed insurance companies via its effects on EVA shows that it mediates the relationship between portfolio management and the financial performance of the NSE-listed insurance companies.

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Table 4.5 also shows the coefficient of determination value ($R2 = 0.09$) which indicates that cash flow contributes only 9% to financial performance.

These results mean that the amount of cash available in the insurance firms listed at NSE, significantly affects the value to be created in excess of the required return of the firms' shareholders. This then helps in predicting the future value creation abilities of the firm. Therefore, the results of the regression analysis and the equations derived from the original regression model led to the rejection of the null hypothesis ($H_{01}$) that: There is no relationship between cash flow and financial performance of insurance firms listed in Kenya; Instead, the alternative hypothesis that: There is a relationship between cash flow and financial performance of NSE-listed insurance firms in Kenya is accepted.

**Table 4.6: regression of cash flow and financial performance (Tobin Q)**

Dependent Variable: Tobin Q
Included observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| C | -7.879157 | 2.189870 | -3.598002 | 0.0007 |
| Cash Flow | 1.318765 | 0.330368 | 3.991807 | 0.0002 |

| | | | |
|---|---|---|---|
| R-squared | 0.215522 | Mean dependent var | 0.854957 |
| Adjusted R-squared | 0.201997 | S.D. dependent var | 0.782494 |
| S.E. of regression | 0.699010 | Akaike info criterion | 2.154461 |
| Sum squared resid | 28.33964 | Schwarz criterion | 2.224272 |
| Log likelihood | -62.63383 | Hannan-Quinn criter. | 2.181768 |
| F-statistic | 15.93452 | Durbin-Watson stat | 0.941570 |
| Prob(F-statistic) | 0.000187 | | |

**Source Field Data, 2023**

Table 4.6 presents results on the effect of cash flow on financial performance as measured by Tobin Q. Based on the model: $TQ_{it} = \alpha_{022}+\beta_{21}CF_{it}+\mu_{it} + \varepsilon it$ the results fitted on the model reveals that: Financial performance $TQit= -7.8791+1.3188CF_{it}$

Table 4.6 shows a constant (C) value of -7.879157, which implies the value of change in financial performance (Tobin Q) with cash flow held at zero. Moreover, unit change in cash flow yields 131.88% changes in financial performance (Tobin Q). The P value of 0.0002 and F-statistics value of 0.000187, $p \leq 0.05$, shows that the relationship between cash flow and financial performance (Tobin Q) is statistically significant. The findings of the study show that cash flow have positive and statistically significant relationship with financial

performance of NSE-listed insurance companies in Kenya. These findings mirror those by Amahalu & Ezechukwu (2017), who in examining the Effect of Cash Holding on Financial Performance of Selected Quoted Insurance Firms in Nigeria, found out that cash flow has a positive and statistically significant effect on financial performance (proxy by Return on Asset, Return on Equity and Tobin's Q) at 5% significant level.

Additionally, Rahman & Sharma (2020), who on analysing the effect of cash flow and financial performance in the industrial sector of Saudi Arabia: With special reference to Insurance and Manufacturing Sectors found out a positive and significant association between financial performance (ROA and ROE). Wanjiku (2019) on conducting a study to determine the effect of free cash flow on profitability of firms in the manufacturing firms listed in Nairobi Securities Exchange, revealed a positive and significant relationship between cash flows and financial performance, using ROE and ROA as a measure of financial performance. Moreover, Wahome (2017), conducted research on the Effect of free cash flows on investment by the insurance companies in Kenya. His results showed that there was a positive relationship between free cash flow and investment by insurance companies in Kenya and that firms with well-managed cash flows experience increases in their financial performance, while improper cash flow management leads to financial failure, hence negatively influence the financial performance of firms.

On the other hand, it contradicts that of Itan & Riana (2021), conducted a study that intended to examine the impact of cash flow statement on firm worth in Indonesia firms listed on the Indonesia Stock Exchange. The findings of this study displayed that the investing cash flow ratio and financing cash flow ratio had a negative significant influence on firm worth. Further in a study on influence of cash management on financial performance of companies in the Nigerian manufacturing sector, Odo, Nneka and Hkay (2022) had somehow different findings to the present study. The study established negative relationship between cash management on ROA and Tobin's Q. However, the negative correlation between cash management and returns on equity was insignificant. According to Odo, Nheka & Hkay (2022), extremely conservative cash management policies and practices explain the negative relationship between cash management and financial performance of companies in Nigeria's manufacturing industry. A key aspect or benefit of cash flow is their reflection of the value of an enterprise's cash and assets that are easily converted to cash.

The uses to which cash flow is put partly explain their relationship with or effect on financial performance. These uses include paying of current debts, future savings, planning for emergencies and meeting financial obligations or covenants. Moreover, notes Ndirangu (2014), cash equivalents such as marketable securities, treasury bills, money market accounts and certificates of deposit have slightly higher yields than do cash. Hence, they have stronger relationship with or effect on financial performance than do cash. Thu-Trang (2020) had findings similar to the present study's findings. in a study linking cash holdings and firm performance, Thu-Trang (2020) established that the proportion of cash holding positively affected the performance of listed Vietnamese firms between 2008 and 2018. Like Thu-Trang and Ndirangu, the present study supports the pecking order theory which notes that Internal financing is the cheapest and most convenient source of financing unlike external financing, like equity or debt financing where the firm must incur fees to obtain it, hence increasing financial performance. The study recommends that financial managers and investors make appropriate cash and cash equivalent decision such as cash holdings, to improve performance.

These results indicate that there is a very strong positive relationship between cash flow and financial performance (Tobin Q), thus implying that over valuation and undervaluation of securities prices are determined to a great extent by the cash and cash equivalents of insurance firms listed in the NSE. These regression analysis results led to the rejection of the null hypothesis ($H_{02}$) that: There is no significant relationship between cash flow and financial performance of insurance firms listed in Kenya; Instead, the alternative hypothesis that: There is a significant relationship between cash flow and financial performance of NSE-listed insurance companies in Kenya is accepted.

**4.5 Effect of portfolio management on the Cash flow of listed insurance firms in Kenya**

The third objective of the study sought to analyse the effect of Portfolio Management on the Cash flow of listed insurance firms at NSE, Kenya; The researcher conducted regression with cash flow as the dependent variable and portfolio management as independent variable. Table 4.8 presents results.

**Table 4.7: Effect of portfolio management on the Cash flow of listed insurance firms.**

Dependent Variable: Cash flow
Included observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 3.231314 | 0.741809 | 4.355989 | 0.0001 |
| Portfolio Size | 0.489543 | 0.104663 | 4.677340 | 0.0000 |
| Portfolio Asset Allocation | -0.261936 | 0.114903 | -2.279624 | 0.0265 |
| Portfolio Risk | -0.078835 | 0.064057 | -1.230701 | 0.2236 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.331833 | Mean dependent var | | 6.622952 |
| Adjusted R-squared | 0.296038 | S.D. dependent var | | 0.275461 |
| S.E. of regression | 0.231118 | Akaike info criterion | | -0.027435 |
| Sum squared resid | 2.991273 | Schwarz criterion | | 0.112188 |
| Log likelihood | 4.823055 | Hannan-Quinn criter. | | 0.027179 |
| F-statistic | 9.270455 | Durbin-Watson stat | | 1.134265 |
| Prob(F-statistic) | 0.000045 | | | |

**Source: Field Data, 2023**

Table 4.7 provides results on the effect of portfolio management on the cash flow of listed insurance firms.

Based on the model: $CF_{it} = \alpha_{03} + \beta_{31}X_{1it} + \beta_{32}X2_{it} + \beta_{33}X_{3it} + \mu_{it} + \varepsilon_{it}$, the results fitted on the model reveals that:     $CF_{it} = 3.2313 + 0.4895X_{1it} - 0.2619X2_{it} - 0.0788X_{3it}$

The results show significant positive effect between portfolio size and cash flow at 0.4895 at P value $0.0000 < 0.05$ positive and significant.  The C value shows that 3.2313 would be the predicted value of cash flow if the values of portfolio size, portfolio asset allocation and portfolio risk were held at zero.   Additionally, Table 4.7 shows a value of -0.2619 for portfolio asset allocation, which implies that a unit increase in portfolio asset allocation would result to 26.19% decrease in cash flow. The P value 0.0265 implies that there is a negative significant relationship between portfolio asset allocation and cash flow.  Further, Table 4.7 shows   coefficient value of -0.0788 for portfolio risk, implying that a unit increase in portfolio risk would yield 7.88% decrease in cash flow, and a P value of 0.2236   implying a negative but insignificant effect between portfolio risk and cash flow. Further, Table 4.7 presents the coefficient of determination value ($R^2 = 0.3312$ which shows that portfolio management contributes only 33.12% to cash flow. The findings robustly support the Agency Theory.  According to Fakhroni (2018) agency problem regarding the cash flow states that a

conflict of interest between the managers and shareholders is related to the firm's cash flow, and could lead to managers conducting expropriation behaviour by utilizing the firm's cash flow that would not result to proper portfolio management. Kargar & Ahmadi (2013) contributed to the theory by stating that more internal cash enables managers to avoid market control, in this situation, they do not need the shareholders' agreement and they are free to decide about the investments at their will which results to agency costs. The negative significant relationship confirms the relationship between portfolio asset allocations and cash flow. When insurance firms do their resource allocations to different investment vehicles, cash has to be used, thus increasing portfolio asset allocations will lower the cash flow levels of a firm.

Results in Table 4.7 are consistent with findings by Kantudu & Umar (2021) in examining the Free Cash Flow and Investment Efficiency of Listed Manufacturing Companies in Nigeria, the study established that there is a positive and robust relationship between free cash flow and overinvestment. Jiang (2016) in analysing the relationship between CEO's tenure and their firm's investment efficiency, his study revealed that over-investment increases with the firm's internally generated cash flow. Additionally, Krueger & Wrolstad's (2016) on determining Portfolio Allocation Using Free Cash Flows and Other Methods, found out a positive, statistically significant returns. Furthermore Nugroho (2020) in conducting an analysis of cash holding on investment cash flow sensitivity in Indonesia, found out that cash holding has a positive and significant effect on investment-cash flow sensitivity. Ghafoor & Islamabad's (2018) who in examining the Effect of Cash Flows on Investment studies, also showed a positive relationship between cash flows and overinvestment. Furthermore, Kwenda & Vengesai (2018) who conducted a study on the association between cash flow variability and investment behaviour of African listed firms and his findings revealed that cash flow volatility has a significant negative effect on investment even for companies with higher cash flows and unconstrained firms. The null hypothesis, $H_{03}$, which was formulated that there is no significant relationship between portfolio management and cash flow of listed insurance firms in Kenya, is therefore not supported by findings in the present study. It therefore implies that cash flows have a significant effect on portfolio management.

**4.6 Mediating Effect of cash flow on the Relationship between portfolio management and Financial Performance of Insurance Firms in the NSE**

The fourth objective sought to examine the mediating effect of cash flow on the relationship between portfolio management and financial performance of firms in the NSE. Therefore, a null hypothesis, H04 assuming that cash flow has no mediating effect on the relationship between portfolio management and financial performance of firms in the NSE was formulated.

The hierarchical regression method proposed by Judd & Kenny (1981), James & Brett (1984) and Baron & Kenny (1986) was followed to meet the objective. This was done in four steps first, regressing the dependent variable on the independent variable, second, regressing the mediator on the independent variable; third, regressing the dependent on the mediator, (Step three involved using the dependent variable as the criterion variable) in a regression equation and fourthly regressing the dependent variable on both the independent variable and the mediator. The first step in mediation is presented as part of objective one (Table 4.3). The second step is presented as part of objective three (Table 4.7), the third and fourth step is presented as follows. After the introduction of cash flows, table 4.8 presents the results.

**Table 4.8: Effect of cash flow on the relationship between portfolio management and financial performance of listed insurance firms**

Dependent Variable: EVA
Included observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 3.511335 | 0.937784 | 3.744288 | 0.0004 |
| Portfolio Size | 0.558792 | 0.134850 | 4.143801 | 0.0001 |
| Portfolio Asset Allocation | -0.431627 | 0.131235 | -3.288965 | 0.0018 |
| Port Risk | -0.137092 | 0.070927 | -1.932866 | 0.0584 |
| Cash Flow | | | | |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.370784 | Mean dependent var | | 6.813192 |
| Adjusted R-squared | 0.325023 | S.D. dependent var | | 0.307353 |
| S.E. of regression | 0.252512 | Akaike info criterion | | 0.164937 |
| Sum squared resid | 3.506919 | Schwarz criterion | | 0.339466 |
| Log likelihood | 0.051890 | Hannan-Quinn criter. | | 0.233205 |
| F-statistic | 8.102594 | Durbin-Watson stat | | 1.443758 |
| Prob(F-statistic) | 0.000033 | | | |

**Source: Field Data, 2023**

Based on the model: $EVA_{it} = \alpha_{05} + \beta_{51}X_{1it}(CF)^{-1}_{it} + \beta_{52}X2_{it}(CF)^{-1}_{it} + \beta_{53}X3_{it}(CF)^{-1}_{it} + \mu_i + \varepsilon_{it}$; the results fitted on the model reveals that: $EVA_{it} = 3.5113 + 0.5588X_{1it}(CF)^{-1}_{it} - 0.4316X2_{it}(CF)^{-1}_{it} - 0.1371X3_{it}(CF)^{-1}_{it}$

Table 4.8 reveals the results after introduction of cash flow into the original regression model, portfolio size, ($\beta = 0.5588$, $p = 0.0001$) and portfolio asset allocation $\beta = -0.4316$, $p = 0.0018$) still remain significant in influencing financial performance. However, portfolio risk becomes insignificant with, ($\beta = -0.1371$, $p = 0.0584$). These results imply that implementing policies or decisions that increase the portfolio size drives listed insurance companies to higher financial performance, while increasing portfolio asset allocation and portfolio risk, results in decreasing the financial performance of listed insurance firms. It is noteworthy that the introduction of cash flow changes the effect of the elements of portfolio management, highlighting the important role of cash flow on portfolio management. The changes in the Beta values of portfolio size and portfolio asset allocation, and the statistical significance imply the presence of partial mediation effect. Thus, portfolio size and portfolio asset allocation, through their influence on portfolio management, influence financial performance of the listed insurance companies in Kenya. On the other hand, introducing cash flow does not seem to affect the influence of portfolio risk on financial performance of the listed insurance companies in Kenya.

The hypothetical testing of the hypothesis for mediation effects were tested by the researcher by performing the following procedures. The first step established whether there was statistically significant effect between the independent variable (portfolio management) and dependent variable (financial performance -EVA), this path was found to be statistically significant. Secondly, the researcher established whether the independent variable (Portfolio management) statistically predicted the mediator (cashflow), this path was also found to be significant. Thirdly, the researcher conducted a regression of the mediator variable (cashflow) predicting for dependent variable (financial performance- EVA), in the presence of the independent variable, this path was found to be significant. Fourthly a multiple regression was conducted with the independent (portfolio management) and mediator variable (cash flow) predicting the dependent variable (financial performance-EVA), the path was found to be statistically significant. Fritz, Fairchild & Mackinnon (2010), recommended that for mediation process, the researcher should assess the statistical significance of the paths as described by Baron & Kenny, if both are statistically significant, there is evidence of mediation.

Additionally, according to the Portland state University (2023) once the first three steps are significant, step four is then tested. Some form of mediation is supported if the effect of the mediator variable remains significant after controlling for the independent variable. If the independent variable is no longer significant when the dependent variable is controlled, the fundings support full mediation, but if the independent variable is still significant, then the findings support partial mediation. Based on the results, the researcher therefore concludes that cash flow partially mediates the relationship between portfolio management and financial performance.

The Sobel-Goodman test was conducted to establish the significance of the mediation effect of portfolio size and portfolio asset allocation.
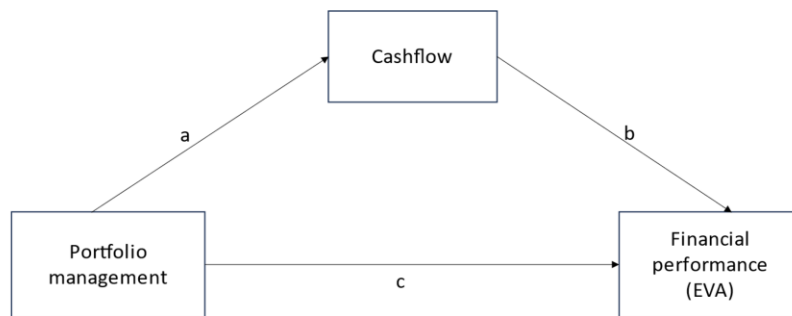


First, as proposed by Judd and Kenny (1981), the indirect effect from portfolio management onto financial performance (EVA) through cash flow was computed as:

Indirect effect ab= a**.**b

The formula used to test for the significance of the indirect effect, as proposed in the Sobel-Goodman test statistic (Z) was:

$$Z = (a \times b) / \sqrt{a^2 \times s_b^2 + b^2 \times s_a^2 + sa^2 \times s_b^2}$$

Where,

    a - is the coefficient of the independent variable predicting mediator

    b - is the coefficient of mediator variable predicting the dependent variable.

$S_{a}$ - is the standard error of independent variable predicting the mediator

$S_{b}$ - is the standard error of the mediator variable predicting the dependent variable

Using this formula, the Z value of the indirect effect of portfolio size, through cash flow was obtained as 2.0742. As asserted by Kenyanya & Ombok (2018), the null hypothesis of no significant mediating effect is rejected if the Z-values exceeds critical value of 1.96 at $p < 0.05$. Clearly, the Z-value is greater than the critical value of 1.96 at $p < 0.05$. Hence, it is concluded that the effects of portfolio size on financial performance through cash flow, is larger than would be expected by chance. Thus, the null hypothesis that cash flow has no significant mediating effect on the relationship between portfolio management and financial performance was rejected. However, the Z value of portfolio asset allocation through cash flows, was obtained as1.5725 which is less than the critical value of 1.96 at $p < 0.05$.  Hence, it is concluded that the effects of portfolio asset allocation on financial performance through cash flow, is smaller than would be expected by chance. Thus, the researcher failed to reject the null hypothesis that cash flow has no mediating effect on the relationship between portfolio management and financial performance.  A summary of the statistics from the Baron-Kenny steps are in table 4.9.

**Table 4.9: Summary for mediating role of cash flow on the relationship between portfolio management and financial performance of listed insurance companies**

| Variable | Step 1 | Step 2 | Step 3 | Type of effect | Partial Regression | Indirect effect | Z-value (Critical value = 1.96, p < 0.05) |
|---|---|---|---|---|---|---|---|
| Portfolio size | 0.5254*** | 0.4895*** | 0.5588*** | Partial | 0.5588*** | 0.1622 *** | 2.0742*** |
| Portfolio Asset Allocation | -0.4137*** | -0.2619*** | -0.4316*** | Partial | -0.4316*** | -0.0845*** | 1.5725*** |
| Portfolio Risk | -0.1317 | -0.0788 | -0.1371 | None | -0.1371 | - | - |

**Source: Field Data, 2023**
**Note:**
Step 1: Regression of the dependent variable on the independent variable
Step 2: Regression of the Mediator Variable on the Independent Variable
Step 3: Regression of Dependent Variable on both the Independent Variable and Mediator Variable. *** $p < 0.05$

Table 4.9 indicates that the four conditions as proposed by Baron and Kenny (1986) are fulfilled for only two elements of portfolio management; portfolio size and portfolio asset allocation. It is revealed that for every unit increase in portfolio size, there is a significant increase of about 16.22% in that proportion of financial performance, mediated by cash flow. however, for every unit increase in portfolio asset allocation, there is an insignificant decrease of 8.45% in that proportion of financial performance, mediated by cash flows. Therefore, cash flow partially mediates the relationship between portfolio size and portfolio asset allocation and firm financial performance implying that the two variables are necessary in influencing cash flow which will in turn influence financial performance. Since portfolio size and portfolio asset allocation has a significant effect on cash flow of the listed insurance firms, the mediation results presented seem to suggest that increasing the portfolio size and decreasing portfolio asset allocation could help increase cashflow levels among listed insurance firms in the NSE which in turn could increase firm financial performance of listed insurance firms at the NSE.

The null hypothesis, *H04* for this objective was that cash flow has no mediating effect on the relationship between portfolio management and financial performance of firms in the NSE. The outcomes from the analysed data indicate that the hypothesis is rejected for two elements of portfolio management; portfolio size and portfolio asset allocation, while we fail to reject the null hypothesis for portfolio risk. The results of the mediating role of cash flow in the present study for portfolio size and portfolio asset allocation are consistent with findings by Kimunduu et al. (2017) who found that cash holding has a significant mediating effect on the relationship between financial Performance and dividend Policy. This results however contradicts that of Mwangi (2014) whose results indicated that internal cash flow available has no mediating effect on the relationship between financing decisions and non-financial performance of listed firms at the NSE.

# CHAPTER FIVE

## SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Introduction

This chapter summarizes the findings and conclusions of the study and outlines a few research, knowledge and policy recommendations based on the findings.

### 5.2 Summary of Findings

The first objective of the study was to establish the effect of portfolio management on the financial performance of listed insurance firms. Portfolio management was operationalized by portfolio size, portfolio asset allocation and portfolio risk. A positive but significant effect was established between portfolio size and financial performance operationalized by EVA and Tobin Q. Additionally, the study established a negative and significant effect of portfolio asset allocation on financial performance (EVA) but positive and insignificant effect on financial performance (Tobin Q). Negative significant effect was established to exist between portfolio risk and financial performance (both EVA and Tobin Q) for the insurance firms listed at the NSE.

For the second objective of the study, which was to analyse effect of cash flow on financial performance, the present study established a positive and significant effect between cash flow and financial performance of NSE-listed insurance companies in Kenya.

The third objective of the study which sought to analyse the relationship between portfolio management and cash flow of listed insurance firms in Kenya determined a positive and significant effect between portfolio size and cash flow, a negative and significant effect between portfolio asset allocation and cash flow and a negative but insignificant effect between portfolio risk and financial performance. This was a follow up of portfolio management operationalized by portfolio size, portfolio asset allocation and portfolio risk.

The last objective was to evaluate the mediating effect of cash flow on the relationship between portfolio management and financial performance of insurance firms listed in Kenya. The results based on the objective reveal that there is a partial mediating effect for the two elements of portfolio management; portfolio size and portfolio asset allocation on the financial performance of insurance firms listed at the NSE. However, cash flow has no mediating effect between portfolio risk and financial performance for firms listed at the NSE.

## 5.3 Conclusion

Based on the summary of findings presented, four conclusions can be drawn. The first conclusion based on the first objective is that portfolio size, portfolio asset allocation and portfolio risk are important predictors of firm financial performance. This confirms the Modern Portfolio Theory, which allows to determine the specific mix of investments generating the highest return for a given level of risk.

Evidence from the second objective leads us to conclude that cash flow has a strong significant effect on the financial performance as measured by both EVA and Tobin Q which supports the Pecking Order Theory which notes that Internal financing is the cheapest and most convenient source of financing unlike external financing, like equity or debt financing where the firm must incur fees to obtain it, hence increasing financial performance.

In the third objective, its evidenced that there is a positive and negative significant effect between portfolio management elements and cash flow. These findings also robustly support the Agency Theory. The agency problem regarding the cash flow states that a conflict of interest between the managers and shareholders is related to the firm's cash flow, and could lead to managers conducting expropriation behaviour by utilizing the firm's cash flow that would not result to proper portfolio management.

Since it was found that cash flows partially mediate the relationship between portfolio size and portfolio asset allocation and financial performance, it is concluded that both portfolio size and portfolio asset allocation are important portfolio management elements since they influence the levels of financial performance through their influence on cash flows. The Modern Portfolio Theory therefore is confirmed for portfolio size and portfolio asset allocation. Implying that cash flow mediates the relationship between portfolio management and financial performance of listed insurance firms at the NSE. Additionally, insurance firms should increase portfolio size in order to increase their financial performance and that portfolio asset allocation can only be done up to an optimal point beyond which will result to a decrease in financial performance.

## 5.4 Recommendations

Based on the conclusions the following recommendations can be made resulting from the findings of the study. Based on the first conclusion, it is recommended that listed insurance firms in the NSE increase the level of portfolio management by giving attention on its elements; portfolio size, portfolio asset allocation and portfolio risk which are important

predictors of firm's financial performance. The firms should also determine the specific mix of investments generating the highest return for a given level of risk which will lead to increased profitability.

From the second conclusion, it is recommended that the insurance listed firms in the NSE look more into having cash holdings especially from internal financing rather than external financing in order to generate higher returns that increase financial performance.

Based on the summary from the third conclusion, it is recommended that the listed insurance firms in the NSE should allocate resources in viable projects that will generate more cash that increases their financial performance.  It is also apparent from the study that multiple other factors may affect the financial performance and sustainability of insurance firms in Kenya. Therefore, insurance companies should analyse internal and external environments and make the necessary adjustments on operations and decisions.

The fourth recommendation which is based on the fourth conclusion is that insurance firms listed at the Nairobi Securities Exchange should seek to increase portfolio size which will act as a diversification strategy which partially but significantly influences cash flows which in turn influence the firm's financial performance. Additionally, the firms should seek to decrease portfolio asset allocations in order to increase their returns that will help increase cash flows, hence increasing firm's financial performance.

## 5.5 Limitations of the Study

The present study's findings, conclusions and recommendations may greatly contribute to the existing empirical, and theoretical works in the fields of corporate finance, cash flows and firm financial performance. However, there are several limitations that may limit its general applicability, which can be identify as follows:

First, the study was restricted to listed firms only.  This may have compromised the general applicability of the findings to the Kenyan and global business environments. Second, the study was limited to the three elements of portfolio management only; portfolio size, portfolio asset allocation and portfolio risk. This isolates other equally important portfolio management elements such as portfolio rebalancing and portfolio diversification, and this indicates that the wholeness of portfolio management influence on financial performance was not analyzed. Third, the study depended on only secondary data that was derived from the firms' individual financial statements listed with the NSE, IRA and NSE sites. Even though

the data is prepared by following the GAAPs, and ISA, different firms use different accounting policies.  However, data in the study was transformed by use of log base 10 to remove this limitation.

**5.6 Suggestions for Further Research**

Following the study's limitations, the following suggestions for further research are suggested.

First, future researchers to consider using other variables of portfolio management so that their effect on financial performance can be investigated.

Second, future studies can be designed to include some firms that are not listed at the Nairobi Securities Exchange since they play a major role in the economic growth of Kenya.

Third, the future studies can consider using both primary and secondary data.

Forth, future studies can consider using booth strapping in testing the level of significance on the indirect effects in the mediation analysis process.

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# APPENDICES

## APPENDIX I: AUTHORITY TO CONDUCT RESEARCH

**REPUBLIC OF KENYA**

**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No:  **967162**

Date of Issue: **05/April/2023**

### RESEARCH LICENSE

This is to Certify that Ms.. CELESTINE Nafula WANDABUSI of  Maseno University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Mediating effect of cash flows on the relationship between portfolio management and financial performance of insurance firms listed in the Nairobi Stock Exchange, Kenya for the period ending : 05/April/2024.

License No: **NACOSTI/P/23/24833**

**967162**

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document,
Scan the QR Code using QR scanner application.

**See overleaf for conditions**

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**APPENDIX II: APPROVAL BY THE UNIVERSITY SCIENTIFIC AND ETHICS REVIEW**



# MASENO UNIVERSITY SCIENTIFIC AND ETHICS REVIEW COMMITTEE

| | |
|---|---|
| Tel: +254 057 351 622   Ext: 3050 | Private Bag – 40105, Maseno, Kenya |
| Fax: +254 057 351 221 | Email: muerc-secretariate@maseno.ac.ke |

**REF**: MSU/DRPI/MUSERC/01224/23                    **Date**: 26th May, 2023

**TO**:    Celestine Wandabusi
PHD/BE/00001/2020
Department of Accounting and Finance
School of Business and Economics
Maseno University
P. O. Box, Private Bag, Maseno, Kenya

Dear Sir/Madam,

**RE: Mediating Effect of Cash Flows on the Relationship between Portfolio Management and Financial Performance of Insurance Firms Listed in the Nairobi Stock Exchange, Kenya**

This is to inform you that **Maseno University Scientific and Ethics Review Committee (MUSERC)** has reviewed and approved your above research proposal. Your application approval number is MUSERC/01224/23. The approval period is 26th May, 2023 – 25th May, 2024.

This approval is subject to compliance with the following requirements;
   i.    Only approved documents including (informed consents, study instruments, MTA) will be used.
   ii.   All changes including (amendments, deviations, and violations) are submitted for review and approval by Maseno University Scientific and Ethics Review Committee (MUSERC).
   iii.  Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Maseno University Scientific and Ethics Review Committee (MUSERC) within 24 hours of notification.
   iv.   Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Maseno University Scientific and Ethics Review Committee (MUSERC) within 24 hours.
   v.    Clearance for export of biological specimens must be obtained from relevant institutions.
   vi.   Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
   vii.  Submission of an executive summary report within 90 days upon completion of the study to Maseno University Scientific and Ethics Review Committee (MUSERC).

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

Prof. Philip O. Owuor, PhD, FAAS, FKNAS
**Chairman, MUSERC**

**MASENO UNIVERSITY IS ISO   9001 CERTIFIED**

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# APPENDIX III: APPROVAL BY SCHOOL OF GRADUATE STUDIES

## MASENO UNIVERSITY
### SCHOOL OF GRADUATE STUDIES
#### Office of the Dean

**Our Ref:** PHD/BE/00001/2020

Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 21st March, 2023

### TO WHOM IT MAY CONCERN

**RE: PROPOSAL APPROVAL FOR CELESTINE WANDABUSI—PHD/BE/00001/2020**

The above named is registered in the programme of Doctor of Philosophy in Finance in the School of Business and Economics, Maseno University. This is to confirm that her research proposal titled **"Mediating effect of cash flows on the relationship between portfolio management and financial performance of insurance firms listed in the Nairobi stock exchange, Kenya"** has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.
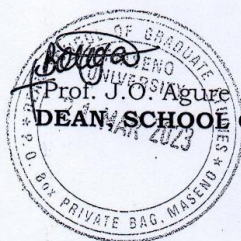
Prof. J.O. Agure
**DEAN, SCHOOL OF GRADUATE STUDIES**

*Maseno University*          *ISO 9001:2008 Certified*

**APPENDIX IV: LISTED INSURANCE COMPANIES IN THE NSE AS AT 31ST DECEMBER 2022**

| INSURANCE FIRMS | LISTED DEC 2011 | INCLUDED |
|---|---|---|
| Jubilee Holdings Ltd | ✓ | ✓ |
| San lam | ✓ | ✓ |
| Kenya Re | ✓ | ✓ |
| Liberty | ✓ | ✓ |
| Britam | ✓ | ✓ |
| CIC Group | ✓ | ✓ |

**Source: NSE, 2023**

**APPENDIX V: DATA COLLECTION FORM**

**NAME OF FIRM: ………………………………….**

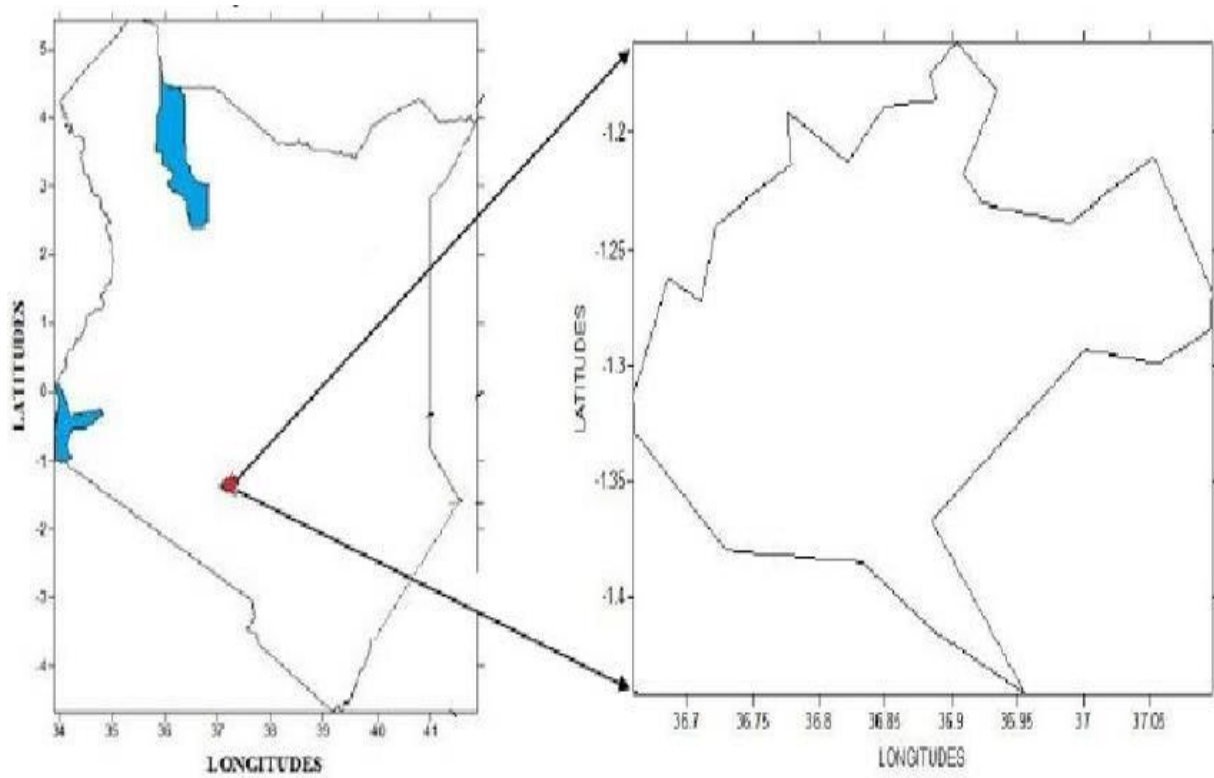| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Portfolio Management** | | | | | | | | | | |
| Value of stocks (Sum of the investment vehicles) | | | | | | | | | | |
| Proportion of total investment | | | | | | | | | | |
| Variance from returns | | | | | | | | | | |
| **Economic Value Added** | | | | | | | | | | |
| Net operating income after tax | | | | | | | | | | |
| Finance charge | | | | | | | | | | |
| **Tobin Q** | | | | | | | | | | |
| Equity Market value of a firm | | | | | | | | | | |
| Equity book value of a firm | | | | | | | | | | |
| Equity market value of a firm/Equity book value of a firm | | | | | | | | | | |
| **Cash flow** | | | | | | | | | | |
| Cash at hand and bank | | | | | | | | | | |
| Cash Equivalents | | | | | | | | | | |

**Data collection forms for different insurance companies listed on Nairobi securities exchange**

**APPENDIX VI: DATA ON SELECTED VARIABLES**

| Name | Firms | Year | Portfolio size | Portfolio asset allocation | Port risk | Cash flow | EVA | Tobin Q |
|------|-------|------|------|------|------|------|------|------|
| CIC | 1 | 2011 | 6.9187 | 0.3234 | 1.0001 | 6.4655 | 6.5969 | 0.8239 |
| | 1 | 2012 | 7.0304 | 0.7623 | 1.2426 | 6.6005 | 6.6895 | 0.8239 |
| | 1 | 2013 | 7.0953 | 0.7310 | 0.0320 | 6.5799 | 6.7776 | 0.6990 |
| | 1 | 2014 | 7.2513 | 0.7529 | 0.3773 | 6.3878 | 6.8955 | 0.3979 |
| | 1 | 2015 | 7.2167 | 0.6609 | 0.4623 | 6.6597 | 6.8414 | 0.8721 |
| | 1 | 2016 | 7.2408 | 0.6490 | 0.2654 | 6.3084 | 6.7576 | 1.0583 |
| | 1 | 2017 | 7.1943 | 0.5128 | 0.3302 | 6.2682 | 6.8660 | 1.0674 |
| | 1 | 2018 | 7.2379 | 0.5245 | 0.1580 | 6.6358 | 6.2248 | 1.0812 |
| | 1 | 2019 | 7.0499 | 0.3177 | 0.1039 | 6.4590 | 6.9426 | 0.5637 |
| | 1 | 2020 | 7.1437 | 0.3589 | 0.2163 | 6.3158 | 6.9358 | 0.8863 |
| Liberty | 2 | 2011 | 7.1830 | 0.6248 | 0.2024 | 6.4313 | 6.5341 | 1.0001 |
| | 2 | 2012 | 7.1863 | 0.5606 | 0.5692 | 6.7387 | 6.6119 | 0.8451 |
| | 2 | 2013 | 7.3015 | 0.9872 | 0.3929 | 6.5279 | 6.2728 | 1.0414 |
| | 2 | 2014 | 7.3513 | 0.9831 | 0.8899 | 6.6191 | 6.3441 | 1.2788 |
| | 2 | 2015 | 7.3030 | 0.5818 | 0.8633 | 6.8298 | 5.5661 | 1.3617 |
| | 2 | 2016 | 7.3508 | 0.6423 | 1.4499 | 6.6934 | 6.6283 | 0.1761 |
| | 2 | 2017 | 7.4747 | 1.2041 | 1.2145 | 6.1603 | 6.4644 | 1.0792 |
| | 2 | 2018 | 7.4855 | 1.2904 | 0.0512 | 6.4295 | 6.3409 | 1.1139 |
| | 2 | 2019 | 7.4053 | 0.6653 | 1.0104 | 6.6526 | 6.9061 | 1.0001 |
| | 2 | 2020 | 7.4025 | 0.6428 | 0.1034 | 6.7586 | 6.8381 | 0.9031 |
| | 3 | 2011 | 6.9526 | 0.3497 | 1.6789 | 6.3701 | 6.2704 | 0.3010 |
| Britam | 3 | 2012 | 7.0312 | 0.2999 | 0.2647 | 6.4606 | 6.8807 | 0.3010 |
| | 3 | 2013 | 7.1286 | 0.2867 | 0.7541 | 6.1517 | 6.9835 | 0.0458 |
| | 3 | 2014 | 7.3591 | 0.3156 | 0.7609 | 6.2429 | 6.9530 | 0.3617 |
| | 3 | 2015 | 7.1350 | 0.1758 | 0.7015 | 6.1320 | 6.9727 | 0.3222 |
| | 3 | 2016 | 7.5299 | 0.4050 | 0.9175 | 6.7758 | 7.0288 | 0.0791 |
| | 3 | 2017 | 7.6216 | 0.4225 | 0.3053 | 6.2253 | 7.1565 | 0.1139 |
| | 3 | 2018 | 7.6797 | 0.4615 | 0.1817 | 6.8434 | 7.1040 | 0.1139 |
| | 3 | 2019 | 7.6924 | 0.3931 | 0.3029 | 6.8884 | 7.2708 | 0.0971 |
| | 3 | 2020 | 7.5976 | 0.2890 | 0.2960 | 6.8750 | 7.0678 | 0.0969 |
| Sanlam | 4 | 2011 | 6.5288 | 0.2934 | 0.6169 | 6.4830 | 6.8380 | 0.5563 |
| | 4 | 2012 | 5.9984 | 0.0605 | 0.0009 | 6.6487 | 6.4895 | 0.6232 |
| | 4 | 2013 | 7.0959 | 0.5894 | 0.1594 | 6.6710 | 6.8617 | 0.9031 |
| | 4 | 2014 | 7.0757 | 0.4839 | 0.0719 | 6.6000 | 6.8267 | 0.9823 |
| | 4 | 2015 | 7.3920 | 0.9096 | 0.3775 | 6.5929 | 6.7268 | 0.1644 |
| | 4 | 2016 | 7.4525 | 0.9967 | 1.1334 | 6.3975 | 6.6975 | 0.9138 |
| | 4 | 2017 | 7.5743 | 1.2596 | 1.1066 | 6.4050 | 6.6971 | 0.7324 |
| | 4 | 2018 | 7.6012 | 1.3716 | 0.8944 | 6.4280 | 6.4944 | 0.6990 |
| | 4 | 2019 | 7.6283 | 1.4611 | 0.6583 | 6.0775 | 6.7616 | 0.6021 |
| | 4 | 2020 | 7.6828 | 1.5283 | 0.1429 | 6.3317 | 6.8011 | 0.5315 |
| Kenya Re | 5 | 2011 | 7.2041 | 0.8384 | 2.5902 | 6.5863 | 6.6059 | 0.1675 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 5 | 2012 | 7.3044 | 0.8472 | 1.1488 | 6.6492 | 6.8324 | 0.0362 |
| | 5 | 2013 | 7.3787 | 0.8475 | 0.3799 | 6.6450 | 6.8774 | 0.2041 |
| | 5 | 2014 | 7.4469 | 0.8697 | 0.8438 | 6.8282 | 6.9924 | 0.3010 |
| | 5 | 2015 | 7.4843 | 0.8484 | 0.1027 | 6.7977 | 6.8637 | 0.3010 |
| | 5 | 2016 | 7.5078 | 0.8363 | 0.1540 | 6.6576 | 7.0312 | 0.3096 |
| | 5 | 2017 | 7.5495 | 0.8294 | 0.3903 | 6.5606 | 7.0661 | 0.3096 |
| | 5 | 2018 | 7.5724 | 0.8421 | 0.5365 | 6.7632 | 7.0614 | 0.2355 |
| | 5 | 2019 | 7.6341 | 0.8766 | 0.1984 | 6.8675 | 7.1321 | 0.1072 |
| | 5 | 2020 | 7.6518 | 0.8712 | 0.2885 | 7.0318 | 7.1761 | 0.0177 |
| Jubilee | 6 | 2011 | 7.4533 | 0.7465 | 0.1064 | 6.5526 | 6.8185 | 2.1139 |
| | 6 | 2012 | 7.5505 | 0.7517 | 0.2222 | 6.7795 | 6.9262 | 2.1238 |
| | 6 | 2013 | 7.6536 | 0.7364 | 0.0628 | 6.8284 | 7.0352 | 0.3117 |
| | 6 | 2014 | 7.7622 | 0.7763 | 0.2532 | 7.0845 | 7.1714 | 2.4874 |
| | 6 | 2015 | 7.8126 | 0.7884 | 0.3377 | 7.0371 | 7.0950 | 2.6580 |
| | 6 | 2016 | 7.8602 | 0.8002 | 0.3281 | 6.9205 | 6.7927 | 2.6314 |
| | 6 | 2017 | 7.9259 | 0.8032 | 0.3220 | 7.1702 | 6.6156 | 2.6532 |
| | 6 | 2018 | 7.9775 | 0.8316 | 0.0387 | 7.2352 | 7.2117 | 2.6857 |
| | 6 | 2019 | 8.0015 | 0.7714 | 0.0249 | 7.1767 | 7.2826 | 2.5877 |
| | 6 | 2020 | 8.0653 | 0.7967 | 0.3353 | 7.0836 | 7.2874 | 2.4393 |

**APPENDIX VII: MAP OF STUDY AREA (NAIROBI)**



**Source: Google map, 2023**