Effect of Portfolio Diversification on Financial Performance of Commercial Banks Listed At NSE, Kenya

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Abstract: **The purpose of this study therefore was to establish the effect of portfolio diversification on financial performance of NSE listed commercial banks in Kenya. The study was anchored in the modern portfolio theory, capital asset pricing model, arbitrage pricing theory and information asymmetry theory. The study used a descriptive research design and targets commercial banks listed at the Nairobi Securities Exchange. A census of all the 11 banks was conducted. The study used secondary data sourced from participating banks financial statements, NSE statements and CBK annual supervision reports. Descriptive methods such as frequency distribution, percentages mean, and standard deviation were used to analyze data. Regression analysis was employed to find out the relationship between variables. The Statistical Package for Statistical sciences (SPSS) version 23 was used to analyze data with the aid of a computer. Presentation of the findings will be done through tables and graphs. The study found that there was a strong positive correlation ($r=0.872$) between investment portfolios and financial performance of commercial banks. According to the findings, 76% of financial performance of commercial banks could be attributed to the investment portfolios. Analysis of variances showed that invest portfolios were significant ($f_{(4,6)} =4.760$, $p=0.045$) signifying a significant relationship between investment portfolios and financial performance of commercial banks. Investment in government securities ($p=0.018$), investment in real estate ($p=0.048$) and investment in loans ($p=0.039$) were all significant at 95% confidence level. Beta values showed that investment in loans ($\beta =1.085$) was the most affecting followed by investment in real estate ($\beta =0.867$), investment in securities ($\beta =0.712$) and investment in stock ($\beta =-0.169$). The study concluded that portfolio diversification enhances bank performance. Investments in government securities, real estate and loans lead to increased bank performance. However investment in stocks negatively affects bank performance. The study recommended that banks should vigorously pursue portfolio diversification. The study recommended that banks should increase investments in government securities, real estate and loans. However, investments in stocks should be re-evaluated as they were found to negatively affect bank performance.**

Keywords: **Portfolio, Portfolio Diversification and Financial Performance.**

I. INTRODUCTION

A bank is a financial institution that provides banking and other financial services to their customers. DeYoung and Rice (2004) define a bank as a lawful organization, which accepts deposits that can be withdrawn on demand. It also lends money to individuals and business houses that need it. Driga (2006) indicates that a bank can be associated with a financial service conglomerate able to provide basic financial services and properly function within the economic, political, legal and international environment that determines its profit and expansion opportunities, interest rates, exchange rates and the particular resources a bank need. Banks are important in the economy because they provide the security to the savings of customers, control the supply of money and credit and encourage public confidence in the working of the financial system, increase savings speedily and efficiently. Banks also avoid focus of financial powers in the hands of a few individuals and institutions. They set equal norms and conditions to all types of customers.

Drigă and Dura (2010) indicate that banks as financial intermediaries are expected to provide basic financial services for everyone. Banking, considered as mirror of economic growth, can contribute to economic development in at least two

ways: directly, by increasing balance sheet items, and indirectly, through financing. Banks also create jobs for their communities and generate returns for their stockholders, thus contributing to the economic growth of local communities and the nation as a whole. A country's banking sector is tightly integrated into the overall political, economic and institutional setting. Biggar and Heimler (2005) indicate that regulation originates from microeconomic concerns over the ability of bank creditors (depositors) to monitor the risks originating on the lending side and from micro and macroeconomic concerns over the stability of the banking system in the case of a bank crisis. Financial institutions are therefore regulated on issues like market entry, deposit insurance and reserve requirements. Drigă and Dura (2010) indicate that the elements of economic environment is the totality of economic factors, such as employment, income, inflation, interest rates, productivity and wealth that influence the buying behaviour of consumers and institutions. Banks make money by lending and charging interest. The money banks lend, comes primarily from deposits in checking and savings accounts, certificates of deposit, money market accounts, and other deposit accounts that consumers and businesses set up with the bank. According to Heffernan (2005) these deposits often earn interest for their owners, and accounts that offer checking, provide owners with an easy method for making payments safely without using cash. Apart from lending, DeYoung and Rice (2004) indicate that banks make money from transaction services like checking and cash management; safekeeping services like insured deposit accounts and safety deposit boxes; investment services like trust accounts and long-run certificates of deposit (CDs); and insurance services like annuity contracts. Generally, banks have two income streams namely interest based income and non-interest income. Kiweu (2012) classifies interest income into: interest on loans and advances, interest from government securities interest from deposits and placement with other institutions and other interest income while fee-based income comprises fees and commission on loans, trade income, foreign exchange trading income and other income (including dividend income). Conventional industry wisdom predicts that combining different types of activities –non-interest earning and interest-earning assets– and rebalancing bank income away from interest income and toward non-interest activities may increase return and diversify risks, therefore boosting performance (Gamra & Philon, 1997).

1. Statement of the Problem

Proper investment diversification, requiring a sufficient number of different assets, is intended to reduce the risk inherent in particular securities. According to Belguith and Bellouma (2017), the positive link between portfolio diversification and bank performance is due to the fact that as the bank expands its lending activities to new economic industries, the quality of its credit portfolio will increase with the decline in the probability of default. The lack of diversity is potentially more costly for society as it implies that similar institutions will more likely face problems at the same time (Wagner 2010). The Kenyan banking Industry has been steadily shifting away from concentrating on traditional activities such as loan - making, and diversifying into non - traditional activities that generate fee income, service charges or trading revenue, among others. Some of these non traditional activities of income generation that many banks have shifted to include installation of ATM services at various retail outlets, money transfer services, internet banking and partnerships for agency services (Nyangweso, 2012). Although commercial banks have embarked on diversification strategies, available data shows that income from commercial banks investments has been decreasing. Data from Central Bank of Kenya (2017) indicates that return on Assets decreased to 2.6 percent in September 2017 from 2.8 percent in June 2017. In addition, return on Equity decreased to 20.6 percent in September 2017 from 22.3 percent in June 2016. There exists a host of studies conducted to assess the determinants of financial performance of commercial banks. Majority of the studies however have focused on loans portfolio and ignored the investment portfolio. Inconsistencies exist among available studies where some find significant relationships between diversification and performance while others finding no significant relationships. In addition, some studies cite real estate as the most viable non-interest income while others identify government securities. Even though current evidence is fairly accurate on the nature of diversification in commercial banks, only tentative conclusions can be drawn on its relationship with performance as previous research has been fraught with methodological problems, generalizability constraints, and mixed conclusions. Based on these limitations, the findings from most of the reviewed studies can only be considered suggestive rather than confirmatory. This study therefore sought to establish the effect of portfolio diversification on financial performance of NSE listed commercial banks in Kenya.

2. Objective of the Study

i. To establish the effect of portfolio diversification on financial performance of NSE listed commercial banks in Kenya. Specific objectives included:

ii.   To assess the effect of investment in government securities on financial performance of NSE listed commercial banks in Kenya.

iii. To establish the effect of investment in stocks on financial performance of NSE listed commercial banks in Kenya.

iv.   To evaluate the effect of real estate investment on financial performance of NSE listed commercial banks in Kenya.

v.   To determine the effect of loans on financial performance of NSE listed commercial banks in Kenya.

3.   Research Questions

In conducting the study the following research questions were answered

i.   What is the effect of investment in government securities on financial performance of NSE listed commercial banks in Kenya?

ii.   What is the effect of investment in stocks on financial performance of NSE listed commercial banks in Kenya?

iii. What is the effect of real estate investment on financial performance of NSE listed commercial banks in Kenya?

iv.   What is the effect of loans on financial performance of NSE listed commercial banks in Kenya?

II.   LITERATURE REVIEW

1.   Theoretical Review

Markowitz's Modern Portfolio Theory (MPT): Modern Portfolio Theory (MPT) also called "portfolio theory" or "portfolio management Theory was advanced by Harry Markowitz in 1952. He defines portifolio is a set/collection of securities. This theory is an investing model where the investor attempts to take minimal level of market risk to capture maximum-level returns for a given portfolio of investments (Bodie, Kane & Marcus, 2004). The model was Developed by the Nobel laureate (1990) US economist Harry Markovitz. It explains how to find the best possible diversification. If investors are presented with two portfolios of equal value that offer the same expected return, MPT explains how the investor will prefer and should select the less risky one (Saunders & Cornett, 2006). Asset allocation, diversification, and rebalancing are all part of a sound investment strategy built upon the time-tested economic concepts of Modern Portfolio Theory. MPT is a mathematical formulation of the concept of diversification in investing, with the aim of selecting a collection of investment assets that has collectively lower risk than any individual asset (Cohen & Natoli, 2003). That this is possible can be seen intuitively because different types of assets often change in value in opposite ways. It quantifies the benefits of diversification using the notion of covariance or correlation. The authors show how an efficient frontier can be determined from the optimization of returns, volatilities, and correlations of a set of investments and portfolio constraints (Landi & Venturelli, 2012). Even though Modern Portfolio Theory is widely accepted and applied by investment institutions, it has been criticized as well. Particularly, the representatives of behavioral economics, behavioral finance challenge the MPT assumptions on investor rationality and return expectations. Some have questioned MPT's definition of risk and questions are raised whether volatility, measured as variance or standard deviation is a good measure for risk. It has been pointed out that the assumption of variance being constant over time isn't always true. The option market is a good example, where option traders do not quote the same volatility every day (Morien, 2011). Another point of criticism lies in the assumption that investors are rational and risk adverse. Critics point out that investors are emotionally driven (Maehl, 2008). This can lead to investors making irrational financial decisions based on rumors and hunches (Morien, 2005).

Arbitrage Pricing Theory (APT): Arbitrage pricing theory is an interesting alternative to the CAPM and MPT. Since its introduction by Ross (1976), it has been discussed, evaluated, and tested. It is a multifactor mathematical model used to describe the relation between the risk and expected return of securities in financial markets. Focusing on capital asset returns governed by a factor structure, the Arbitrage Pricing Theory (APT) is a one-period model, in which preclusion of arbitrage over static portfolios of these assets leads to a linear relation between the expected return and its covariance with the factors (Huberman & Wang, 2008). In the arbitrage pricing theory assets' expected returns are shown to be approximately linear in the factor loadings of the process generating returns. It predicts a relationship between the returns of a portfolio and the returns of a single asset through a linear combination of many independent macroeconomic variables (Burmeister *et al.* 1986). Goetzmann (2010) indicates that to achieve "arbitrage" pricing, we must assume that there exist some important systematic risks driving security returns in a linear fashion and investors perceive these risks and can estimate the sensitivity of the security to them. We must also assume that some investors are risk-takers in the

economy. The APT has a number of benefits. First, it is not as a restrictive as the CAPM in its requirement about individual portfolios. It is also less restrictive with respect to the information structure it allows. It is a revolutionary model because it allows the user to adapt the model to the security being analyzed (Javed & Aziz, 2005). APT is also very useful for building portfolios because it allows managers to test whether their portfolios are exposed to certain factors (Manapon, 2007). This theory is therefore relevant in this study which seeks to establish the effect of investment in stocks on financial performance of NSE listed commercial banks in Kenya. Arbitrage pricing theory offers analysts and investors a multi-factor pricing model for securities based on the relationship between a financial asset's expected return and its risks (Ahmet, 2010). However, the model has following limitations: there is no specific factor in APT model, at least ex ante and the model will not prevail if there is no opportunity of arbitrage (Mauri, 2006). In addition, APT makes no statements about the size or the sign of the F's and gives no direction as to the choice of the factors themselves or even how many factors might be required.

2. Empirical Review

Investment in Government Securities: Muriithi (2013) conducted a study to assess how government securities affects financial performance of commercial banks in Kenya. Objectives of the study were to determine the effect of foreign exchange trading, fees and commissions on loans and advances, government securities and sale and lease of assets owned by the banks on the five most profitable commercial banks financial performance. It was established that banks prefer government securities (Government bonds and Treasury bills) since they have low involved risk. This research adopted an exploratory design where the population of interest was drawn from the five most profitable commercial banks in Kenya; KCB, Equity Bank, Barclays, Standard Chartered and Cooperative Bank. Further, it was established that unlike loans which might turn to be non-performing, government securities' returns are guaranteed. Rop *et al.* (2016) also sought to establish the effect of government securities on the financial performance of commercial banks in Kenya. The specific objectives were to investigate the effect of insurance investment on the financial performance of commercial banks in Kenya, establish the effect of government securities on the financial performance of commercial banks in Kenya, determine the effect of real estate investment on the financial performance of commercial banks in Kenya and to establish the effect of buying shares on the financial performance of commercial banks in Kenya. The average capital structure for banks in the banking sector was 64.040 with a standard deviation of 3.87239. The study concluded that there was a significant difference in government securities in different banks. This implies that the government securities in individual bank vary and is determines the financial performance for Individual Banks in the financial years.

A study by Erel, Nadauld and Stulz (2011) estimated holdings of highly-rated tranches of mortgage securitizations of American deposit-taking banks ahead of the credit crisis and evaluated hypotheses that had been advanced to explain these holdings. Using a sample of 231 publicly-traded U.S. bank holding companies, they found that holdings of highly-rated tranches were economically trivial for the typical bank, but banks with greater holdings performed more poorly during the crisis. Though univariate comparisons show that banks with large trading books had greater holdings, the holdings of highly-rated tranches are not higher for banks with large trading books in regressions that control for bank size. Affinito *et al.* (2016) analyzed the main microeconomic determinants of Italian banks' purchases of sovereign debt securities from 2007 to 2013, with special reference to their balance-sheet conditions. The analysis distinguished two phases of the crisis – the period following the Lehman Brothers collapse and the sovereign debt crisis – and different types of banks (large and small). Results showed that banks' specific characteristics and balance-sheet features do matter and that banks use government securities purchases to support their financial and economic conditions. The influence of the balance-sheet conditions differs according to the phase of the crisis and the type of bank. Abbassi *et al.* (2016) analyzed securities trading by banks during the crisis and the associated spillovers to the supply of credit. They used a proprietary data set that has the investments of banks at the security level for 2005–2012 in conjunction with the credit register from Germany. The study found that banks use central bank liquidity and government subsidies like public recapitalization and implicit guarantees mainly to support trading of securities. The quantitative effects were largest for trading-expertise banks with higher capital and in securities with lower rating and long-term maturity. In fact, there are no differential effects for triple-A rated securities.

Investment in Stocks: Abbassi *et al.* (2016) analyzed securities trading by banks during the crisis and the associated spillovers to the supply of credit. They used a proprietary data set that has the investments of banks at the security level for 2005–2012 in conjunction with the credit register from Germany. The study found that—during the crisis—banks with higher trading expertise (trading banks) increased their investments in securities, especially in those that had a larger price drop, with the strongest impact in low-rated and long-term securities. Moreover, trading banks reduced their credit supply,

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and the credit crunch is binding at the firm level. All of the effects were more pronounced for trading banks with higher capital levels. A study by Iercosan *et al.* (2017) aimed to identify the key drivers of the trading performance of systemically important banks in the post-crisis period. By applying a simple regression framework to confidential trading data collected daily by on-site supervisors, they found that across a number of asset classes, the average systemically important bank's trading performance--proxied by trading revenue that they adjusted using value-at-risk (VaR) estimates-- was driven more by indicators of client facilitation or market making, such as bid-ask spreads or trading volumes, than by changes in asset prices. Tan and Floros (2012) evaluated the determinants of bank performance in China. In particular, the paper examined the effects of stock market volatility, competition and ownership on bank performance in China. Empirical results showed that high level of stock market volatility can translate into higher return on equity (ROE) and excess return on equity (EROE). Rather than leading to improved profitability, the labour productivity has a negative impact on economic value added (EVA). Ownership does not have any effect on the profitability of Chinese banking industry. The bank profitability in terms of ROE and EROE is lower in the banking industry with higher competition.

Chan-Lau, Liu and Schmittmann (2012) analyzed the impact of sovereign risk, economic growth prospect, and funding conditions on equity performances. The study found that equity returns in the banking sector in the wake of the Great Recession and the European sovereign debt crisis have been driven mainly by weak growth prospects and heightened sovereign risk and to a lesser extent, by deteriorating funding conditions and investor sentiment. While the equity return performance in the banking sector has been dismal in general, better capitalized and less leveraged banks have outperformed their peers, a finding that supports policymakers' efforts to strengthen bank capitalization. Rop *et al.* (2016) sought to establish the effect of buying shares on the financial performance of commercial banks in Kenya. The study concluded that there was a significant relationship buying shares and financial performance of commercial banks in Kenya. This implies that need to regularly buy shares to raise their performance and provide the enabling environment that will accelerate financial growth. From the regression equation, the study concluded that buying shares was the most important factor contributing significantly to financial performance, followed by Real estate investment, Insurance Investment and Government Securities. Falato and Scharfstein (2015) argued that stock market pressure to generate earnings encourages banks to increase risk. They measured risk using confidential supervisory ratings as well as financial information released in regulatory filings. They documented that there is an increase in the risk-taking behavior of banks that become part of publicly traded bank holding companies (BHCs) either through a public listing (IPO) or acquisition by a publicly-traded BHC. This increase in risk was greater than the increase in risk for a control group of banks that intended a private-to-public transition through an IPO or acquisition, but where the deal failed.

Investment in Real Estate : Samsi *et al.* (2012) explored the dynamic interaction between the real sector and the financial sector in Malaysia during the period 1986:1 to 2011:4, a period in which the global crisis have been felt. The findings suggested the existence of a long-term relationship between the real output and the financial sector. The causality tests reveal that the real output has strong relationships with the real estate and banking sector. From the PECM, the contribution of the banking sector is higher than that from other financial indices. The Kuala Lumpur stock exchange and the real estate contribute the same percentage to the output growth. Meanwhile, financial services accounted a small percentage to the output growth. Deacle and Elyasiani (2014) examined the effect of real estate investment on the risk, returns, and risk-adjusted returns of U.S. BHCs between 1990 and 2010. The analysis was performed by forming portfolios of BHC stocks according to BHCs' engagement and non-engagement in real estate investment, leniency versus strictness of regulations on BHC real estate activity and the BHC real estate investment to total asset ratios. Results provided evidence that the benefits of allowing BHCs to invest in real estate, which could stem from diversification of cash flows, economies of scale, economies of scope, or increased charter value, are outweighed by the greater volatility of returns that could come from the greater volatility of real estate prices, BHCs' possible lack of expertise in real estate investment, or their inability to diversify within this field of activity because of their limited scale of operation in this area.

Zhang, Cai, Liu and Kutan (2013) tested hypotheses linking the growth of investment in real estate and the stability of regional commercial banks in China, measured by NPLs. Empirical results revealed a close connection between the growth of investment in real estate and the NPLs among regional commercial banks, and its sensitivity to real estate market cycles. When real estate market activity declines, our results suggest, regional commercial banks can find themselves in trouble if they have significant exposure to one type of (real estate) asset. In addition, we find that regional bank competition plays a critical role in defining the relationship between bank stability and real estate investment activity. Rop *et al.* (2016) sought to determine the effect of real estate investment on the financial performance of

commercial banks in Kenya. There was a significant difference in real estate investment for Individual Banks. This implies that the real estate investments for Individual banks vary. The study concluded that there was a significant relationship between real estate investment and financial performance. This implies that real estate investment has a relationship with the financial performance, where the level of real estate investment affects the financial performance. Ojiambo (2014) study sought to evaluate the effects of real estate finance on the financial performance of listed commercial banks in Kenya. The major finding of the study was that mortgage finance had a strong negative effect on the financial performance of listed commercial banks in Kenya, β = -2.147, p = 0.054. Further, liquidity and cost of operations also had a strong effect on the financial performance of commercial banks. The study concluded that real estate finance influence the financial performance of listed commercial banks in Kenya.

Investment in Loans: Ozurumba (2016) study examined the impact of Non-performing Loans on the Performance of Selected Commercial Banks in Nigeria covering the period 2000 - 2013 with special emphasis on Access Bank, United Bank for Africa and Union Bank of Nigeria Plc. The specific finding of the work is that return on asset and return on equity have inverse relationship with non-performing loans and loan loss provision respectively while they are positively related to loans and advances. The conclusion therefore is that the effects of non-performing loans on Commercial Banks' performance is negative and cannot be underestimated, and poses a fundamental danger to the very existence of the Banks as corporate business entities. Maina (2016) examined the effect of lending practices on financial performance of commercial banks in Kenya. The study found a significant relationship between the KYC procedures and the financial performance of commercial banks. The study found that interest rates wielded significant influence on the rate and volume of borrowing in commercial banks. The study found that credit guidelines policies were vital in enhancing efficiency in the lending operations and finally the study found that there exists a significant relationship between credit policy guidelines and financial performance of commercial banks. Thiong'o *et al.* (2016) evaluated the effect of growth in loan portfolio on financial performance of commercial banks in Kenya. The study found that growth in loan portfolio had a positive effect on financial performance of commercial banks in Kenya, but the effect was not significant. The effect of loan growth on financial performance of commercial banks in subsequent years was found to be adverse. A similar study by Ugoani (2016) explored the effect of NPL portfolio on bank profitability. It was found that nonperforming loans portfolio has negative effect on bank profitability. This result supports Lata (2014) that nonperforming loans portfolio does not explain bank profitability**.**

III. METHODOLOGY

1. *Research Design ,Target Population And Sampling*

The study used a descriptive research design. According to Kombo and Tromp (2009), descriptive research is a strategy for gathering data by meeting or regulating a survey to a specimen of people. Population.The study targeted commercial banks listed at the Nairobi Securities Exchange. As of March, 2018, 11 commercial banks were listed at the Nairobi Securities Exchange (NSE, 2018). A census of all the 11 banks was conducted. Census refers to the quantitative research method, in which all the members of the population are enumerated (Burns, 2010).

2. *Research Instruments and data collection*

The study used secondary data. The data was sourced from commercial banks' financial statements, NSE statements and CBK annual supervision reports. Secondary data was preferred owing to its ease of access, accuracy and freedom from bias which affects self-reported data. Information was collected on the previous 5 years (2013-2017). On getting approval to conduct the study from relevant bodies, the researcher proceeded to collect the financial statements from the banks, NSE and CBK. These reports were freely accessible on the institutions' websites and therefore data collection and analysis took very short time.

3. *Data Processing and Analysis*

In this study, data was collected and analyzed using both descriptive and inferential statistics. Descriptive statistics involved frequencies, percentages, mean and standard deviation while inferential statistics comprised of regression analysis. Descriptive statistics were used to organize findings while regression analysis were employed to find out the relationship between variables. Regression analysis aided in solving the study hypothesis. The Statistical Package for Statistical sciences (SPSS) version 23 was used to analyze data with the aid of a computer. Analysis of data was conducted at 95% confidence level. Presentation of the findings was done through tables and graphs.The effect of portfolio diversification was determined by a multivariate regression model as shown below:

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

Y = dependent variable (financial performance).

C = constant

X_1 = government securities, X_2 = stocks, X_3 = real estate, X_4 = loans and advances, β_1- β_4 = Beta Coefficients and ε = Error term

4. Diagnostic tests

Test will include: test for normality, autocorrelation and multicollinearirty were conducted. The purpose of the tests were to ensure that the data collected met the assumptions of linear regression (Cohen et al., 2003).Normality test: In this study, skewness was used to test for normality. Skewness should be within the range ±2 for normality assumption to be satisfied. Autocorrelation: Durbin-Watson's d tests was used to test for autocorrelation. As a rule of thumb values of 1.5 < d < 2.5 show that there is no auto-correlation in the data (Osborne & Waters, 2002). Multicollinearity: In this study, multicollinearity was assessed using VIF. The variance inflation factor of the linear regression is defined as VIF = 1/T. With VIF > 10 there is an indication that multicollinearity may be present; with VIF > 100 there is certainly multicollinearity among the variables.

IV.   RESULTS AND DISCUSSIONS

1. Pilot Study and Response Rate

The study targeted to collect data from a census of the 11 listed commercial and service firms in Nairobi Stock Exchange. The study envisaged to collect data for seven years starting 2010-2016 for each company giving seven observations per company. The study therefore was to realise 77 observations. However, during data collection, two firms were dropped from the analysis after they lacked all relevant data for analysis. The data collection and analysis was therefore based on a total of nine listed Commercial and Services firms which were used in the study giving 63 observations and response rate of 81.81%. The findings were analysed beginning with descriptive statistical analysis followed by quantitative statistical analysis.

2. Descriptive Analysis

This section presents the descriptive analysis of the study variables. **Investment in Government Securities:** Findings show that participating banks had an upward trend in investments in government securities from 552,240M in 2013 to 949, 665M in 2017. The mean investment in government securities was 724,071M. **Investment in Real Estate** : An uneven trend was seen in banks' investment in real estate. Banks invested 793M in 2013 which rose sharply to 4839 in 2014 and then dropped to 1061M in 2015. The mean investment in real estate was 1971.4M.. **Investment in Loans**: Investment in loans as highest in 2016 at 2,128,162M and lowest in 2013 at 1,497,171M. The average investment in loans over the study period was 1892684.8. **Bank performance**: Bank performance showed an unsteady trend. The highest performance was seen in 2016 at 147B while 2013 recorded the lowest performance at 125.8B. The mean profit was 136.22

3. Correlation Analysis

In this subsection, the correlation analysis using the Pearson Product Moment Correlation was made to first determine the degree of multicollinearity between the independent variable and show the degree of their association with the dependent variable resulting correlation matrix given in table 1.

Table 1: Correlation Matrix

	BP	GS	STCK	RE	LA
BP	**1.000**				
GS	0.800	**1.000**			
STCK	-0.105	.037	**1.000**		
RE	0.681	.051	.301	**1.000**	
LA	0.902	.136	.390	.172	**1.000**

BP = Bank Performance, GS= government securities, STCK= stocks, RE= real estate and LA= loans and advances

Table 1 shows the correlation matrix. The correlation matrix shows that there was a strong positive correlation (r=0.800) between investment in government securities and financial performance of NSE listed commercial banks in Kenya. There was a weak negative correlation (r=-0.105) between investment in stocks and financial performance of NSE listed commercial banks in Kenya. There was a strong positive correlation (r=0.681) between investment in real estate and financial performance of NSE listed commercial banks in Kenya. There was also a strong positive correlation (r=0.902) between investments in loans and advances and financial performance of NSE listed commercial banks in Kenya. These findings therefore show that investments in government securities, stocks and loans and advances enhanced financial performance of NSE listed commercial banks in Kenya. However, investments in stocks reduced financial performance of NSE listed commercial banks albeit to a small extent. Table 1 also show that no two independent variables exhibited extreme correlation values as all the values are between +/- 0.5. According to Field (2006), linear regression analysis requires that there is little or no autocorrelation in the data. The data is therefore fit for regression analysis.

4. *Diagnostic Test*

Normality test: The Statistical Package for Statistical sciences (SPSS) version 23 was used to analyze data with the aid of a computer. Analysis of data was conducted at 95% confidence level. Presentation of the findings was done through tables and graphs. **Multicolliniarity test**: The highest VIF value was 6.771 for investment in securities. This shows the absence of multicollinearity in the data as the values are all below 10 as recommended by Montgomery et al. (2001). **Serial Correlation**: The study recorded a Durbin Watson statistic of 2.05. This shows the lack of autocorrelation as the value is between 1.5 and 2.5 as recommended by Osborne and Waters (2002).

5. *Regression Analysis*

Financial performance of commercial banks was regressed with investment portfolios.. The findings show that there was a strong positive correlation (r=0.872) between investment portfolios and financial performance of commercial banks. According to the findings, 76% of financial performance of commercial banks could be attributed to the investment portfolios.

Table 2: Model Summary

R	R Square	Adjust R Square	Std Error
0.872	0.760	0.601	0.655

Analysis of variances shows that invest portfolios were significant (f (4,6) =4.760, p=0.045) signifying a significant relationship between investment portfolios and financial performance of commercial banks.

Table 3: Analysis of Variance

	Sum of squares	df	Mean square	F	Sig
Regression	8.157	4	2.039	4.760	0.045
Residual	2.571	6	0.428		
Total	10.727	10			

The finding therefore shows that portfolio diversification is important for bank performance. This is consistent with Markowitz's Modern Portfolio Theory. This finding is consistent with Galema et al. (2011) who indicated that a more diversified portfolio allows banks to enhance asset quality, performance and resilience; on the other, it minimizes portfolio. The finding is also consistent with DeYoung and Torna (2013) finding that a diversified portfolio that combines a variety of loan products that belong to different asset classes in an optimal way will help a bank survive much easier to an economic storm than if it would provide loans in the same asset category

Table Error! No text of specified style in document.**: Coefficients Table**

Variable	Beta	Std. Error	t	Sig
Constant	2.212	1.231	1.797	0.122
Securities	0.712	0.212	3.227	0.018
Stock	-0.169	0.382	0.444	0.673
Real Estate	0.867	0.349	2.483	0.048
Loans	1.085	0.413	2.626	0.039

The beta values in the regression output can be used to solve the model (1) of the study as shown below.

$$Y = 2.212 + 0.712 X_1 - 0.169 X_2 + 0.867 X_3 + 1.085 X_4 \dots\dots\dots\dots\dots\dots\dots\text{(1)}$$

Where X_1 = government securities, X2 = stocks, X3 = real estate and X_4 = loans and advances

The new model shows that without the investment portfolio, bank performance would be 2.2 billion. The findings also shows that a unit change in investment in loans would result in a 1.085 change in financial performance of commercial banks. The findings show that all variables increase financial performance of commercial banks apart from investment in stocks, which negatively affects financial performance of commercial banks.

Effect of Investment in Government Securities on Financial Performance of Commercial Banks: The study the effect of investment in government securities on financial performance of NSE listed commercial banks in Kenya. The study found that investment in government securities was significant (p=0.018) at 95% confidence level. A unit change in investment in government securities was found to yield 0.712 change in financial performance of banks. The finding therefore shows that investment in government securities enhances financial performance of banks to a large extent. This is in agreement with Muriithi (2013) that banks prefer government securities (Government bonds and Treasury bills) since they have low involved risk. It is in agreement with Sankale (2013) who found a strong, significant, positive relationship between Treasury bills rate and commercial paper yield. It is also in agreement with Rop et al. (2016) finding that there was a significant difference in government securities in different banks. This finding is however in disagreement with Munene (2015) finding that long years to maturity of Treasury bonds affect investments in the same issue.

Effect of Investment in Stocks on Financial Performance of Commercial Banks: The study sought to establish the effect of investment in stocks on financial performance of NSE listed commercial banks in Kenya. Investment in stocks was not significant (p=0.673) at 95% confidence level. A unit change in investment in stocks was found to yield -0.169 change in financial performance of banks. This finding therefore shows that investment in stocks was not an important predictor of financial performance of banks. The finding shows that increased investment in stocks negatively affected financial performance of banks. The finding is similar that of Falato and Scharfstein (2015) who argued that stock market pressure to generate earnings encourages banks to increase risk. This finding is different to that of Rop et al. (2016) where there was a significant relationship buying shares and financial performance of commercial banks in Kenya. The finding is also different from that of Tan and Floros (2012) who showed that high level of stock market volatility can translate into higher return on equity (ROE) and excess return on equity (EROE).

Real Estate Investment and Financial Performance of Banks : The study evaluated the effect of real estate investment on financial performance of NSE listed commercial banks in Kenya. Investment in real estate was significant (p=0.048) at 95% confidence level. A unit change in investment in real estate was found to yield a 0.867 change in financial performance of banks. This finding shows that real estate investments enhanced financial performance of banks albeit to a small extent. This finding is in tandem with Rop et al. (2016) conclusion that there was a significant relationship between real estate investment and financial performance. It is also in tandem with Ojiambo (2014) finding real estate finance influence the financial performance of listed commercial banks in Kenya. The finding however differs from that of Zhang et al. (2013) who revealed a close connection between the growth of investment in real estate and the NPLs among regional commercial banks, and its sensitivity to real estate market cycles.

Loans and Financial Performance of Banks: The study also sought to determine the effect of loans on financial performance of NSE listed commercial banks in Kenya. Loans were significant (p=0.039) at 95% confidence level. A unit change in loans was found to yield a 1.085 change in financial performance of banks. This finding suggests that investment in loans enhanced performance of banks to a large extent. This is in agreement with findings of Thiong'o et al. (2016) that growth in loan portfolio had a positive effect on financial performance of commercial banks in Kenya, but the effect was not significant. It I also in agreement with Ugoani (2016) and Ozurumba (2016) that nonperforming loans portfolio has negative effect on bank profitability. It however disagrees with Lata (2014) that nonperforming loans portfolio does not explain bank profitability.

V. CONCLUSION

The study concludes that investment in government securities is vital for bank performance. The study found that investment in government securities enhanced bank performance. With the addition of government securities funds in a bank's investment portfolio it gets well diversified and the risk mitigates because government securities are considered as risk free. In addition, the liquidity in these securities is good as other banks and financial institutions regularly participate

in this market.The study concludes that investment in stocks is not important for bank performance. The study found that investment stock negatively affected bank performance. This may be attributed to stock volatility. These price fluctuations are unpredictable most of the times and the banks sometimes have to face severe loss due to such uncertainty. In addition, it takes a long time for investments in stock to yield significant returns. The study concludes that investment in real estate enhances bank performance to a small extent. The findings showed that participating banks did not invest significantly in the real estate sector as the mean investment in real estate was only 1971.4M. Although real estate investments can be financed and leveraged, exist in an inefficient market and reacts proportionately to inflation, it has higher transaction costs, low liquidity and creates liabilities.The study also concludes that investment in loans enhances bank performance to a large extent. Loans were the most affecting on performance of banks of the four variables selected for this study. This finding was xpected due to the fact that lending is the primary and largest source of income for banks. In summary the study concludes that portfolio diversification enhances bank performance. Investments in government securities, real estate and loans lead to increased bank performance. However investment in stocks negatively affects bank performance.

In light of the above findings the study recommends that banks should vigorously pursue portfolio diversification. This is because portfolio diversification was found to explain a large part of bank performance. The study recommends that banks should increase investments in government securities, real estate and loans. However, investments in stocks should be reevaluated as they were found to negatively affect bank performance. A study should look into why investment in stocks produces a negative bank performance. A study should also be conducted to investigate the low yield of investment in loans in contrast to investment in government securities. Other investment options such as mutual funds, joint ventures and associates should also be studied to enhance our understanding of the effect of portfolio diversification on financial performance.

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