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Effect of Macroeconomic Factors on the relationship between Asset Liability Management and Profitability of Commercial Banks in Kenya

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Abstract

The study sought to establish the influence of macroeconomic factors on the relationship between asset liability management and profitability among commercial banks in Kenya. The study was anchored on liability management theory. The study also drew its theoretical support from commercial loan theory, the market power theory and the efficient structure theory. The study was guided by the positivism philosophical paradigm and a cross sectional descriptive design adopted. The population of the study was the 42 commercial banks in Kenya that were operational between 2015 and 2020. Secondary data was obtained from the annual reports of CBK and audited banks' financial statements from 2015 to 2020. Data was analyzed using descriptive and inferential statistics. The findings indicated that asset liability management had a statistically significant influence on the profitability among commercial banks in Kenya. Macroeconomic factors were found to have a statistically significant influence on the relationship between asset liability management and profitability among commercial banks in Kenya. The study has contributed to theory, policy and management in relation to how macroeconomic factors influences relationship between asset liability management and profitability among commercial banks in Kenya. In light of these findings, banks should ensure that asset liability management policies are crafted based on appropriate strategies for profitability enhancement. The study recommends that policy makers should enhance the economic growth and develop strategies to control inflation levels for the banking sector to thrive.

Keywords: *Macroeconomic Factors, Profitability, Commercial Banks in Kenya*

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1. Introduction

Commercial banks are the main drivers of an economy especially in their role of funds reallocation from the surplus to the deficit units (Ongore & Kusa, 2013). Banks run their business within an underlying mismatch between highly liquid liabilities and long-term assets of the balance sheet (Marozva, 2017). Commercial banks have been facing various risks in their business operations such as liquidity risk, credit risk, exchange rate risk and operational risk. While these risks could manifest in many forms, banks are more concerned about liquidity and interest rate risks. The significance being that liquidity risk affects the bank's ability to meet its liabilities in time while interest rate risk impacts the profitability. Banks now focus on integrated balance sheet management where all the relevant factors which affect its financial performance are considered (Belete, 2013). Several components of the balance sheet are analyzed and evaluated in the present asset liability management (ALM) system, keeping in view the bank's strengths.

Asset liability management is managing assets and liabilities simultaneously in order to minimize the adverse effect of interest rate volatility, provide liquidity and enhance the financial performance. Banks have to keep a good balance among spreads, long term viability and profitability; which is measured in terms of return on assets (Tee, 2017). Return on assets gives the comprehensive measure of overall bank's financial performance and it is the total earning to total asset of a bank. It shows how managers are efficient in converting the assets of a bank into total income. The profitability of a bank is therefore influenced by ALM, measured as the ratio of total assets to total assets and liabilities; and a well run ALM improves bank's profitability. Financial performance of banks is also affected by macroeconomic factors (Porter, 1985).

The macroeconomic factors are the external features in firms, marketplace and the entire economy that influence operation of business and may consist of growth in gross domestic product (GDP) measured on yearly basis and inflation measured on yearly average; and is sector wide (Belete, 2013). Bank's prevailing macroeconomic factors determine its opportunities and threats as well as the level of its profitability (Porter, 1985). Banks have no control over them and their impacts appear on macro-level (Galbraith, 2002).

Banks have a key role in resource allocation in the economy. They channel funds from surplus to deficit units and provide liquidity that enhances economic growth (Ongore & Kusa, 2013). A bank is considered successful if it is able to achieve its liquidity objective and still earn profit, which is measured in terms of return on assets. Return on assets gives the comprehensive measure of overall bank's profitability and it is the total earning to total asset of a bank (Ongore & Kusa, 2013). It shows how managers are efficient in converting the assets of a bank into total income. To be profitable, banks therefore need to be efficient in ALM. Several studies by Pragathi and Veena (2018), Mohanty and Mehrotra (2018), Tee (2017), Sanjay and Shrestha (2015), and Sheela and Bastray (2014), have confirmed that ALM affect profitability of banks. Despite the importance of ALM and claim that it enhances profitability, there is still lack of empirical evidence to bring this to a conclusion. The above studies further examined only two variables, that is, ALM and profitability and none has attempted to determine the moderating impact of macroeconomic factors on the relationship between ALM and profitability of banks. The focus of this study therefore is to determine the influence of macroeconomic factors on the relationship between ALM and profitability of commercial banks in Kenya.

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1.1 Commercial Banks in Kenya

Commercial banks initiate deposits for customers which in return acquire assets from funds received (Rose, 2012). This enables banks to have assets and liabilities, a process, which require efficient and effective management in order to have a profitable balance sheet. Commercial banks strive to reduce liquidity gap problem, maximize profit and minimize costs by monitoring maturities of both assets and liabilities (Marozva, 2017). In Kenya, commercial banks are regulated by central bank of Kenya and they are required to maintain a minimum liquidity ratio of 20% as per section 19 (1) of the Banking Act so as to secure depositors' fund and enhance stability in the banking sector. Commercial banks are also required to observe liquidity risk management strategies as outlined by the regulatory authority (CBK, 2020).

In Kenya, the financial sector has remained resilient and stable in the last three years, despite the interest rate capping by CBK and unfavourable weather conditions experienced in the country (CBK, 2020). The supervisory reforms and regulatory measures have facilitated the sector to grow both in efficiency and inclusiveness. The Kenyan financial sector asset base increased to Sh.5.4 trillion as at December 2020 compared to Sh. 4.8 trillion as at December 2019. There was an improvement of liquidity ratio to 54.5 percent in December 2020 compared to 49.7 percent in December 2019. This was higher than the statutory requirement of 20 percent. The Kenyan financial sector has been well capitalized. It had capital adequacy ratio of 19 percent as at December 2020, which was higher than 14.5 percent, the minimum prudential requirement (CBK, 2020). Despite the good overall financial performance of financial institutions in Kenya, there are several banks that have been declaring losses. Moreover, the failure of banks in the last decades in developing nations and bailouts thereof necessitates the need to examine the reason behind the poor performance in those institutions and how the situation can be reversed through efficient ALM.

1.2 Research Problem

Banks forms the major part of the financial system and any shift in terms of their stability or performance can have immediate impact on financial healthiness of a country. The world has been experiencing a lot of crises, mainly the 2008 economic downturn, which originated from banking institutions then spread to other sectors of the economy. It is liquidity problem that facilitated the 2008 global financial crises (Acharya & schnabl, 2010). The banking institutions underrated the need of liquidity risk management and this confirmed the importance of effective risk management and financial controls through ALM (Marozva, 2017).

In Kenya, financial institutions have experienced a number of challenges such as funding and market risks. Many banks have been facing liquidity and credit risk problems and lack good framework to support the banking business due to inadequate recognition of ALM and its effects on financial performance. For instance, Imperial bank and Chase bank were under receivership in 2018, while Dubai bank Kenya was liquidated in 2015. National bank of Kenya has also been experiencing liquidity challenges despite the government ownership of 70.55%. It had cost to income ratio of 99.3% in 2018 compared to an industry average of 56.3% in the same year. Further, it had non-performing loan ratio of 47.1%, above the industry average of 9.9%, a low capitalization and CAMEL rating score (Cytonn investments report, 2018).

Various studies have been conducted on ALM and bank's profitability in developed nations and have provided inconsistent findings. Belete (2013) carried out a study from 2005 to 2010, to access

the role of ALM on banks' income in Ethiopian banking system. The study indicated that asset management positively influences net income of banks and liability management negatively influences net income of banks. The study further indicated that net income of banks is a function of ALM and that GDP and inflation negatively affected banks' income. Sheela and Bastray (2014) conducted a research to determine the role of ALM on commercial bank's income in Indian banking sector from 2010 to 2014. The research revealed that ALM is positively related to profitability in banks. The above studies considered only direct relationship between ALM and bank's profitability hence provided inconclusive results.

Sanjay and Shrestha (2015) carried out a research to examine the role played by asset liability management on profitability of banks in Nepal from 2007 to 2014. The research revealed that ALM is positively related to profitability in banks. Thejane (2017) conducted a research to access the role of ALM and regulation on banks' income in Lesotho from 2005 to 2015. The study used ordinary least square regression model to examine the influence of the research variables. The study revealed that ALM variable and gap ratio had positive impact on banks' income. The above studies also assumed a direct effect of ALM on bank's profitability and did not examine the impact of macroeconomic factors on this relationship. Based on this empirical analysis, it is noted that ALM affect bank's performance but it cannot exhaustively explain the variations in profitability, hence the need to carry out further research.

1.3 Research Objective

The objective of this study is to determine the influence of macroeconomic factors on the relationship between asset liability management and profitability of banks in Kenya.

2. Theoretical Foundation

The study was anchored on the liability management theory by Redington (1952), which is asset and liability based theory. The study has also drawn its theoretical support from the commercial loan theory by Smith (1776), the market power theory by Bain (1951) and the efficient structure theory by Demsetz (1973). The liability management theory recognizes that bank's asset structure has a key role in providing it with the needed liquidity and profitability because it takes into account the two sides of balance sheet of a bank as sources of liquidity (Marozva, 2017).

Commercial loan theory is a liquidity risk management based theory that encourages banks to advance short term and self-liquidating loans. The theory assists banks to improve their liquidity and profitability simultaneously as they are able to match maturities of both assets and liabilities. Market power theory suggests that profitability of firms is affected by their conduct and the structure of the market they operate. The theory has managerial implication that profitable banks ought to be large in terms of asset base, relate well with its external environment; have large market share and high quality products besides being efficient (Athanasoglou et al., 2008). Efficient structure theory suggests that efficiency in firms reduces costs and enhances high profitability

2.1 Empirical Review

Belete (2013) conducted a research from 2005 to 2010, to access the impact ALM on banks' profitability in Ethiopia using statistical cost accounting model. The research incorporated GDP and inflation rate as macroeconomic variables. The study established that ALM positively affects banks' income while GDP and inflation negatively affect return on asset. Osamwonyi and Michael (2014) conducted a research to ascertain the impact of macroeconomic aspects on the relationship

between ALM and banks' profitability in Nigeria from 1990 to 2013. Pooled ordinary least method was used to determine the effects of macroeconomic factors. The research concluded that GDP significantly affected bank profitability. However, a research by Kanwal and Nadeem (2013) on the impacts of macroeconomic environment on ALM and bank's financial performance in Pakistan revealed an insignificant positive impact of GDP and inflation. A research by Kiganda (2014) on impact of macroeconomic environment on ALM and banks' income in Kenya for the period from 2008 to 2012 also found insignificant positive effects of inflation and GDP.

Sanjay and Shrestha (2015) carried out a research on ALM and profitability of banks in Nepal from 2007 to 2014. The research also incorporated macroeconomic variables to determine their effects on the relationship between ALM and banks' profitability. The research established that inflation negatively influenced commercial banks' profitability. However, a research by Simiyu and Ngile (2015) on effects of macroeconomic environment on ALM and Kenyan bank's profitability established that GDP had an insignificant positive effect on profitability. Maigua and Mouni (2016) conducted a research on impacts of inflation rate on the relationship between ALM and banks' income in Kenya. The research established that inflation rates positively influenced profitability of banks. This is contrary to a study by Rao and Lakew (2012) on macroeconomic factors and banks' profitability in Ethiopia that revealed insignificant but positive effects of inflation on bank's profitability.

Tee (2017) conducted a research from 2008 to 2012 to access the impact of external factors on ALM and income of financial institutions in Ghana, using quantitative research design. The research established that GDP and interest rates were the main macroeconomic factors that negatively affected profitability. In most of the above studies, only two variables were examined, that is, ALM and profitability. Based on this empirical analysis, it is noted that ALM affect bank's performance but it cannot exhaustively explain the variations in profitability, hence an empirical gap.

3. Research Methodology

The target population of the study involved the 42 registered Kenyan banks. The study employed both longitudinal and cross-sectional descriptive research design. Data for the variables of the study were also collected at a particular point in time. The research involved collecting published annual reports from banks which were licensed and operational from 2015 to 2020 and also from CBK for the same period. The period was selected because of the availability of reliable and credible data that would be subjected to statistical analysis for testing hypothesis and drawing objective findings (Saunders *et al.*, 2007).

3.1 Research Hypothesis

The study's objective was to determine the influence of macroeconomic factors on the relationship between asset liability management and ROA among commercial banks in Kenya. Asset liability management was operationalized in the study as the ratio of total assets to total assets and liabilities in a bank. The macroeconomic variables considered in the study were GDP growth rate and inflation rate. To establish the objective of this study, a corresponding hypothesis H_{01}: *Macroeconomic factors has no significant moderating influence on the relationship between asset liability management and ROA among commercial banks in Kenya* was stated and tested.

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4. Data Analysis and Findings

The study utilized a number of inferential statistical tests to realize the objective and test the hypothesis. Simple and multiple regression analyzes helped to find out the influence of predictor on the outcome variable. To test for interacting effect of moderating, interaction term was used where the moderating variables were added to independent variables. Regression analyzes yielded various values including R, R^2, F ratio, t-values and p-values. To test the research hypothesis, empirical models were developed and carried out in three steps as follows:

Step One:

Step one was to find out the impact of ALM on profitability of banks. The dependent and independent variable relationship model is;

$$ROA_{it} = \alpha+\beta_{1it}ALM_{it}+e_{it}$$

Step Two

In step two, ALM and macroeconomic factors were used in the regression model as predictors of bank profitability. The empirical model used in this step is;

$$ROA_{it} = \alpha+\beta_{1it}ALM_{it} + \beta_{2it}INF_t+\beta_{3it}GDP_t+e_{it}$$

Step Three:

In step three, the regression in step two was repeated but with additional predictor variables derived from the interaction of the independent variable and the moderating variable. The study had two interaction terms. Each moderating variable was multiplied by the corresponding independent variable to form the interaction term as shown below.

Table 1. Interaction Terms of the Independent and Moderating Variables

Independent Variable	**Moderating Variable**		
		GDP growth rate	**Inflation rate**
	Asset Liability Management	IT1	IT2

In step three, the following model was used:

$$ROA_{it} = \alpha+\beta_{1it}ALM_{it} +\beta_{2it}INF_t+\beta_{3it}GDP_t+\lambda1_{it}IT1_{it}+ \lambda2_{it}IT2_{it}+e_{it}$$

Where:

ROA_{it} is Return on Asset for i^{th} bank in t^{th} year, α is constant or the value of the intercept, β is Regression Coefficients for i^{th} bank in t^{th} year, ALM_{it} is Asset Liability Management for i^{th} bank in t^{th} year, INF_t is Inflation Rate for t^{th} year, GDP_t is Gross Domestic Product for t^{th} year, λ_{it} is Coefficient of the i^{th} interaction terms for i^{th} bank in t^{th} year, e_{it} is the error term and IT_{it} = Interaction Term for i^{th} bank in t^{th} year.

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In step one asset liability management was operationalized in the study as the ratio of total assets to total assets and liabilities in a bank. The independent influence of asset liability management on ROA was tested. The analytical results are presented in Table 2

Table 2: Independent Influence of Asset Liability Management on ROA

ROA	Coefficient	Std. Error	t – Statistics	Prob.
ALM	1.253856	.4675413	2.68	0.008
Constant	-.6203147	.2360856	-2.63	0.009
R-squared		0.0089		
F – Statistics		9.79		
Prob. F =		0.0000		
Number of observations		210		
Number of groups		35		

The results of the effect of asset liability management on ROA on Table 2 shows that R^2 was 0.0089, which indicates that the independent variable indicator which was the ratio of total assets to total assets and liabilities account for about 0.89% of the variation in bank profitability. The other percentage 99.11% was accounted for by other factors not considered in the model. The results further show that F statistic value of 9.79 was statistically significant an indication that asset liability management influences bank profitability significantly.

The results further shows that the effect of ALM ($\beta = 1.254$) on bank profitability was positive and statistically significant at 5% level of significance. In addition, the results show that the constant ($\beta = -0.620$, $p < 0.05$) had a negative and statistically significant influence at 5% level of significance. These results indicate that asset liability management has a significant effect on profitability of commercial banks in Kenya.

The results of step two are as shown in Table 3

Table 3: Independent Influence of Macroeconomic Factors on Asset Liability Management and ROA

ROA	Coefficient	Std. Error	t – Statistics	Prob.
ALM	.9075474	.4746727	1.91	0.058
GDP growth rate	1.030911	.345218	2.99	0.003
Inflation rate	.3136272	.1614423	1.94	0.054
Constant	.5214009	.2349373	-2.22	0.028
R-squared		0.0286		
F – Statistics		10.18		
Prob. F =		0.0000		
Number of observations		210		
Number of groups		35		

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The results of the effect of asset liability management and macroeconomic factors on ROA on Table 3 shows that R^2 was 0.0286, which indicates that the independent variables which were ALM, GDP growth rate and inflation rate account for about 2.86% of the variation in bank profitability. The other percentage 97.14% was accounted for by other factors not considered in the model. The results further show that F statistic value of 10.18 was statistically significant an indication that asset liability management and macroeconomic factors influences bank profitability significantly.

The results further shows that the effect of ALM ($\beta = 0.908$, $p > 0.05$) on bank profitability was negative and statistically insignificant at 5% level of significance while the relationship between GDP growth rate ($\beta = 1.031$, $p < 0.05$) was positive and statistically significant at 1% level of significance. In addition, the results show that the inflation rate ($\beta = 0.314$, $p > 0.05$) had a positive and statistically insignificant at 5% level of significance. These results indicate that ALM and inflation rate do not have a statistically significant influence on bank profitability while GDP growth rate had a statistically significant influence on bank profitability among commercial banks in Kenya.

To test for the moderation influence of macroeconomic factors on asset liability management and ROA relationship, there was need to conduct a third step. In step three, the interaction term was introduced in the equation and its significance evaluated when controlling for asset liability management and macroeconomic factors. The interaction term was computed as the product of the standardized scores of the asset liability management and macroeconomic factors. To confirm moderation, the influence of the interaction term should be significant.

The findings of step three are in Table 4. The findings indicated that asset liability management ($\beta = 42.856$, $p < .05$) had a statistically significant influence on ROA after moderation. The results also reveal that GDP growth rate ($\beta = 249.269$, $p < .05$) and inflation rate ($\beta = 106.475$, $p < .05$) had an influence which was statistically significant on ROA. This accounts for 16.43 percent ($R^2 = .1643$, $F = 9.05$, $p < .05$) explained variation. The influence of the interaction term on controlling for the two independent variables was also statistically significant.

Table 4: Moderating Influence of Macroeconomic Factors on ALM and ROA Relationship

ROA	Coefficient	Std. Error	t – Statistics	Prob.
ALM	42.85594	8.687539	4.93	0.000
GDP growth rate	249.269	60.77564	4.10	0.000
Inflation rate	106.4747	33.26006	3.20	0.002
IT1	-492.7095	120.5621	-4.09	0.000
IT2	-210.8165	65.97921	-3.20	0.002
Constant	-21.65227	4.37611	-4.95	0.000
R-squared		0.1643		
F – Statistics		9.05		
Prob. F =		0.0000		
Number of observations		210		
Number of groups		35		

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The significance of the interaction term indicated that asset liability management independently did not contribute to the influence of ROA without the moderating role of macroeconomic factors. The positive change in R^2 was an indication that the interaction term had a significant influence, which was enough to explain the relationship. The study thus concluded that both GDP growth rate and inflation rate has a significant moderating effect on the relationship between ALM and profitability of commercial banks in Kenya. The interaction between the two variables had influence on ROA, which was enough to support the moderation relationship.

Table 5 bestowed the summary in the modification of the coefficient significance when interaction terms are initiated in the equation.

Table 5: Outcomes of the Moderating Influence

Variable	(Before Moderation)		(After Moderation)		Significance of Change	
	β	p-Value	β	p-Value	β	p-Value
ALM	0.908	0.058	42.856	0.000	41.948	0.000<.05
GDP growth rate	1.031	0.003	249.269	0.000	248.238	0.000<.05
Inflation rate	0.314	0.054	106.475	0.002	106.161	0.002<.05

The results in Table 5 signifies that GDP growth rate and inflation rate has a significant moderating effect on the relationship between ALM and bank profitability as introduction of the interaction term led to a rise in the coefficients of the variables and change from being non-significant to significant. There was also an increase in the value of R squared from 0.0286 to 0.1643.

4.1 Discussion of Findings

The study's objective was to determine the influence of macroeconomic factors on the relationship between asset liability management and ROA among commercial banks in Kenya. This objective had a corresponding hypothesis, Ho_1 that stated that macroeconomic factors have no significant moderating influence on asset liability management and ROA relationship among commercial banks in Kenya. Scholars have tried to debunk inconsistencies in asset liability management and ROA relationships outcomes. For example, Drobetz and Wanzenried (2006) posit that macroeconomic factors determine banks' profitability and hostile macroeconomic factors affect businesses as banks operate in a state of uncertainty that leads to poor performance.

Results for the independent influence of the aspects of macroeconomic factors with ROA revealed that GDP growth rate had a positive and significant effect on ROA while inflation rate did not exhibit a significant influence. Combined influence indicated that macroeconomic factors influenced the relationship between ALM and commercial banks' ROA, the relationship was positive and the influence was statistically significant. The study supported a study by Osamwonyi and Michael (2014) that focused on the effects of macroeconomic factors and banks' profitability in Nigeria and found that GDP significantly affect bank profitability. The results however differ with a study by Kanwal and Nadeem (2013) on the impacts of macroeconomic environment on bank's financial performance in Pakistan, which revealed an insignificant positive effect of GDP

and inflation. The study supported a study by Kiganda (2014) on impact of macroeconomic environment on banks' profitability in Kenya for the period 2008–2012, which also found an insignificant positive effect of inflation on ROA.

The moderating influence indicates that asset liability management independently was not statistically significant on ROA while macroeconomic factors independently were statistically significant on ROA. However, on influence of interaction term on controlling for the two independent variables, were statistically significant. The significance of interaction term pointed out that, macroeconomic factors had a moderating influence on asset liability management and ROA relationship.

The results support Sanjay and Shrestha (2015) who carried out a research on ALM and profitability of banks in Nepal from 2007 to 2014. The research revealed that inflation was the main macroeconomic factor that negatively influenced commercial banks' profitability. However, the findings of this study differ with that of Simiyu and Ngile (2015) who focused on the effect of macroeconomic factors on bank's profitability in Kenya and established that GDP had an insignificant positive effect on profitability.

The study findings are also in support of Maigua and Mouni (2016) who carried out a study on impacts of inflation rate on banks' profitability in Kenya. The study established that inflation rates had positive impact on profitability. These findings are however in contrary to a study by Rao and Lakew (2012) on macroeconomic factors and banks' profitability in Ethiopia that revealed insignificant but positive effects of inflation on bank's profitability. Most of the above studies assumed direct relationship of the study variables and none determined the moderating influence of macroeconomic factors on the relationship between ALM and profitability of banks.

5. Conclusion and Recommendations

The study sought to find out whether macroeconomic factors influence the relationship between asset liability management and ROA among commercial banks in Kenya. The study established that there is a statistically significant moderating effect of macroeconomic factors on the relationship between asset liability management and ROA among commercial banks in Kenya. The findings imply that macroeconomic factors strengthen the effect of asset liability management on ROA. The interaction between asset liability management and macroeconomic factors had an influence on ROA to support the moderating relationship. The results indicate that asset liability management and macroeconomic factors have significant influence on ROA. This implies that asset liability management depends on macroeconomic factors in determining ROA among Commercial banks in Kenya. These findings inform firms that for the confirmed hypotheses, they need to be keen on the influence of the levels of GDP growth rate and inflation.

The study recommends that policy makers should develop strategies aimed at ensuring that the macroeconomic factors are maintained at sustainable levels, which will not have a detrimental effect on profitability of banks. The policy makers should develop policies aimed at promoting GDP growth rate, as this will have a positive influence on bank profitability. It supports the need for commercial banks in Kenya to create and come with measures of hedging their exposure to inflation rate fluctuations, as this will go a long way in enhancing profitability. The study therefore recommends that policy makers should create a conducive macroeconomic environment for the banking sector to thrive.

References

Acharya, V. V., & Schnabl, P. (2010). Do global banks spread global imbalances? Asset-backed commercial paper during the financial crisis of 2007–09.*IMF Economic Review*, 58, 37-73

Athanasoglou, P., Brissimis, S., & Delis, M. (2008). Bank-specific, industry-specific and Macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money, 18*(2), 121-136.

Bain, J. S., (1951). Relation of Profit Rate to Industry Concentration, Quarterly *Journal of Economics, 65*: 293 – 324.

Belete T., (2013). Asset Liability Management and Commercial Banks Profitability in

Ethiopia. *Journal of Finance and Accounting, 4,* 10, 2222-1697.

Central Bank of Kenya, (2020).Bank supervision annual report 2020. http://www. Central bank.go.ke/downloads/acts regulations/banking Act.pdf

Cytonn Investments, (2016) Kenya Banking Sector Report 2016.

Demsetz, H. (1973). Industry structure, Market Rivalry, *Journal of Law and Economics*, 16:1-9

Drobetz, W., & Wanzenried, G. (2006). What determines the speed of adjustment to the target Capital structure? *Applied Financial Economics, 16*(13), 941 – 958.

Kanwal, S., & Nadeem, M., 2013. The Impact of Macroeconomic Variables on the

Profitability of Listed Commercial Banks in Pakistan. *European Journal of Business and Social Sciences, 2* (9), 186-201.

Kiganda, E.O. 2014. Effects of Macroeconomic factors on Commercial Banks Profitability in Kenya: Case of Equity Bank Limited. *International Journal of Economics and Sustainable Development, Vol. 5,* No. 2, 2014, ISSN 2222-1700

Maigua, C., & Mouni, G., 2016. Influence of Interest Rates Determinants on the Performance of Commercial Banks in Kenya. *International Journal of Academic Research In Accounting Finance and Management Sciences* Vol. 6, No.2, April 2016, pp. 121- 133

Marozva, G. (2017). Empirical Study of Liquidity Risk embedded in banks' Asset Liability Mismatches.

Memba, F., & Makau, N. F., (2014). Influence of asset liability management on financial performance of commercial banks in Kenya: *Journal of Economics, Commerce and Management* United Kingdom Vol. II, Issue 10, Oct 2014, page 1-20, ISSN 2348 0386.

Mohanty, B., & Mehrotra, S., (2018). The effect of liquidity management on profitability: A Comparative analysis of public and private sector banks in India. *The IUP Journal of Bank Management*, Vol. XVII, No. 1, 2018

Mugenda, O. M., & Mugenda, A. G. (2003). Research Methods: Quantitative and qualitative Approaches. Nairobi: African centre for technology studies.

Ongore, V. O., & Kusa, G. B. (2013).Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues, 3*(1), 237-252.

Osamwonyi, P. I. S., & Michael, C.I., 2014.The Impact of Macroeconomic Variables on Profitability of Listed Commercial Banks in Nigeria. *European Journal of Accounting Auditing and Finance Research*.Vol.2, No.10, pp.85-95.

Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance.* New York: Free Press.

Pragathi, K. M., & Veena, K. P. (2018). An analysis of Asset Liability Management in Banking Sector: A case study of Kotak Mahindra Bank. *IOSR Journal of Business and Management* (IOSR-JBM). Volume 20, Issue 2. Ver. VIII (February. 2018), PP 01-07

Rao, K. R. M., & Lakew, T, B. 2012. Determinants of Profitability of Commercial Banks in Developing Country: Evidence from Ethiopia. *International Journal of Accounting and Financial Management Research, 2* (3), 1-20.

Redington, F.M. (1952). Review of the Principles of Life –office Valuations, Journal of the Institute of Actuaries. Vol. 18, Pg. 286 -340.

Sanjay, S. (2015).Asset Liability Management and Commercial Banks' Profitability in Nepal. A multidisciplinary Journal Volume 5, No. 1, 2015. ISSN 2091 - 1106

Sheela.P., & Bastray, T. (2014).Effect of Asset Liability Management on Commercial Banks Profitability in Indian financial market. International Journal of Business and Administration Research Review, Vol.1, Issue.6, July - Sep, 2014. Page 92

Smith, (1776). Theories of Money: Maryland and the Carolinas in Journal of Political

Economy, volume 93.

Tee, E. (2017). Asset Liability Management and the profitability of listed banks in Ghana *IOSR Journal of Economics and Finance* Volume 8, Issue 3 Ver. IV (May - June 2017), PP 09-14

Saunders, M. N., Saunders M., Lewis P. & Thornhill A. (2007). *Research Methods for Business Students*, (5th Ed.). Pearson Education India.