CENTRAL BANK OF KENYA MONETARY POLICY AND PROFITABILITY OF COMMERCIAL BANKS IN KENYA

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ABSTRACT

The banking institutions in Kenya are crucial for the country's economic growth. Nevertheless, numerous banks in Kenya have encountered difficulties lately that have affected their operations. These reports show a rising occurrence of loans that are not being repaid and A decline in Return on Assets, dipping below the banking sector standard of approximately 1%. Therefore, the primary emphasis of the present investigation was to explore the impact of central bank of Kenya monetary policy on the profitability of commercial banks in Kenya, with inflation serving as the moderating variable. The research specifically evaluated cash reserve ratio, central bank rate, and open market operations and how they had affected the banks' profitability. Theories adopted encompassed; financial intermediation theory, Keynesian theory, and the structural theory of inflation. An explanatory type study design was applied. Analysis of 39 commercial operating within Kenya was done applying census. The secondary source of data from 2020 to 2025 was gathered using secondary data collecting form. A trend and times series analyses were used in determining profitability at a certain point in time for the specified timeframe. The process of data analyses involved descriptive statistics and inferential statistics especially the correlation and time series regression methods. The diagnostic tests applied included the; multicollinearity assessment, and a heteroscedasticity evaluation. The findings were displayed in tables. The limitations of the study could include; potential misalignment of secondary data and the precision and comprehensiveness of secondary data could differ, particularly when gathered by various institutions. The ethical standards were upholding integrity and honesty by ensuring transparency throughout the research process. The research observed that cash reserve ratio ($r=0.791$; $p=0.004$), Central bank rate ($r=0.801$; $p=0.002$) and open market operations ($r=0.707$; $p=0.005$) had a positive significant effect on profitability of commercial banks in Kenya. Moreover, inflation was found to have contributed to positive significant moderation between Central Bank of Kenya monetary policy and profitability of commercial banks in Kenya. The conclusion made were that the lower the Central Bank of Kenya cash reserve ratio, the higher the banking lending rate resulting to increased profitability from higher interest income earned. A change in Central Bank of Kenya nterest rate affects the cost of borrowing and returns on commercial banks deposits. The purchase of securities by the Central Bank of Kenya puts more liquidity within the banking system increasing the lending rate of commercial banks thus stimulating borrowing power. The rise in inflation makes the Central Bank of Kenya to increase interest rate so as to make the economy of the country stable which raises the cost of borrowing. The recommendations made were that the commercial banks could look for more alternative source of earning revenue like investment banking, management of assets and advisory service fees. Commercial banks should raise the interest rate on loans when Central bank rates are increased. Commercial banks should effectively manage the asset liability through closer

tracking of asset and liability maturity profiles for optimum interest income while handling risks associated with liquidity and interest rates. The commercial banks should adjust their interest rates on loans and deposits for protection of their profit margins.

Key words: Profitability, Monetary Policy, Central bank rate, Interest rate, Cash reserve ratio, Inflation rate.

INTRODUCTION

Commercial banks plays prominent role in enhancing the economy of a nation, serving as financial middlemen that allow transfers of cash between savers and borrowers which is achieved through getting individual or an organization deposits, save members cash and return the deposited cash with some rated interest (Greenspan, 2020). According to Meylievich (2022), commercial banks uses the cash that has been deposited by their customers to offer loan in various industries such as personal loans, business loans for those running businesses and mortgages to those individuals who want to own their home, thus stimulating the country's economic growth.

The commercial banks have been essential in managing risks effectively and ensuring constant supply of liquidity and operates under the regulation of government authorities that ensure conducive and secure environment of the sector resulting to maintenance of public trust on the country's banking system (Alkhazaleh, 2021). As noted by Saini and Sindhu (2024), commercial banks are Key to implementing a country's financial policy by determining interest rates and regulating the money supply, which affects inflation and the overall economy. Thus, these financial institutions are indispensable to the nation's monetary expansion by contributing to distinct financial strength and bigger economic steadiness.

Duca and McLaughlin (2021) discern that the profitability of commercial banks globally shows substantial deviation amongst different areas and explicit institutions, designed by features like interest rates, economic stability, and technological progressions. Jigeer and Koroleva (2023) noted that main commercial banks in China including the Industrial and Commercial Bank of China, have maintained a consistent attainment of significant profitability levels driven by stronger economic activities and increased lending within the nation. However, there is an increasing concern regarding asset quality, particularly in the real estate sector, which presents a possible threat to the economic prosperity of these commercial banks in the near future.

The German Banking Association document produced in the year 2024 shows that the profitability of their financial institutions had faced significant increase which was primarily ascribed to interest rate contributions towards growing the national economy and continuous

modifications from the regulatory body (Germany Banking Association, 2024). According to Farkasdi, Septiawan, and Alghifari (2024), the financial institutions in German like Deutsche Bank had encountered some challenges linked due the regulatory lowering the interest rate and exerting more pressures to these institutions. Despite this, the bank made a transition to digital banking system and invested heavily in technology as a result experienced higher level of profitability.

In Africa, commercial banks have undergone a notable revolution about their profitability levels due to ever constant economic situations, changes in regulations and technology. This has been witnessed in a country like Ghana whereby its banking industry has transformed into the continuing changes caused by economic fluctuations within the country with banks such as Ghana Commercial Bank (GCB) opting for digital banking systems and financial inclusion for long term profitability earning (Mireku, Sakyi & Agana, 2023). Biekpe (2024) stated that Ecobank Ghana had a fruitful use of its wider branch network to get into retail and corporate banking markets which has expanded the bank's lending range and shifted to non-interest income using fee-based services.

Chirwa (2021) observe that commercial banks within Malawi earn profits from several sources such as fee charged from income and commissions. In addition, the profitability of these banks has also boosted by the country's growing economy, favorable regulatory structures and stakeholder trust. Chimkono, Muturi, and Njeru (2024) observe that Malawi has passed a number of policies that has affected the interest rate resulting fluctuating profitability of its financial institutions. Furthermore, the integration of technology, particularly mobile banking, has created additional opportunities for these banks to reach a broader audience and improve customer experience, leading to an increase in profitability levels.

The economic segment within Kenya has encountered sizeable development and revolution currently, with many banks demonstrating returns before tax. For instance, Kenya Commercial Bank (KCB), one of the leading banks in the country, realised a 14% upsurge in net interest revenue for the year 2023 (Lukorito, Muturi, Nyang'au & Nyamasege, 2024). As specified by Onuonga (2024), the arrival of mobile money facilities like M-Pesa has nurtured a digital banking scenery in Kenya, stimulating commercial banks to adjust by joining forces with mobile service suppliers to improve their service provision to a wider customer base, thereby increasing together deposits and customer commitment.

Profitability

Profitability normally denotes to a firm's capability to yield income regarding its expenditures within a distinct period, letting it to reinvest in its procedures, allocate bonuses, and withstand the continuously progressing economic situations (Wiech, Kourouklis & Johnston, 2020). Eilon (2021) indicate that an organization's profitability spreads past simply handling costs; it encompasses comprehending its clients' requests and prospects to deliver worth, thus nurturing customer faithfulness. This standpoint concerning organizational profitability highlights the requisite of constructing continuing inspirations with customers, which later yields value that leads to enlarged profits.

Kaplan and Norton (1990) propose that an organization's profitability can be weighed through non-financial aspects, comprising customer gratification and employee commitment, where actual organization of these two features can considerably enrich profitability. Oke (2024) indicate that the prominence of profitability for a business deceits in its capacity to endure processes, capitalize in development, and nurture stakeholder sureness, who consist of investors, employees, and customers.

Achim (2022) expresses an organization's profitability grounded on Return on Investment (ROI), declaring that profitability basically assesses how successfully the organization exploits its assets to produce bigger profit. This redirects that profitability is a proportion that stresses the administration's capacity to create knowledgeable decisions meritoriously. Thus, once an organization weighs its ROI metrics, it classifies the parts that suggestively add to its profitability. Singh, Gupta, and Chaudhary (2024) proclaim that the Return on Assets (ROA) quantity positions typically engaged in calculating firm's profitability. This is realized over compelling the calculation of the share of net profit and total assets to estimate the efficacy of a company in the way it uses its assets to gain income through resource distribution. Consequently, in this research, profitability was assessed using ROA.

Table 1: Profitability of Commercial Banks in Kenya (2020 to 2024)

Years	2019	2020	2021	2022	2023	2024
Profitability (ROA) %	2.5	2.1	2.1	3.7	2.9	3.4

Source: CBK Report (2025)

The figures as presented in Table 1.1 disclose profitability of all commercial banks was recorded at 2.5% in 2019. This figure saw a decline to 2.1% in both 2020 and 2021, indicating a challenging period for the banking sector. However, there was a notable recovery in 2022, with profitability rising to 3.7%. The trend continued positively into 2023, where profitability reached 2.9%, followed by a further increase to 3.4% in 2024. The results is an indicator that irrespective of banks facing challenges brought about by the pandemic they still have indicated a certain significant level of sustainability and ability to recover their losses in the following which is a good reflection of better economic situations and strategy management.

Central Bank of Kenya Monetary Policy

The Central Bank uses monetary policy as one tool in controlling the currency in circulation and interest rates within a certain specified economy with the aim of creating more job opportunities and stabilizing the prices (Mbabazize, Turyareeba, Ainomugisha & Rumanzi, 2020). According to Dzeha, Boachie, Kriese and Kusi (2023), the ability of a financial institution to adapt to the ongoing alterations in regulations increases the likelihood of attaining improved stability of the strong profitability levels through effective modification of its strategies in lending or by providing distinctive offerings that align with the current market demands. Consequently, the financial policy assumes vigorous purpose in influencing profitability of commercial banking institutions because interest rate changes, liquidity management and availability of credits directly affect their performance. The measures of CBK

monetary policy in this study included; cash reserve ratio, Central Bank rate and open market operations.

Cash reserve ratio influence profitability by managing liquidity, as a bank with sufficient cash reserves can respond more swiftly to customer needs, thereby fostering trust and reliability, especially during periods of economic uncertainty (Abidi, & Lodhi, 2020). Mia, Nodi, Arif, and Shah (2023) observe that actual administration of cash reserves permits banks to heighten their interest earnings by stopping the upkeep of extreme pointless reserves, which possibly will end in extra cash residual idle as an alternative of being reinvested or loaned out to produce additional interest earnings.

Abreu and Mendes (2021) perceived that the central bank rate unswervingly shakes the expenditures for borrowing from banks; a lessened interest rate results to condensed borrowing expenses, which in turn endorses loaning determinations. This, thus, permits commercial banks to lift their interest paychecks, thus refining their profitability. Equally, once interest rates are enlarged, borrowing charges escalate causing diminished interest revenue for commercial banks and finally decreasing their profitability. Kowalewski (2024) indicate that commercial banks can traverse the variations within central bank rate through upholding a differentiated collection to alleviate these alterations. Furthermore, they ought to do a full risk calculation to get ahead probable modifications in debtors' settlement competences, mainly in a situation where interest rates are recurrently inconsistent.

The implication of open market operations surrounded by the commercial banks monetary strength is that, as the central bank's commitment in these processes whether purchasing or retailing government securities openly sways the liquidity survival inside banking arrangement permitting commercial banks to prolong loans and earn interest revenue, in that way improving their profitability (Kareken, Hall & Tobin, 2022). Highfield, O'Hara, and Smith (2024) specify that commercial banks could regulate their loaning approaches and product offerings if they forestall deviations in interest rates owing to approaching open market processes. Still, these banks could decide to arrange for credits at stable rates for the period of periods of lesser interest rates and shift to flexible rate credits once they forecast an escalation in tariffs.

Inflation

CBK raises the interest proportions to respond to the increasing inflation frequency which results to making borrowing more expensive for citizens and businesses and slowing down loaning processes eventually reducing the profitability of banks (Batsinda & Shukla, 2019). Humagain (2023) indicate that a rising inflation makes banks to charge more interests on already loans owned by their customers so as to raise their earnings, though this may pose a danger of experiencing a reduced rate of borrowing.

Anbar and Alper (2021) show that an increase in interest rate due to the effect of CBK monetary policy, could make commercial banks earn more profits from the new lending. Conversely, persistent inflation results in an economic stagnation that diminishes loan demand and escalates delinquencies. Huridi, Abd-Malek, and Hadi (2024) suggest that during periods of high

inflation, commercial banks must effectively manage the rising costs related to staffing, facility management, and technology. Therefore, the CBK's response to inflation presents both opportunities and challenges for banks.

Inflation can shape how monetary policy relates with the commercial banks' profitability because fluctuation in inflation rates affects interest rates which are crucial elements of monetary policy (Brunnermeier & Sannikov, 2021). Similarly, Anari and Kolari (2023) point out that CBK raises interest amounts in responding to growing pace on price increases with the intention of controlling spending and make prices more stable which may affect borrowing cost for consumers and businesses. Moreover, may cause increase in profit margins for banks on loans, minimize the overall lending volume since borrowers may be more cautious. Conversely, when inflation is low, lowering interest rates can be beneficial for encouraging economic stability which may increase borrowing and possibly more profits for the commercial banks. Therefore, the gaining the knowledge of how to manage inflation dynamics is crucial to analyze how monetary policy affects the profits of commercial banks, given that these organizations have to see how to go about the difficulties caused by changes in economic situations and consumer behavior.

Commercial Banks in Kenya

The Central Bank of Kenya's (CBK) regulations govern how Kenyan commercial banks conduct business. CBK role is the development and implementation of monetary policies, regulation of the country's banking sector and maintaining the sector's stability. Commercial banks in Kenya provides a wider variety of financial products including; accepting member deposits, cash saving, offering credits and loans, investment opportunities, foreign exchange services and digital banking services that enable their customers to transact online at their convenient location.

The CBK report has highlighted a notable resilience and profitability in Kenya's banking sector in recent years. The 2022 report reveals that there has been remarkable growth in profitability, with these banks achieving a net profit of approximately $1.5 billion. The introduction of digital technologies by commercial banks has enabled these banks to increase the number of their customers, improved on engagements with their customers and generated more revenues. The CBK has created a favorable banking environment by implementing policies that promote competition, encourage efficiency, and foster an innovative culture, thereby building investor confidence (CBK report, 2024).

Statement of the Problem

Banks operating within Kenya are essential for the growth the economic activities within the country. Nonetheless, various commercial banks in Kenya have lately encountered difficulties that have affected their performance. The 2024 CBK report indicates that the rate of Non-Performing Loans (NPLs) has risen, increasing by nearly 14% from 2022 to 2024. The commercial banks in the year 2024 have experienced a varied average Return on Assets (ROA) with majority of these banks not meeting the sector's threshold of about 1%. For instance, the ROA the present predictions show a decline to 1.2% despite having an average ROA of about

3% for the last 5 years. The average ROA has resulted to a variation ranging between 0.5% and 0.8% which is an indicator of inefficient utilization of their assets (CBK, 2024).

A study by Mulwa (2020) assessed how monetary policy influences the commercial banks of Kenya profitability and found that factors such as open market operation and cash reserve ratio had insignificant influence on profitability. However, the profitability of these banks was measured from the 2015 to 2019. Abonyo (2020) research focused on how monetary policy was related with Kenyan commercial bank's financial performance and demonstrated that the economic performance of these financial institutions was considerably impacted by open market transactions, the liquidity reserves, and CBK interest rate. Nevertheless, the emphasis of the research was financial performance from 2015 to 2019. The study by Kithandi (2022) looked at monetary policy and how it affected commercial banks' financial results. The analysis found little correlation between these organizations' financial performance and the central bank rate or the cash reserve requirement. However, the research analysed financial performance between 2017 and 2021. Therefore, the present study investigated the effect of central bank of Kenya monetary policy on profitability of commercial banks in Kenya.

Objectives of the Study

The part focuses on research's general and specific objectives.
Effect of Central Bank of Kenya monetary policy on profitability of commercial banks in Kenya. The specific objectives include:

(i) Explore effect of cash reserve ratio on profitability of commercial banks in Kenya.
(ii) Assess effect of Central bank rate on profitability of commercial banks in Kenya.
(iii) Establish effect of open market operations on profitability of commercial banks in Kenya.
(iv) Evaluate moderating effect of inflation on the relationship between monetary policy and profitability of commercial banks in Kenya.

Research Hypotheses

H_{01}: Cash reserve ratio does not significantly affect profitability of commercial in Kenya.
H_{02}: Central bank rate does not significantly affect profitability of commercial banks in Kenya.
H_{03}: Open market operations do not significantly affect profitability of commercial banks in Kenya.
H_{04}: Inflation does not significantly moderate relationship between monetary policy and profitability of commercial banks in Kenya

Scope of the Study.

Study looked into commercial banking institutions within Kenya, focusing on impact of CBK monetary policies on their financial performance. This assessment analyzed monetary policy as it relates to cash reserves, the interest rate established by CBK, and transactions within the open market. The appraisal of the banks' financial outcomes was carried out using ROA. The research took place from July to December of 2025. An explanatory research framework was applied in this investigation. Information about these banks was collected from current sources,

and the review took place between 2020 and 2024. Significant economic events, such as a global pandemic and its effects, occurred during this time, which also made it easier to evaluate how laws, consumer trends, and technology advancements have changed.

LITERATURE REVIEW

Theoretical Review

This segment introduces concepts underpinning variables which includes; financial intermediation theory, Keynesian theory, and structural theory of inflation.

Financial Intermediation Theory

The theory was founded by Diamond (1984). This theory evaluates the role of financial intermediaries. like the financial institutions takes role in the facilitation of cash flow from savers to borrowers resulting to enhanced financial system efficiency within the country. The theory also assists in minimizing the cost of transactions that promoted countless transaction within the country' economic system and financial institutions are able to attain higher financial performance through effective information asymmetry management (Diamond, 1984).

Rampini and Viswanathan (2019) examine the function of financial intermediaries in times of economic uncertainty, emphasizing their role in fostering stability and trust within the financial system. In this framework, banks turn out to be vital as they link lenders and borrowers. Gbadebo (2024) presents that processes of credits for monetary policy through assessment of financial intermediaries and the effect they present to credit sources and thus to economic activities. Moreover, managing distribution of credit prudently enables banks in influencing their expenditures and investments presenting their prominent role within the wider economy. Benston and Smith (2012) present critics concerning financial intermediation theory by indicating that every person has perfect information signifying that creditors understand everything that could require concerning those who wish to borrow and arrive at better choice on giving credits. But the individual worthiness or capability could result to negative choices in an event that the only higher risk creditors get loans or may assume much since they may not be bearing much risk. Lin (2019) critics concerning the theory reflect that it does not sufficiently consider on the repeated cycles of economic improvements. Therefore, when the economy is good banks might lend a lot and may overlook risk whereas when the economy is bad these banks tighten lending which may result to credit crisis that suppresses monetary retrieval.

The theory makes it better to learn the way banks become intermediaries of savers and borrowers facilitating flow of cash within the process of intermediation and strikes a good balance between risks and earning associated with engagement in giving credits and borrowing choices. In addition, the theory plays a significant role on aspects such as interest rate, managing credit risks and efficiency within operation that are determinant of banks' financial performance.

Keynesian theory

Keynes (1936) developed the Keynesian theory which has a profound influence on economic thinking and policy restructuring the way economists and policymakers understand the employment, interest rate and monetary system dynamism. This theory was further expanded by Eichner and Kregel (1975) by integrating knowledge from behavioral economics showing how psychological aspects influences financial options and suggested that the traditional Keynesian model could require revisions to cater for illogical behaviours and imperfect market. The involvement of government in Keynesian Theory is significant especially when the country is experiencing economic downturns since fiscal policies has an effective stimulation of demand and alleviation of joblessness (Crotty, 1980). However, the theory has received criticisms from Wolff (2011) who suggests that its over relies on fiscal policy instead of focusing on money supply regulation to make the country's economy stable. Moreover, Lavoie (2019) critics about the theory indicates that it fails to address issues regarding the distribution of income and market power and also argues that it fails to consider the capitalist economies complexity especially the effect resulting from monopolies and oligopolies.

The theory gives an illustration of how the aggregate demand is substantial in supporting the stability and economic growth of the country. In this instance, commercial banks in Kenya can assume a pivotal role as financial intermediaries. The theory also assists in explaining the causes of varied consumer expenditure, investment from the government and the economic activities as a whole affects the banks' income. This can be illustrated through taking an example of a case when the expenditure by the government and consumer increases, the banks have increased loan demand and vice versa.

Structural Theory of Inflation

Azariadis (1975) developed the structural theory of inflation by indicating that inflation increases due to many factors such as increased money supply in the economic system, supply chain, cost of producing goods and services, labor market situations and advanced technology. The structural theory of inflation promotes the assessment of the way structural changes inside the country's economy like insufficient labor changes brought by the technology exerts more pressure on pricing of goods and services.

Inflation is a crucial monetary matter which occurs when there is a rapid increase in money supply exceeding the economy's capability in generating goods causing an increase in inflation. Such condition requires the knowledge of structural aspects since it brings the need for analyzing the way the financial institutions manages their finances (Canavese, 2018), According to Kim (2022), increase in inflation can be caused by companies monopoly in raising commodity prices without facing resistance from consumers and emphasizes the need for market structure and power dynamic influence on inflation.

The structural theory has faced criticism from Lim (1987) by indicating that it exaggerates the importance of structural elements at the same time reducing the influence caused by monetary policy or worldwide economic situations. For instance, when the inflation is high, it is usually common in establishing structural issues such as increase in wages, supply chain intervals as

the basin causes. Hossain (1988) indicate that the theory lacks adaptability and therefore, cannot fit well in an evolving market dynamics same to the factors contributing to inflation which may result to having policies that does not adequately respond to the developing certainties.

The theory holds great importance to the study through its capability in showing how diverse structural factors causes inflation within the country's economic system instead of exclusively on demand being higher than supply. Therefore, having an understanding of structural inflation theory is very crucial to the commercial banks to effectively manage the challenges that may be brought about the inflationary pressures and to formulate appropriate strategies that can lead to higher profitability of these banks irrespective of economic conditions.

Empirical Review

Cash Reserve Ratio and Profitability

Mia, Nodi, Arif, and Shah (2023) investigated how the cash reserve ratio affected Bangladeshi commercial banks' profitability. To decide the link concerning the cash reserve ratio and the banks' profitability, the correlation coefficient was utilized. The study hypotheses were evaluated using a t-test. The research gathered time series data from the years 2017 to 2021. The target population consisted of ten prominent commercial banks within Bangladesh. The findings indicated that the cash reserve ratio significantly influenced the profitability of these banks, as measured by their ROA and ROE. Nonetheless, the focus of the study remained on commercial banks situated in Bangladesh.

In order to determine how changes in the Cash Reserve Ratio (CRR) affected these banks' profitability as measured by ROE and ROA, Abidi and Lodhi (2022) looked at the assessment of CRR on the profitability of banks based within Pakistan. Secondary data were collected over a decade, spanning from 2005 to 2014. An empirical examination was conducted utilizing correlation analysis and linearity testing. The findings indicated that the cash reserve ratio, as measured under reserve requirements, showed a negligible correlation with these institutions' profitability. Nevertheless, a methodological gap was identified due to the study's reliance on a cross-sectional design.

Olagunju and Isiaka (2021) focused on how cash reserve restrictions affected Nigerian deposit money banks' profitability. Secondary data were obtained from CBN Statistical Bulletin, as from years 2018 to 2020. Among methods used in the data analysis were multiple regression analyses, co-integration tests and Granger Causality tests. It was concluded that cash reserve requirements significantly contributed to the enhancement of deposit money banks of Nigeria. The research assessed the profitability of these banks within the Nigerian context.

The reserve ratio and its impact on Ghana's financial performance were evaluated by MacCarthy (2021). The Bank of Ghana provided the secondary data based on the level of participating in Corporate Social Responsibility (CSR) and ROI between the year 2013 and 2020 based on 20 commercial banks. The finding obtained suggested that there was a positive significant effect caused by cash reserve ratio on certain banks' financial results. The banks'

profitability is not suggestively caused by CSR. However, Ghanaian commercial banks were the study's primary emphasis.

Central Bank Rate and Profitability

Owusu-Antwi, Banerjee, and Antwi (2023) explored interest rate spread and how it had affected the profitability of banks in Ghana. They analyzed average yearly observational data collected between 1992 and 2021, which comprised 28 commercial banks. An application of ordinary least square method was done in estimating the parameters in regression examination. It was observed that specific banks' factors played considerably in assessing the variation of interest rates within the nation's banking sector, every related bank variable was discovered to be relevant, with the exception of total assets. Nevertheless, the study identified a theoretical gap.

The research conducted by Mungai (2023) examined how profitability of banks was affected by the central bank interest rate. Descriptive study involved collecting information from the publicly available financial reports of 9 selected listed commercial. The findings revealed that if every variables, comprising central bank rate, were set to nil, profitability of these banks would be 1.147. Additionally, keeping other factors constant, the central bank rate improve profitability of these banks by 75.2%. The research highlighted a significant change in the CBK's rates between 2007 and 2012, during which the rates had doubled. However, the analysis of commercial bank profitability was focused on the period from 2018 to 2022.

Asiligwa's (2021) investigation concentrated on the examination of the central bank's interest rate and its impact on commercial banks listed on NSE. The research utilized an exploratory study design. A census of commercial banks was conducted as of the end of 2020. The CBK website provided the secondary data taken from banks' officially released financial statements. The results revealed that the central bank's interest rate had positively influenced the profitability of these banks significantly though due to inflation profitability levels were somehow negatively affected. However, the study employed exploratory research design.

Using an exploratory research design, Mabati and Onserio (2020) investigated how the CBK rate affected the financial performance of banks. The investigation involved all 43 commercial banks that were operational by the conclusion of the year 2019. The secondary data gathered was analyzed utilizing regression analysis. The research indicated that the central bank rate had notably contributed to the enhancement of the banks' economic results. But the analysis was about banks operational as of December 31, 2019.

Open Market Operations and Profitability

Alika, Ojije, Lukat, and Oduniyi (2024) investigated the connection between OMO and inflation in Nigeria. Research evaluates influence of OMOs on Nigerian inflation from 2015 to 2024 through various exploratory analyses. The findings indicate that inflation has been on the rise and that the implementation of OMOs has not proven particularly effective in managing inflation. Although OMOs seem to efficiently regulate liquidity within the banking sector, they

are less successful in controlling the overall money supply, which contributes to the persistent increase in inflation. However, the study analysed inflation in Nigeria outlining conceptual gap. Subedi and Chaulagain (2022) investigated the influence of open market operations on short-term interest rates. The examination encompassed independent variables such as the magnitude of interbank transactions and the interest rates on Treasury bills. The research utilized time series data sourced from the Nepal Rastra Bank's website. The evaluation of this data was conducted using time series regression techniques. The study determined that agreements on repurchase, liquidity levels, and exchange rates had no discernible impact on bank earnings. Conversely, the Treasury bill rate significantly impacted profitability. Nonetheless, the study identifies a theoretical gap.

Inoue (2022) focused analysis emphasized on open market operations influence on price determination within Japan government securities market. A short term analysis was done focusing on reporting of open market operations regarding the volumes traded and pricing changes from the last 10 year. The observations were that the open market operations had led to significant rise in volumes traded and the volatility of prices. However, temporary open market operations, Transactions involving sell-back arrangements and repossessions, as well as direct acquisitions executed by the Ministry of Finance, exerted no impact. However, the study primarily focused on the Japanese government securities market, which presents a contextual gap.

Bassey, Akpan, and Umoh (2021) evaluated how open market operations affected Nigerian commercial banks' profitability. The research utilized the Ordinary Least Squares (OLS) estimation technique. The findings revealed that open market operations were significantly related with profitability of these banks. Moreover, the open market operations had brought an improved efficiency with the control of monetary policy within the country. The rate on monetary policy was also found to be crucial in managing the supply of cash and ensured effective monitoring monetary policies with the larger economic structure. However, the study's context was banks in Nigeria.

Monetary Policy, Inflation and Profitability

Huridi, Abdmalek, and Hadi (2024) examined inflation rate within Malaysia and Indonesia and how it had affected their financial institutions profitability. The secondary data was obtained from year 2005 and 2020 on annual released financial statements of these banks. The application of Ordinary Least Squares (OLS) regression and the Engle-Granger Cointegration (EG) test in analysis the empirical data was adhered to. The finding indicated that inflation and banks' profitability are significantly correlated since rise in inflation negatively affects the profitability.

Mohammad (2022) examined how fiscal policy impacts the economic performance of the banking industry in Iraq. This study adopted a quantitative methodology, utilizing annual data collected from 2009 to 2020. The information was sourced from multiple online platforms. The monetary factors taken into account in this study encompassed the liquidity reserve ratio, adjustments in the base lending rate, market operations, and the rate of inflation. Banking

profitability was assessed through financial indicators like ROA and ROE. The research incorporated specific characteristics of banks in the regression analysis techniques. The outcomes achieved from the evaluating data indicated that monetary policies had a major effect on banks' profitability with varying degrees of impact across different measurements. Nonetheless, the analysis focused on profitability during the years 2009 to 2020.
of banks and vice versa.

Mutai, Nzioki, and Kiprop (2022) evaluated how inflation affected Kenyan commercial banks' financial results. The study sourced secondary data from these banks from officially audited financial reports covering year 2011 and 2020. A census of 42 commercial banks was done. Financial performance data for these banks was collected from their individual financial statements, while macroeconomic information was sourced from both the CBK and the KNBS. Findings indicate a substantial inverse correlation linking ROA and the rate of inflation. Nevertheless, a review of the banks' profitability was based between year 2011 and 2020 revealed a contextual gap.

Jeevitha, Mathew, and Shradha (2019) explored how inflation impacts the profitability of banks. Their study focused on five government-owned banks, namely the Indian State Bank, IDBI Bank, Allahabad Bank, Canara Bank, and Punjab National Bank, during the period from 2014 to 2018. Findings established that inflation and the profitability of banks was inversely related suggesting that when one factor rises, the other tends to fall. As inflation escalates, interest rates also tend to rise. This increase in interest rates provides banks with a greater opportunity to augment their profits. However, the cost of funds concurrently rises, which may undermine profits. Nonetheless, the study specifically examined banks in India during the years 2014 to 2018, underscoring a contextual gap.

RESEARCH METHODOLOGY

Research Design

An explanatory research design was used. Patel and Patel (2019) state that the design helps in understanding the relationships between various variables and aids in elucidating the causes of the observed events. Thus, the reason for employing this design was to attain an in-depth comprehension of how fiscal policies influence the profitability of financial institutions.

Target Population

An entire group of people is represented by a target demographic being analyzed within a particular field of research who possess a similar feature (Ingram & Schneider (2021). The research concentrated on commercial banks located in Kenya. Based on the CBK report, there were 39 authorized Kenyan commercial banks operating as of December 31, 2024 (appendix ii). This number showcases the ever-changing nature of the banking industry, shaped by numerous factors such as mergers and takeovers, the closure of distressed banks, or giving newly established financial organizations new licenses

Empirical Model

The empirical model provides the basis for data collection and interpretation enabling the researcher to draw conclusive findings and make better decisions founded on empirical evidence (Tsinidou, Gerogiannis & Fitsilis, 2020). The research employed a time series model to analyze data gathered over a specified duration in order to investigate trends, patterns, and potential forecasts of future outcomes by understanding how variables evolve over time and how they are interconnected (Hurvich & Tsai, 2023). The model is expressed as follows;

$Yt = \beta 0t + \beta 1X1t + \beta 2X2t + \beta 3X3t + \varepsilon$ ..... (i)

Yt= Profitability (ROA); X1t = Cash reserve ratio at time t ; X2t = Central bank rate at time t X3t = Open market operations at time t; β1, β2 and β3 = Coefficients; ε = Error term

RESULTS AND DISCUSSIONS

Descriptive Statistics Outcomes

The study used minimum and maximum values, the mean and standard deviation as descriptive statistics values to presents the finding on the influence of cash reserve ratio, Central bank rate, open market operations and inflation on profitability of commercial banks in Kenya. The outcomes are offered in Table 2.

Table 2: Descriptive Statistics Results

Variable	Minimum	Maximum	Mean	Standard deviation
Cash reserve ratio	12.623	20.014	10.263	5.211
Central bank rate	8.162	15.643	17.167	11.327
Open market operations	14.623	23.105	19.008	11.030
Inflation	5.122	12.041	9.085	4.031

Source: Survey Data (2025)

These results in the Table 2 indicate a health range between minimum value and maximum value for cash reserve ratio. The capital reserve ratio of 12.623% which is an indicator commercial banks' readiness in lending much of their deposits and a maximum value of 20.014% is a reflection of a more traditional approach in which commercial banks holding back on loaning to protect their liquidity. Moreover, the mean value shows that the value is significant as it reflects that commercial banks position of their liquidity level with the financial sector. The standard deviation (5.211) value shows the variations of cash reserve ratio amongst all the commercial banks which indicates that some banks could be strictly adhering to the mean and others may be not which may bring adverse negative effected on management of liquidity strategies. The finding agrees with Mia, Nodi, Arif, and Shah (2023) who investigated the way cash reserve ratio had contributed to enhanced profitability of Bangladeshi banks. The findings indicated that the cash reserve ratio significantly influenced profitability.

The finding regarding the Central bank rate indicates a minimum value of 8.162 which represents the minimum interest by the Central bank serving as the baseline for borrowing costs with the current economy and influences lending in terms of loans or mortgages. The maximum

value established at 15.643 is the upper limit that commercial banks are expected in charging their interest rate on loans. It also reflects constriction of monetary policy of CBK when controlling inflation by raising the cost of borrowing a bit higher. The finding also shows that the mean value found is at 17.167 which shows where the rates generally fall. The mean value is high an indication that the Central bank is trying to manage inflation and making budget stable by raising the cost of borrowing. The standard deviation of 11.327 represents variation of these interest rates within the mean. This is a reflection of uncertain market or varied economic situations facing the banking sector. The finding aligns with the research conducted by Mungai (2023) who revealed the profitability of these banks would be 1.147 with the absence of CBK rate. Additionally, keeping other factors constant, the central bank rate improved profitability of these banks by 75.2%.

The results regarding the open market operations had a minimum value of 14.623 and a maximum value at 23.105 which reflects the extent to which interest rates had fluctuated and its effect on commercial banks' profitability. According the finding the interest rate was higher which implied that banks were earning more from the government securities they were holding improving their profitability margins. The finding also shows that (mean=19.008) as the minimum interest rate which shows a quite significant government securities which had resulted to substantial change on profitability of banks and standard deviation was 11.030 which means that there was fair level of variations around the mean suggesting that some commercial banks were benefiting from the increase in interest rate but there were others that were not favored reasons being varied implementation of bank strategies, risk level and market conditions. The finding concurs with Subedi and Chaulagain (2022) who investigated the influence of OMO on short-term interest rate establishing that the rates of treasury bills had caused improvements on profitability.

Inflation had affected the commercial banks profitability margins as indicated by minimum value of 5.122 and maximum value of 12.041. This finding signifies that the magnitude of challenges faced by commercial banks could change over time linked to increased rate of lending rates, the cost of funds, and the country's economic situation as a whole which acted a crucial role in improving banks' performance with such environment. The results also indicate that the mean value is at 9.085 which implies the average effect of inflation rate on commercial banks' profitability. The standard deviation is 4.031 implying a moderate variation level whereby in some cases it may be higher or lower though a consistent pattern is observed. The finding is consistent with Mutai, Nzioki, and Kiprop (2022) who evaluated how inflation affected banks' monetary outcomes establishing substantial inverse association linking ROA and the rate of inflation.

Inferential Statistics Results

The inferential measurements outcomes were presented using correlation examination and time series regression.

Correlation Analysis

The results on correlation examination showing the direction and strength of each variable are;

Table 3: Correlation Analysis

		Cash reserve ratio	Central bank rate	Open market operations	Profitability
Cash reserve ratio	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	39			
Central bank rate	Pearson Correlation	.117	1		
	Sig. (2-tailed)	.201			
	N	39	39		
Open market operations	Pearson Correlation	.132	.416	1	
	Sig. (2-tailed)	.206	.103		
	N	39	39	39	
Profitability	Pearson Correlation	.791**	.801**	.707**	1
	Sig. (2-tailed)	.004	.002	.005	
	N	39	39	39	39

Source: Survey Data (2025)

In the Table 3 the cash reserve ratio had strong positive correlation with the profitability of commercial banks in Kenya (r=0.791; p=0.004). This means that sustaining higher cash reserve ratio will results to improved profitability margins of these banks. The finding agrees Olagunju and Isiaka (2021) research who focused on how cash reserve restrictions affected Nigerian deposit money banks' profitability concluding that cash reserve requirements significantly contributed to the enhancement of Nigeria's deposit money banks.

The research discovered strong positive correlation associated with Central bank rate and banks' profitability (r=0.801; p=0.002). This means that by increasing Central Bank rates the banks' profitability would also increase because the banks will increase the loan interest rate

which raises their income interest which is a source of profitability. The finding aligns with Asiligwa's (2021) investigation who revealed that the central bank's interest rate had positively influenced the profitability of these banks significantly though due to inflation profitability levels were somehow negatively affected.

The study found that open market operations considerably correlated with banks' profitability (r=0.707; p=0.005). This finding indicates that when the Central bank is much engaged in OMO increases the banks' profitability due to favorable financial environment which enables the banks to make loans more accessible to many of its clients which raises borrowing and spending rate thus stimulating the country's economy. The finding agrees with Bassey, Akpan, and Umoh (2021) who evaluated how open market operations affected Nigerian commercial banks' profitability. The findings revealed that open market operations were significantly related with profitability of these banks. Moreover, the open market operations had brought an improved efficiency with the control of monetary policy within the country.

Panel Regression Analysis

A panel regression was done for effective examination of data collected over a span of previous 5 years (2020 – 2024) to account for simultaneous specific differences and time effects (Bayar, Gavriletea & Ucar, 2018). The study used Hausman test to analyze the panel regression analysis.

Table 4: Panel Regression Analysis

Profitability (P)	Coef.	Std.Err	Z	P>IzI	95 Conf.	Interval
Cash reserve ratio (CRR)	8.451	3.347	0.105	0.003	5.617	11.081
Central bank rate (CBR)	5.548	1.096	3.515	0.001	7.465	7.613
Open market operations (OMO)	12.645	4.441	1.229	0.002	1.163	3.030
_cons	9.153	4.651	1.901	0.002	9.085	15.643
Wald λ2(3) = 17.77; Prob > λ2 = .002; Pseudo R-sq. = .821						

Source: Survey Data (2025)

The regression model developed based on the results presented in Table 4 is expressed as;

$Pit = 9.153 + 8.451CRRit + 5.548CBRit + 12.645OMOit + \varepsilon$

The study established the following results; Wald λ2(3) =17.77 which suggested strong association between variables. The Prob > λ2 = 0.002 signified that independent variables exhibited strong link with dependent variable. Pseudo R-sq. = 0.821. This finding shows that there was a variation of 82.1% of profitability due to the effect of cash reserve ratio, the central bank rate, and open market operations. This means that other aspects of monetary policy not examined were represented by 17.9% of profitability.

Test of Hypotheses

The research verified the subsequent hypotheses at 95% confidence level in determining if there was any substantial connection linking cash reserve ratio, the central bank rate, and open market operations and commercial banks profitability.

Cash Reserve Ratio and Profitability of Commercial Banks in Kenya

H_{01}: Cash reserve ratio has no significant effect on profitability of commercial banks in Kenya

Results indicated significance value of 0.003 revealing that cash reserve rate had contributed to significant improvement on banks' profitability level. This led to rejection of null hypothesis. This finding deviates from the results established by Abidi and Lodhi (2022) who showed that the cash reserve ratio, as measured under reserve requirements, showed a negligible correlation with these institutions' profitability.

Central Bank Rate Profitability of Commercial Banks in Kenya

H_{02}: Central bank rate has no significant effect on profitability of commercial banks in Kenya

The investigation examined the hypothesis that the Central bank rate does not affect profitability of commercial banks in Kenya and discovered that the CBK rate had significance value (.001) reflecting that CBK rate contributed significantly towards improvement of the banks' profitability. Therefore, null hypothesis was rejected. The finding is in line with Owusu-Antwi, Banerjee, and Antwi (2023) who explored interest rate spread and how it had affected banks' profitability based in Ghana and observed that specific elements of the bank played significantly in assessing the variation of interest rates within the nation's banking sector, every related bank variable was discovered to be relevant, with the exception of total assets.

Open Market Operations Profitability of Commercial Banks in Kenya

H_{03}: Open market operations do not significantly affect profitability of commercial banks in Kenya

Open market operations had significance value of 0.002, below 0.05. The observation led to the determination that open market operations exhibited substantial affirmative correlation with banks' profitability, thus rejecting null hypothesis. The outcome aligns with Subedi and Chaulagain (2022) study who determined that agreements on repurchase, liquidity levels, and exchange rates had no discernible impact on bank earnings. Conversely, the Treasury bill rate significantly impacted profitability.

Inflation Profitability of Commercial Banks in Kenya

H_{04}: Inflation does not have a moderating association linking CBK monetary policy and profitability of commercial banks in Kenya

The research used two steps to determine the moderating effect expressed as;

Table 5: Step One in Testing for Moderating Effect of Inflation

Profitability (P)	Coef.	Std.Err	Z	P>IzI	95 Conf.	Interval
Monetary policy (MP)	2.546	1.245	0.254	0.002	2.231	10.245
Inflation (I)	6.667	2.945	2.294	0.002	4.496	5.548
_cons	4.491	5.091	1.165	0.001	2.987	9.102
Wald λ2(2) = 10.02; Prob > λ2 = 0.001; Pseudo R-sq. = 0.707						

Source: Research Data (2025)

The regression model developed founded on outcomes presented in Table 5 is expressed as;
Pit = 4.491 + 2.546MPit + 6.667Iit + ε

The study established that the Wald λ2(2) = 10.02 which shows robust association concerning monetary policy and Inflation and a Prob > λ2 = 0.001 indicates a positive significant effect between these variables.

Table 6: Step Two in Testing for Moderating Effect of Inflation

Profitability (P)	Coef.	Std.Err	Z	P>IzI	95 Conf.	Interval
Monetary policy (MP)	6.564	4.006	1.015	0.003	5.102	5.613
Inflation (I)* Monetary policy (MP)	3.155	3.338	2.245	0.001	3.369	8.150
_cons	7.152	8.120	2.915	0.003	4.102	3.285
Wald λ2(2) = 12.605; Prob > λ2 = 0.003; Pseudo R-sq. = 0.749						

Source: Survey Data (2025)

The regression model developed based on the results presented in Table 6 is expressed as;
Pit= 7.152 + 6.564MPit + 3.155MP*Iit + ε …… (iii)
The study revealed that the Wald λ2(2) = 12.605 observing CBK monetary policy (predictor variable) and inflation (moderator variable) are strongly correlated. Prob > λ2 = 0.003 indicates a positive significant effect between these variables. This resulted to rejection of null hypothesis and determined that inflation had a positive and substantial moderating association concerning monetary policy and profitability. Finding implies presence of certain level of inflation that can lead to significant improvement of commercial banks through raising interest rates on loans. The finding corroborates with Mohammad (2022) research who examined how fiscal policy impacts the economic performance of the banking industry in Iraq. The outcomes achieved from the evaluating data indicated that monetary policies had a major effect on banks' profitability with varying degrees of impact across different measurements.

CONCLUSION AND RECOMMENDATIONS

Conclusions

The study concludes that cash reserve ratio had a direct effect on the amount money the commercial banks could lend. The lesser the CBK cash reserve ratio, the upper the banking lending rate resulting to increased profitability from higher interest income earned. Banks holds a bigger portion of their deposits reserved when CBK raises the cash reserve ratio. Profitability may improve when CBK raises cash reserve ratio to respond to increasing rate inflation or economic downturns.

The study concludes that a change in CBK interest rate affects the cost of borrowing and returns on commercial banks deposits. An increase in Central bank rate increases the banks' lending rate resulting to improved profitability margins. However, significant increase in Central bank rate may prevent potential borrowers from getting loans which could decrease the volume of lending. The commercial banks increase their earnings from the money they get from the interest compensated on credits and put on loans.

The study concludes that the purchase of securities by the CBK puts more liquidity within the banking system increasing the lending rate of commercial banks thus stimulating borrowing power. The sale of securities by the government means removal of liquidity from the banking system resulting to increase in interest rate which discourages more borrowing affecting the profitability of commercial banks negatively as these banks cannot generate enough revenue from loans. Increase in lending provides a healthier environment for commercial banks to gain interest on loans improving the profitability.

The study concludes that the rise in inflation makes the CBK to increase interest rate so as to make the economy of the country stable which raises the rate of borrowing. The increased interest rate can enable the commercial banks earn more on loans or less due to increased loan interest rates that minimizes the loan uptake affecting the profitability of these banks. The inflation rate affects the banks cost of operations such as maintaining branches and recruitment of more staff.

Recommendations

Banks can look for more alternative source of earning revenue like investment banking, management of assets and advisory service fees. The banks should invest heavily on technology through process automation, minimize the cost of operations and focus on higher margin activities by freeing up resources. The banks should adopt a stronger assessment structure of managing risks to make them better achieve better lending decisions and minimize the number of loan defaulters and improve their returns on capital deployed.

The commercial banks should raise the interest rate on loans when Central bank rates are increased. The commercial banks can tighten the standards of lending when the Central bank rate is high and focus on creditworthy borrowers to reduce risk of defaulting. The banks should

increase their lending rate when the CBR is lowered or extend credits to a wider customer range.

The commercial banks should effectively manage the asset liability through closer tracking of asset and liability maturity profiles for optimum interest income while handling risks associated with liquidity and interest rates. The commercial banks can use risk assessment models to assess the possible effects of open market operations on their loan portfolios to be able to regulate their strategies for lending based on the expected market patterns.

The commercial banks should adjust their interest rates on loans and deposits for protection of their profit margins. The banks can provide higher interest rates on savings accounts to attract depositors for effective maintenance of liquidity and customers' loyalty. The commercial banks should have diversified loan products that can accommodate various sectors that could be sensitive to inflation. The commercial banks can improve on their innovative financial products and implementation of hedging strategies to gain protection against price fluctuations and to make cash flow more stable due to increasing costs.

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