# EFFECTIVENESS OF RATIO ANALYSIS IN PREDICTING FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

**BY**

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# DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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This research project has been submitted for examination with my approval as the University Supervisors.

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# DEDICATION

This research project is dedicated to my family

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| | |
|---|---|
| **ANOVA** | Analysis of Variance |
| **CAMEL** | Capital Adequacy, Credit risk, Management Quality, Earnings and Liquidity |
| **CAPM** | Capital Asset Pricing Model |
| **CAR** | Capital Adequacy Ratio |
| **CBK** | Central Bank of Kenya |
| **DT-SACCOs** | Deposit-Taking Savings and Credit Cooperatives |
| **LDR** | Liquidity to Deposit Ratio |
| **MFI** | Micro Finance Institutions |
| **NPL** | Non-Performing Loans |
| **NPLR** | Non-Performing Loans Ratio |
| **NSE** | Nairobi Securities Exchange |
| **ROA** | Return on Assets |
| **ROE** | Return on Equity |
| **ROS** | Return on Sales |
| **SPSS** | Statistical Package for Social Sciences |
| **VIF** | Variance Inflation Factors |

# ABSTRACT

A firm's capacity to remain profitable is believed to be strongly connected to characteristic such as liquidity, financial leverage, and efficiency. Notable, however, is the fact that despite the key company features described here being factors that can predict performance, previous empirical investigations have been unable to establish this as fact. While some studies hold that liquidity ratios, capital adequacy ratios, credit risk ratios and management quality ratios are predictors of financial performance. This view has been challenged by some past studies which have found that some financial ratios cannot be used in predicting financial performance. This research sought to establish the effectiveness of ratio analysis in predicting financial performance among commercial banks in Kenya. The independent variables for this study were liquidity ratio, leverage ratio, efficiency ratio, capital adequacy ratio and credit risk ratio while bank size was used as the control variable in the model. Descriptive research design was used. The target population was the banks in Kenya. There are 38 banks in Kenya as at 2020 but only 37 provided complete data set. Research variables data were derived from CBK and audited bank's annual financial statements from 2016 to 2020 for all 37 banks making 185 observations. Regression and correlation analysis were used to test the study hypotheses by establishing the relationship between ratio analysis and ROA. The study found that efficiency ($\beta$=0.006, p=0.001) and bank size ($\beta$=0.006, p=0.002) had a positive and significant effect on ROA among banks in Kenya. Leverage ($\beta$=-0.071, p=0.000) and credit risk $\beta$=-0.005, p=0.000) had a significant negative effect on ROA while liquidity and capital adequacy were not statistically significant. The results also indicated $R^2$ of 0.525 which implied that the selected independent variables contributed 52.5% to variations in ROA. The study recommends the need for investors to analyze efficiency, leverage, credit risk and bank size when predicting financial performance as these four are effective predictors. Managers and directors of commercial banks should also work on improving their efficiency and reducing their credit risk in a bid to enhance their performance and to remain competitive in the ever-changing environment.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Shareholder wealth maximization is the main goal of a firm. As a result, researchers have conducted studies on various factors that are related or that can influence financial performance. Financial ratios are thought to be of value in predicting financial performance of a firm (Mahama, 2015). Dang (2011) holds that liquidity ratios, capital adequacy ratios, credit risk ratios and management quality ratios are predictors of financial performance. This view has however been challenged by some past studies which have found that some financial ratios cannot be used in predicting financial performance (Ismail, 2013; Almajali, Alamro & Al-Soub, 2012).

The research was based on information signaling theory, investment-catering theory, and the model for pricing capital assets (CAPM). Information signaling theory by Ross (1977) was the anchor theory, which describes how a firm should notify prospective investors. This sign provides information about what the management has done to fulfill the desires of the owner. Signaling theory suggests that investors should be informed about how they view the perspectives of the business. The Stein (1996) investment catering theory says that with short-term consumers, managers would opt to spend rationally in costly projects and avoid low prices, thus catering to sentiments, so that they may maximize the value of short-term stocks. CAPM by Sharpe (1964) claims that anticipated returns are equal to the price sum of risk-free security plus a hazardous premium.

Kenyan commercial banks were the focus of this research. The reason for focusing on banks was informed by the fact that commercial banks serve a vital role in a nations' economic development as they help bridge the surplus and deficit spending unit's gap.

In addition, failure of commercial banks would have spiral effects in the economy and therefore need to predict banks financial performance and take necessary actions (Cytonn, 2020). The banks in Kenya have posted differing results with some performing very well while others have performed dismally (CBK, 2020). This offered a good context to investigate how financial ratios relate with performance of firms.

### 1.1.1 Ratio Analysis

Ratio analysis can be defined as quantitative analysis of information contained in a firm's financial statements (Liang Fu, 2016). A ratio is an indicated quotient of the mathematical correlation between one quantity and another. The link is expressed in relation to either a percentage, a rate, or a simply proportion (Kimmel, Weygandt, & Kieso, 2020). Mudida and Ngene (2017) defines ratio analysis as an inspection of the link between financial reports two numbers or sets of numbers. It is the specific implementation of ratios to financial accounts in order to assess the firm's weaknesses and strengths, including its past performance and current condition.

The link between selected components of financial statement data is expressed through ratio analysis. Ratios can reveal underlying conditions that aren't always obvious when looking at the specific elements of a ratio. However, a single ratio is really not useful on its own (Ryan, 2014). Ratios give more information when compared either for the same company over time, Intracompany Comparisons, or with a competitor in the same industry, intercompany comparison, or based on average for particular industry, industry average comparison (Kimmel, Weygandt, & Kieso, 2020).

In regards to operationalization, there is diversity in when it comes to ratio analysis. Kusa and Ongore (2013) operationalize ratios in terms of liquidity, leverage, management quality, credit risk and capital adequacy. This definition is also adopted

by Yin and Yang (2013). Mwangi and Murigu (2015) employed the CAMEL rating method, which incorporates important financial ratios to assess capital sufficiency, credit risk, managerial quality, profits, and liquidity of banks. The current study operationalized ratio analysis in relation to capital adequacy, leverage, liquidity, efficiency and credit risk.

### 1.1.2 Financial Performance

Almajali, Alamro, and Al-Soub (2012) describe financial performance as a company's capacity to meet a set of financial objectives, like profitability. The magnitude by which a company's financial standards are fulfilled is referred to as financial performance. It displays how well financial goals have been met (Nzuve, 2016). Financial performance, as per Baba and Nasieku (2016), indicates in what manner a firm utilizes assets in generating revenue and hence helps stakeholders in making their decisions. According to the current study, a company's financial position is defined as its ability to generate income out of its assets.

Financial performance is vital to shareholders, investors, and, by extension, the entire economy. The return on investment is completely worthwhile to investors, and having a good firm can provide greater and long-term revenue to individuals who invest (Fatihudin & Mochklas, 2018). Financial performance of a corporation is significant to its health as well as its existence. As per Karajeh and Ibrahim, (2017) company's excellent performance demonstrates its efficiency and effectiveness in managing its assets throughout operations, investments, as well as financial transactions.

Various methods of evaluating financial performance are used and should be harmonized. Asset returns (ROA), size of company, equity returns (ROE) and sales return (ROS) are factors recognized as measures of financial performance. ROA and

ROE are the most recognized ways of measuring financial performance. The ROA evaluates the company's profitability using its total assets, whereas the ROE examines the way a company is using shareholder's equity (Mwangi & Murigu, 2015). Baba and Nasieku (2016) posit that market based metrics like earnings per share, dividend yield, market to book value of equity and market capitalization can too be employed in financial performance measure. The current study utilized ROA as a metric of financial performance as it was the most recognized measure (Fatihudin & Mochklas, 2018).

### 1.1.3 Ratio Analysis and Financial Performance

Finance theory holds that liquidity directly influences performance of any firm (Raheman & Nasr, 2007). If their liquidity management processes are wrong, companies with continuously positive profits may suffer bankruptcy (Karger & Bluementhal, 1994). Excessive liquidity levels may contribute to subpar asset returns, while inadequate liquidity levels may present issues with running day-to-day operations. Wambugu (2013) holds that failure to manage liquidity and leverage properly leads to operational inefficiencies which in turn influence financial performance.

Bank specific factors like capital adequacy, liquidity and size are hypothesized to influence financial performance, as a well-capitalized bank, it sends a signal to the market that it expects above-average performance (Fatima, 2014). Ombaba (2013) noted that a bank's asset strongly determines the performance since it affects the interest income while lowering the cost associated with bad debts management. A high amount of NPLs to total loans, lowers credit risk and vice versa meaning that there will be a negative tradeoff between NPL and bank financial performance.

A factor causing business financial hardship in most cases is a poorly managed working capital, huge debts, harsh economic conditions, management inefficiencies and the structure of the capital. In their study, Parker, Peters, and Turetsky (2002) showed that a lack of robust working capital management — encapsulated in mishandling of capital — leads to financial collapse and fraud. Industry rivalry was shown to contribute to a decrease in sales turnover and a consequent reduction in profitability for the impacted companies in their research (Kapopoulos & Lazaretou, 2007).

### 1.1.4 Commercial Banks in Kenya

The CBK defines a bank as a business conducting or planning to carry out banking operations in Kenya. Commercial banking includes the activities of deposit acceptance, extending credit, processing financial transactions in addition to offering financial services in other areas. Specifically, the industry contributes significantly to the financial sector, with a special focus on the mobilization of saving and the provision of loans to businesses and consumers. The CBK is the regulating authority in the Kenyan banking industry. The banking segment has 1 mortgage finance company, 38 commercial banks, as well as 13 microfinance companies in the industry. There are 11 of the 38 listed at the NSE (CBK, 2020).

The banking segment in Kenya has faced several cases of bank collapse. The downfall of Dubai Bank of Kenya, Imperial Bank as well as Chase Bank in the year 2015 and 2016 offers good examples. The wave of bank mergers, acquisitions, as well as failures that swept Kenya as well as the rest of the world in the 1990s served as a wake-up call for Kenya's Central Bank, which strengthened its bank supervision arm in 2001 as well as again in 2013 and 2015. In order to attain this, the CBK has released prudential rules on several occasions, which all institutions registered under Kenya's Banking Act Cap

488 must follow (CBK, 2020). It is important to investigate whether ratio analysis would be able to predict the future performance of a bank.

Commercial banks have performed variably in terms of financial performance, with some seeing an increase in ROA while others have seen a decline. Over the past few years, we have seen certain banks, like Chase bank and National bank record declining performance to the extent of being acquired, and we have also seen more mergers among competing banks, all in an effort to maintain financial stability in the market (CBK, 2020). This clearly demonstrates the need to investigate whether ratio analysis can be utilized in predicting financial performance in the banking sector.

### 1.2 Research Problem

A firm's capacity to remain profitable is believed to be strongly connected to characteristic such as liquidity, financial leverage, and efficiency. Notable, however, is the fact that despite the key company features described here being factors that can predict performance, previous empirical investigations have been unable to establish this as fact. Dang (2011) holds that liquidity ratios, capital adequacy ratios, credit risk ratios and management quality ratios are predictors of financial performance. This view has however been challenged by some past studies which have found that some financial ratios cannot be used in predicting financial performance (Ismail, 2013; Almajali, Alamro & Al-Soub, 2012).

Commercial banks in Kenya have reported a rise in their financial performance considerably. In the past ten years, the financial performance of banks like the Equity Bank, which is Kenya's biggest customer bank, the KCB Bank, which has the greatest asset base, Standard Chartered Bank, NCBA, ABSA, I&M and DTB have reported a rise in ROA (Cytonn, 2020). However, during the same period, some banks have

experienced financial difficulties such as Chase bank, National Bank, Imperial Bank among others. The commercial banks therefore offered a good context to investigate if financial ratios can be used to predict financial performance.

Empirical research on ratio analysis predicting financial performance is present but there exist conceptual, contextual and methodological research gaps. Shukla and Bajpai (2015) studied how management of credit risk and bank profitability relate and noted that the two variables were directly correlated. There exists a contextual gap as this study was conducted in Rwanda. Further, there exists a conceptual gap as this study did not consider other ratios. Rifqah and Hafinaz (2019) analyzed how credit risk, liquidity, and capital adequacy of banks in Indonesia impact profitability. Findings from the study showed presence of a substantial negative relation between the dependent variable (ROA) and the independent variables (NPLR, LDR, and CAR). This study presents a conceptual gap as some ratios such as leverage and management quality were left out.

Locally, Orichom and Omeke (2020) examined how capital adequacy, efficiency, credit risk and performance of microfinance institutions (MFIs) were related. The research had a conceptual problem because it only looked at three components of ratio analysis. The study also reveals a contextual gap as it focused on MFIs. Atsango (2018) examined how firm characteristics impact profitability of DT SACCOs in Kenya. The conclusions depicting firm size, credit risk as well as operational efficiency significantly affected profitability while leverage and capital adequacy had minimal effects on profitability of the institutions. This research presents a contextual gap as it focused on DT SACCOs. Orang'i (2018) examined how management of credit risk impacted the performance of Kenyan banks using a descriptive research design. The examination showed that risk identification is insignificant to performance while risk

monitoring is positive and significant to performance. This study presents a methodological gap as it utilized interval scale due to the nature of its independent variable operationalized while the current study will utilize ratio scale. Thus, it was worthwhile for the study to seal the gap through establishment of the connection between ratio analysis and financial performance among banks in Kenya. The current research was based on these gaps and attempts to answer the research question; how effective is ratio analysis in predicting financial performance among commercial banks in Kenya?

### 1.3 Research Objective

To investigate the effectiveness of ratio analysis in predicting financial performance of commercial banks in Kenya

### 1.4 Value of the Study

The findings of this research add to current economic, theoretical and empirical literature. The findings will also help in theory development since it will offer insights on the shortcomings and relevance of the current theories to the variables of the research. Future investigations may be performed based on the recommendations and proposals for further study.

The outcomes of the research may be relevant to the government and the regulator CBK in developing regulations for the population under consideration. The study's findings will help investors who are considering investing in the population under investigation by providing information on the risk-reward tradeoffs that exist in such institutions and their impact on overall performance.

The findings will benefit managers responsible for managing of commercial banks as the study will give important data as well as recommendations which will be valuable

in making better decisions that will maximize share returns. As a result, they will be in a better position to develop suitable plans and practices for their institutions improved financial performance management.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

The chapter clarifies the theories on which ratio analysis and financial performance is based. It further discusses the previous empirical studies; knowledge gaps identified and summarizes with a conceptual framework and hypotheses displaying the expected study variable relationship.

## 2.2 Theoretical Framework

The segment examines theories which underpin the research of ratio analysis and financial performance. Theoretical reviews covered are information signaling theory, income and investment catering theory, and the concept for pricing capital assets.

### 2.2.1 Information Signaling Theory

This is the anchor theory and was pioneered by Ross (1977). The theory is centered mostly on the issue of information asymmetry among the many market players particularly between shareholders and managers. Under such scenarios, the managers use the high cost of dividend payments to communicate information regarding the firms' prospects to the market. John and Williams (1985) opine that the strong desire of the investors to meet their needs may lead to the under-valuation of the firm. If the investors dispose their holdings upon the undervaluation of the firm, then wealth will be transferred to the new shareholders from the old ones.

Criticism against this theory is on the basis that for it to hold, managers must be in possession of private information on the prospects of a firm and should have incentives that would make available to the market such information. A legitimate signal is one in which a firm with future prospects which is poor is unable to copy and send incorrect

market signals to the market by dividend payment increase. In contrast to Miller and Modigliani's assumptions (1961) that management and investors are in possession of perfect knowledge on the firm in the real market, there exists information asymmetry since managers who operate in the firm tend to be in possession of more timely information compared to investors hence gap creation (Al-Makawi, 2007).

Financial performance, according to the theory, act as a proxy for management's evaluation of the firm's success and prospects. Grinblatt and Titman (1996) made an agreement that: A rise in payment of dividends indicates confidence by the management on the firm’s future profitability. The prices of its shares will be positively impacted upon by it but a decrease in the dividend is an indicator of the firm's financial difficulties hence the share price will show an unfavorable movement. This theory is relevant as it acknowledges that ratio analysis can be used as a signal to indicate the future performance of a firm.

### 2.2.2 Investment Catering Theory

Stein (1996) developed an investment catering theory that affects the company's investment choice by valuing the market, even if new investment initiatives do not fund additional shares. The idea says that if investors have short horizons, the management is logically able to invest in overpriced initiatives and avoid underpriced ones, thereby responding to their feelings to optimize short-term stock values. If companies are mispriced according to the amount of their investments, management may attempt to raise short-term share price in accordance with current sentiments. Companies with shorter financial viewpoint and whose goods are tougher to assess should be given more consideration.

According to the theory of Aghion and Stein (2008), when managers are worried about current stock prices, further efforts will be made to increase sales when investors focus more on revenue. They believe that investors have different revenue requirements and managers would meet that need by providing more income if investors pay greater income premiums. If the management takes care of the present stock price, it will do more to increase sales if the price on the market increases the revenue.

Companies that care about the present stock price will respond to this shift via increased revenue premiums. Investor demand may come from the value of investors' revenue (Aghion & Stein, 2008). Polk and Sapienza (2009) investigate a catering channel that may directly affect investment decisions if deviations from fundamental standards. They are extremely beneficial for investment and stock prices. The positive correlation is that overvalued firms accept investments that have negative net current values, whereas low-priced businesses renounce investments with good net current values. This theory is relevant as it acknowledges that ratio analysis can be used to predict future performance.

### 2.2.3 Capital Asset Pricing Model

Sharpe (1964) and Lintner (1965) are credited with the asset pricing concept. The concept is called the balanced model of asset pricing for hazardous assets. The CAPM is a methodology for pricing hazardous inventories according to anticipated inventory revenue. The theory states that the anticipated stock returns amount to a sum of risk-free asset prices plus a risky premium. CAPM is a risk measurement tool and an anticipated connection between anticipated revenue and stock risk.

The model serves to estimate the required return rates for the underlying security when the asset underlying a portfolio is exposed and the assets are systemically risky. The

systemic safety risk is assessed by the beta factor. Beta is an important indicator of market safety returns. By developing a CAPM from Sharpe (1964) and Lintner (1965), it is now one of the most frequently utilized academics and financial planner. However, certain bond market odds emerge because the return features of inventories seem to be violating the CAPM notion that risk beta may explain only the cross-section of expected returns.

This theory is the most popular in academics and practice in financial modeling from its beginnings. The same methodology may be used to model prices of stocks, that is to say drivers of inventory prices, and how these prices might influence the company's performance. The theory will thus be helpful to understand variables that influence financial performance behavior.

### 2.3 Determinants of Financial performance

There are various financial performance determinants of a firm; these factors are found either within or outside the firm. Internal factors are firm-specific and can be manipulated internally. They are liquidity, leverage, management efficiency, capital adequacy, credit risk and bank size. Factors outside a firm that influence financial performance include; regulatory environment, political stability, corruption amongst others (Athanasoglou et al., 2005).

#### 2.3.1 Liquidity Ratio

Liquidity is used to denote the capability of a firm in this case a bank to settle its debt obligations that are incurred within twelve months by the use of cash and short-lived assets that are rapidly convertible into cash. It hence occurs as a result of the ability to settle financial demands owed to creditors without liquefying their other assets (Adam & Buckle, 2013).

Skandalis and Liargovas (2008) stated that sufficient quantities of liquid assets assist companies in financing and investing when external funds are not provided. Firms with high liquidity can meet unforeseen liabilities and obligations that need to be settled. Almajali et al. (2012) argued that a bank's liquidity can significantly affect the amounts it can afford to lend out to clients; thus banks should hold more liquid assets and lower short term obligations. Jovanovic (1982) noted that an increase in bank liquidity might harm the firms.

### 2.3.2 Capital Adequacy Ratio

Core capital to assets ratio is often known as bank capitalization. It illustrates the relationship between equity and total assets. It demonstrates a bank's capacity to stay viable through risk regulation. In a study, Berger and DeYoung (1997) demonstrated a negative link between capital sufficiency and performance. In imperfect financial markets, firms with adequate capital should limit borrowings to support a particular asset class and therefore minimize the expected bankruptcy cost.

A bank with enough capital indicates that a better performance is anticipated on the market. The findings of Athanasoglou et al. (2005) have shown that the capital stocks are favorably associated with bank profitability and indicate a solid financial position for Greek banks. Berger et al. (1987) also showed a positive causation of the influence from capital and profitability.

### 2.3.3 Credit Risk Ratio

Credit risk poses a substantial challenge to the firm's solvency since it represents a risk to its existence (Sufi & Qaisar, 2015). It is normally assessed as the ratio of NPL to total loans. Lenders provide loans knowing the borrowers would repay without any default, without falling into the non-performing category (Bhattarai, 2016). There will

be disastrous consequences for the bank's profits if non-performing loans remain on the books. It is possible that banks have not implemented an effective measure to manage credit risk (Afriyie & Akotey, 2012).

In the banking industry, moral hazards and asymmetric knowledge are associated with credit risk. When it comes to profits of the bank, credit risk has a large impact because a substantial part of a bank's revenue is from loans with interest. However, the threat posed to the financial sector by credit risk is undeniable. Credit risk must be addressed effectively (Bhattarai, 2016). Past research show that bank assets quality is a strong indicator of financial performance. Examples of credit risk indicators include non-performing loans, which might potentially destabilize the bank's general credit system and diminish its value (Afriyie & Akotey, 2012).

### 2.3.4 Firm Efficiency Ratio

Seongjoo and Jongwoo (2013) noted that management effectiveness in the insolvency forecast literature is frequently characterized as revenue generating capacity, proxied by a capital turnover proportion. Altman found that, other things held constant, the more productive a business is, the better is its financial results. Expenses in production process can ascend for various causes, employee compensation might have risen, cost of production input material may have risen, the business may have needed to spend money on compliance with new enactment or standard, etc. Usually, a firm can anticipate such changes and can consider them while planning its activities, however in the event they fluctuate haphazardly, it might catch them unaware and cause them to slip into bankruptcy (Kirui, 2012).

Capital-turnover ratio illustrates the turnover generating capability of its employed capital. It measures the management’s ability to cope with competition. Due to its one

of uniqueness to different ratios in the model, the (S/TA) proportion positions it at number two as its contribution to the overall model (Altman et al., 2017).

### 2.3.5 Financial Leverage Ratio

Leverage refers to a firm's debt to equity capital proportion. This share affects the value of the firm because it is a critical determinant of the cost of capital in a firm (Pandey, 2010). Leverage measures depict that should a company be declared insolvent how much of a deficit would result from realizing the company's assets in the market to settle the existing obligations. The measure incorporates the market value of shares into the model which is outside pure fundamentals. This is to say, "a durable market capitalization can be interpreted as the market's confidence in the company's solid financial position" Pandey (2010). Equity measurement incorporates both the market values of ordinary shares and preference shares whereas liabilities takes care of both current and long-term obligations of the firm.

Samira (2013) argues that a number of new companies will require a business plan in order to be able to access financing. It is also critical that the management put in reasonable time and effort into the preparation of the business plan for purposes of success. A business plan which is based on poor or bad information is likely to be ineffective. Thus it is critical for firms to prepare accurate and reasonable business plans else the firm faces failure.

### 2.3.6 Bank Size

Firm size determines by how much legal as well as financial elements affect a bank. As big businesses gather cheap capital and generate enormous incomes, the size of the bank is strongly related to enough capital (Amato & Burson, 2007). The book value of the entire assets of the bank typically determines its size. Additionally ROA is

positively associated with bank size showing that large banks can accumulate economies of scale hence reducing operational costs while increasing loan volumes (Amato & Burson, 2007). Bank size is related to capital rations, according to Magweva and Marime (2016), and profitability rises with size.

Burson and Amato (2007) said a company's size depends on the organization's assets. It can be argued that the more the assets owned by a bank the more the investments it can make which generate bigger returns compared to smaller firms with less assets. In addition, a bigger company may have more collateral that may be utilized as safety for more loan facilities than smaller companies (Njoroge, 2014). Lee (2009) argued that the assets being controlled by entity impacts profitability level of the firm from one period to another.

### 2.4 Empirical Review

Local as well as global researches have determined the affiliation between ratio analysis and financial performance, the objectives, methodology and prior research results have been discussed in this segment.

#### 2.4.1 Global Studies

Vighneswara (2015) in an examination of profitability of banks in India used data panel techniques on data from 1997 to 2009 and determinants of bank credit risk, and found that priority sector credit was insufficient to impact NPL. The findings were contrary to the general opinion and a similar finding was established in local banks which concluded that rural credit aversion is an incorrect assumption. The banking sector performance is tied to bad debts as opposed to a single institution. Additionally, capital adequacy and investment activity significantly impact bank profitability, unlike assets size with zero effect.

Rifqah and Hafinaz (2019) analyzed how credit risk, liquidity, and capital adequacy of banks in Indonesia impact profitability. The main indicators used in the study included NIM, ROA, Non-Performing Loan Ratio (NPLR), Loan to Deposit Ratio (LDR), and CAR. The study used data from publicly available financials of four state-owned banks in Indonesia from 2007 to 2016. Analysis of data was performed by finding the significant relation between variables. Findings from the study showed that there exists a substantial negative relation between the dependent variable (NIM, ROA) and the independent variables (NPLR, LDR, CAR).

Gadzo et al. (2019) examined how credit and operational risk impact the performance of Ghanaian banks. Data was obtained from 24 universal banks with no missing variables; findings showed that credit risk is negatively linked to performance compared to prior studies following the information asymmetry assumption of lemon theory. Additionally, operational risk had a negative relation to performance of the banks. In other findings, bank specific factors (credit risk, bank leverage, cost to income ratio and liquidity) were positively and significantly related to credit risk, operational risk and performance.

The impact of the debt ratio, net profit margin and size on stock price with corporate performance was studied by Suksti et al. (2020) as a mediating variable. The sample utilized for the period 2014 to 2018 was 136 production firms registered on the Ghanaian Stock Exchange. This study was evaluated utilizing a Warp PLS statistic testing tool to prove the hypothesis presented. The findings revealed the substantial negative impact of the debt equities ratio on ROA and a significant favorable impact on stock prices. Net profit margin has a large beneficial impact on the ROA and a major positive impact on stock prices. Although size has a substantial beneficial impact on

ROA, it doesn't affect stock prices. ROA has a strong beneficial impact on inventory prices. In regard to size and stock price, ROA is not a mediator variable; nevertheless, the ROA works as a mediator in the debt equity ratio and the stock prices ratio and in the ratio between net profit margin and the stock prices.

The impacts of asset sales, current ratio, equity revenues and debt-to-equity, and the prices earned by changes in stock price were reviewed by Okwono, Odemwe and Ului (2020). The method of sampling utilizes a careful sample approach. The research is based on the consumer industries published on the Nigerian Bourse from 2015 to 2017. Multiple linear regression was used for technical data analysis. The results showed that the change in share prices between the varying total assets and price income ratio was affected. The changes in stock price do not impact other independent variables such as the current ratios, equity returns, and the debt-to-equity ratio.

### 2.4.2 Local Studies

A study by Meeme (2015) sought to find out whether the degree of adherence to the Basel III agreement by commercial banks in Kenya correlates with their financial strain condition. Using a census to gather secondary data from all the commercial banks over the course of two years, this study used a descriptive research methodology. Financial hardship was first shown to be strongly associated with the Basel III agreement using a multiple regression model. It was discovered that criteria such as capital and leverage restrictions, as well as liquidity requirements, are positively correlated with commercial bank financial hardship. The research determined that base III has a significant impact on the financial distress of commercial banks in Kenya, and that in order to execute the Basel agreement, banks would need to devise strategies to assist them put in place the measures mandated by the Basel accord.

Muigai (2016) conducted research on non-financial businesses listed on the NSE to find out if capital structure affects financial distress. Leverage, debt maturity, equity structure, and asset structure were studied as independent factors that were expected to affect the companies' financial distress independently, while company size was expected to influence the interaction between these variables. Ten year audited financial statements spanning 2004-2013 were utilized for the research, which utilised audited financial statements as secondary data. Using a census from 41 of the Fortune 500 firms, together with a quantitative research methodology, the study investigated this topic. According to Muigai (2016), asset tangibility, external equity, and financial leverage do not aid in the recovery of non-financial businesses during financial crisis. As part of the research, the data collected showed that although internal equity and long-term debt have a significant influence on mitigating the impacts of financial distress in non-financial companies, the size of the company and the industry in which it is listed had a marginal impact on this connection.

Atsango (2018) examined in what way firm characteristics impact profitability of DT SACCOs in Kenya using a descriptive survey methodology. A total of 135 licensed DT-SACCOs with financial data amounting to five years were selected from 2013-2017. Analysis was performed using strata in which descriptive as well as inferential statistics were produced. The findings showed firm size, credit risk as well as operational efficiency significantly affected profitability while leverage and capital adequacy had minimal effects on profitability of the institutions.

Ndung’u (2019) sought to establish financial distress determinants in Kenyan commercial banks. The research adopted a quantitative research design. The methodology employed was panel data. The study took on a census approach.

Secondary data being gathered for the period 2012-2018. The research found that leverage, overly aggressive activity, market risk and bank size negatively and significantly affected the level of financial distress. Earnings, liquidity and the spread on insider lending are found to positively and significantly affect financial distress. Private ownership was associated with higher degrees of financial distress.

Orichom and Omeke (2020) examined how capital adequacy, efficiency, CRM and performance of microfinance institutions (MFIs) were related with a focus on the agency theory. A cross–sectional was used in examining 64 MFIs in the country. Correlation and multiple regression were employed in the analysis of the data. Findings showed that CRM improves performance. Second, capital adequacy and efficiency were not significant to performance. Hence, credit risk appraisal, monitoring and mitigation were crucial in the achievement of performance of the institutions. It was however noted that capital adequacy did not substantially impact performance. the recommendation was that managers should institute risk preventive and control methods to lower credit risks and achieve positive performance among MFIs.

### 2.5 Summary of the Literature Review and Research Gaps

The theoretical reviews showed the predicted affiliation between ratio analysis and the financial performance. Major influencers of financial performance have been discussed. From the reviewed studies, there is a knowledge gap requiring to be filled. From the studies reviewed, there are varied conclusions concerning the relation between ratio analysis and financial performance. The differences from the studies can be explained on the basis of different operationalization of ratio analysis by different researchers thereby indicating that findings are dependent on operationalization model.

Further, the prior studies concentrated on the influence of ratio analysis on predicting distress leaving a gap on financial performance.

### 2.6 Conceptual Framework

Figure 2.1 displays the predicted relation between the variables. Ratio analysis was the predictor variable and was operationalized as liquidity, capital adequacy, credit risk, efficiency and leverage. The control variable was bank size given as log total assets. ROA provided the response variable of financial performance.

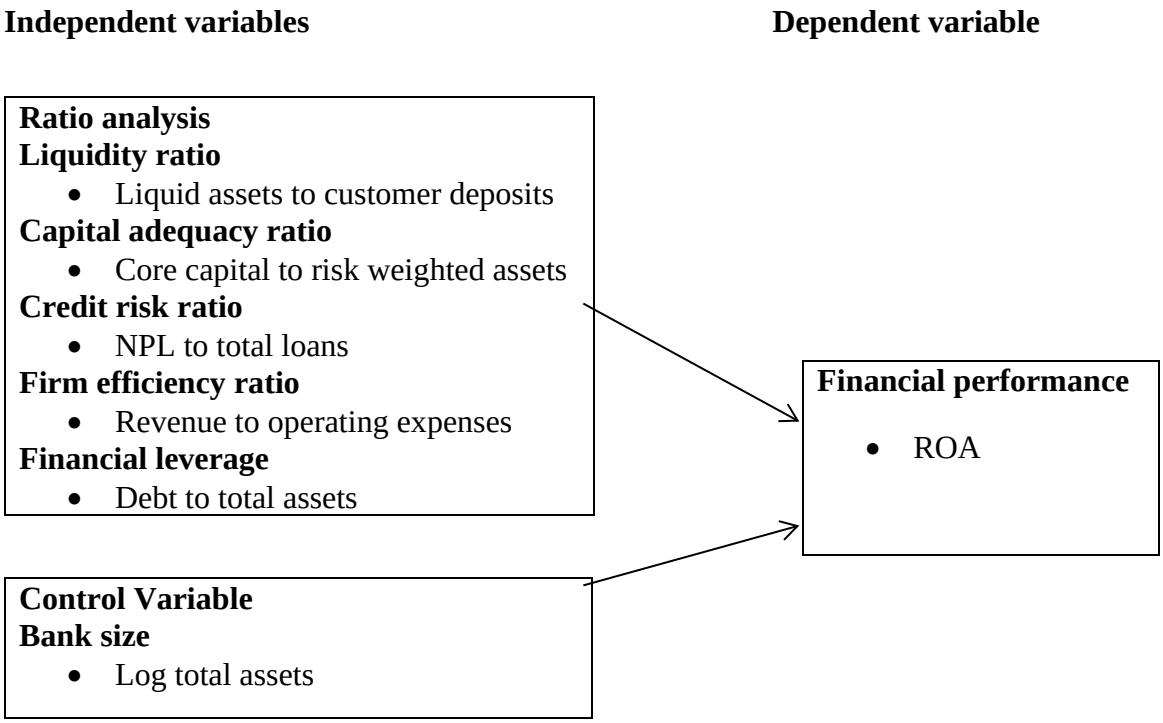


**Figure 2.1: The Conceptual Model**

**Source: Researcher (2021)**

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter designates the approaches utilized in accomplishing the research objective which was to determine the effectiveness of ratio analysis in predicting financial performance. In particular, the study highlighted the; the design, data collection, diagnostic tests as well as analysis.

## 3.2 Research Design

A descriptive design was adopted to determine effectiveness of ratio analysis in predicting financial performance. This design was appropriate since the nature of the phenomena was of key interest to the researcher (Khan, 2008). It was also sufficient in defining the interrelationships of the phenomena. This design also validly and accurately represented the variables thereby giving sufficient answers to the study questions (Cooper & Schindler, 2008).

## 3.3 Population

A population is all observations from a collection of concern like events specified in an investigation (Burns & Burns, 2008). The current study's population was all 38 banks as of December 2020. The research used a census technique since the population was comparatively small, and thus all elements of the population were studied.

## 3.4 Data Collection

Secondary data was depended on in this investigation and was sourced from annual published financials of the banks from 2016 to 2020 and taken in forms of data collection. The study period was chosen as it provided adequate data for robust regression analysis. The publications were extracted from CBK financial publications

of the specific listed firms.Net income, total assets, liquid assets, total loans, NPLs, risk weighted assets, core capital, interest income and total debt being the specific data gathered.

### 3.5 Diagnostic Tests

To ascertain the model viability, a number of diagnostic tests were done, like normality, stationarity, Hausman test, multicolinearity, homogeneity and autocorrelation. The assumption of normality was that the dependent variable's residual was normally distributed and closer to the mean. This was accomplished by use of the Shapiro-wilk test or Kolmogorov-Smirnov test. In instances where one of the variables had no normal distribution, it was adjusted using the logarithmic adjustment methodology. Stationarity test was utilized in determining if the statistical characteristics such as variance, mean, as well as autocorrelation change with the passage of time. This property was ascertained via the Levin-Lin Chu unit root test. In the event the data did not meet this property, the data was transformed using natural logarithm. Robust regression was also be used as it provides better regression coefficients than ordinary least square (Khan, 2008).

Autocorrelation is a measure of how similar one time series was when compared to its lagged value across successive timings. The measure of this test was done using the Wooldridge test and in the event that the presumption was breached the robust standard errors were used in the model. Multicollinearity exists when a perfect or near perfect linear relation exist between a number of independent variables. Variance Inflation Factors (VIF) as well as tolerance levels were utilized. Heteroskedasticity confirms if the errors variance in a regression lies among the independent variables. This was tested using the Breuch Pagan test and if data does not meet the homogeneity of variances

assumption, robust regression analysis would be employed as it provides better regression coefficients when outliers exist in the data (Burns & Burns, 2008).

### 3.6 Data Analysis

In data analysis, version 25 of SPSS software was utilized. Tables presented the findings quantitative manner. Descriptive statistics were employed in the calculation of central tendency measures as well as dispersion such as mean as well as standard deviation for every variable. Inferential statistics relied on correlation as well as regression. Correlation determined the magnitude of the affiliation between the variables in the research and a regression determined cause and effect among variables. A multivariate regression linearly established the relation between the dependent and independent variables.

#### 3.6.1 Analytical Model

The following equation was applicable:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Where: Y = Financial performance given as net income divided by total assets

$\beta_0$ =y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ =are the regression coefficients

$X_1$ = Liquidity ratio given as liquid assets to customer deposits

$X_2$ = Firm efficiency given as the ratio of total revenue to total operating expenses

$X_3$ = Financial leverage given as total debt to total assets

$X_4$ = Credit risk as given by the ratio of NPL to total loans

$X_5$ = Capital adequacy as measured by the ratio of core capital to risk weighted assets

$X_6$ = Bank size given by the natural logarithm of total assets

ε =error term

### 3.6.2 Tests of Significance

Parametric tests were utilized to establish the relevance of the overall model and each specific variable. The F-test established the overall model's significance and this was achieved by means of ANOVA whereas a t-test determined coefficient significance.

# CHAPTER FOUR: DATA ANALYSIS RESULTS AND FINDINGS

## 4.1 Introduction

his chapter focuses on data analysis. The objective of the research was to establish the relationship between ratio analysis and ROA among banks in Kenya. Patterns were studied by descriptive and inferential analysis, that were then analyzed and conclusions drawn on them, in accordance with the specific objectives.

## 4.2 Descriptive Statistics

The research sought to describe the data in terms of their mean and standard deviations. The descriptive analysis was necessary as it helps in understanding the characteristics of the collected data before conducting inferential analysis. Table 4.1 summarizes the findings.

**Table 4.1: Descriptive Results**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| ROA | 185 | -.244 | .070 | .00644 | .038379 |
| Liquidity | 185 | .000 | .227 | .07351 | .040753 |
| Leverage | 185 | .096 | 1.075 | .45625 | .168346 |
| Efficiency | 185 | .016 | 11.384 | 1.64009 | 1.178527 |
| Capital adequacy | 185 | .0280 | 2.1258 | .237358 | .2113328 |
| Credit risk | 185 | .0008 | 38.5539 | .355127 | 2.8284459 |
| Bank size | 185 | 14.7750 | 20.6163 | 17.725991 | 1.3648773 |
| Valid N (listwise) | 185 | | | | |

**Source: Field data (2021)**

Table 4.1 shows the descriptive analysis, with 185 observations for each variable based on the product of the number of cross-sectional units and the number of periods studied (37*5 =185). The dependent variable was ROA while the independent variable was

ratio analysis (liquidity, leverage, efficiency, capital adequacy and credit risk). Finally, the control variable was bank size.

### 4.3 Diagnostic Tests

To ascertain the model viability, a number of diagnostic tests were done, like normality, stationarity, Multicollinearity test, homogeneity of variance and autocorrelation.

#### 4.3.1 Normality Test

To test whether the collected data assumed a normal distribution, normality test was conducted using the Shapiro-Wilk Test. The threshold was that, if the p value is above 0.05, then the data assumes a normally distribution.

**Table 4.2: Test for Normality**

| | Shapiro-Wilk | | |
|---|---|---|---|
| | Statistic | Df | Sig. |
| ROA | 0.869 | 185 | 0.078 |
| Liquidity | 0.918 | 185 | 0.102 |
| Leverage | 0.881 | 185 | 0.094 |
| Efficiency | 0.874 | 185 | 0.091 |
| Capital adequacy | 0.892 | 185 | 0.101 |
| Credit risk | 0.923 | 185 | 0.120 |
| Bank size | 0.874 | 185 | 0.094 |

a. Lilliefors Significance Correction

**Source: Field Data (2021)**

The outcomes of normality test yielded a p- value above 0.05 thus the null hypothesis rejection and acceptance of the alternate hypothesis meaning the normality test revealing normal distribution in the data.

#### 4.3.2 Multicollinearity Test

Multicollinearity exists when a perfect or near perfect linear relation exist between a number of independent variables. Variance Inflation Factors (VIF) as well as tolerance levels were utilized.

**Table 4.3: Multicollinearity**

| | Collinearity Statistics | |
|---|---|---|
| **Variable** | **Tolerance** | **VIF** |
| Liquidity | 0.724 | 1.382 |
| Leverage | 0.684 | 1.463 |
| Efficiency | 0.697 | 1.434 |
| Capital adequacy | 0.703 | 1.422 |
| Credit risk | 0.661 | 1.513 |
| Bank size | 0.634 | 1.577 |

**Source: Field data (2021)**

The outcomes in Table 4.3 specify that all the variables had a VIF values <10 and tolerance values >0.2 suggesting that Multicollinearity did not exist.

### 4.3.3 Heteroskedasticity test

To check for heteroskedasticity, the Breusch-Pagan test is used. The null hypothesis was that the variance of error terms is constant. Heteroskedasticity Test Results are shown in Table 4.4.

**Table 4.4: Heteroskedasticity Results**

| **Breusch-Pagan / Cook-Weisberg test for heteroscedasticity** | | |
|---|---|---|
| Ho: Constant variance | | |
| Variable: fitted values | | |
| chi2(1) | = | 0.8227 |
| Prob > chi2 | = | 0.6314 |

**Source: Field data (2021)**

The null hypothesis of Homoskedastic error terms is not rejected, according to the results in Table 4.4, which are supported by a 0.6314 p-value

### 4.3.4 Autocorrelation Test

Autocorrelation is a measure of how similar one time series was when compared to its lagged value across successive timings. The measure of this test was done using the Wooldridge test.

**Table 4.5: Test of Autocorrelation**

| **Wooldridge test for autocorrelation in panel data**<br>**H0: no first-order autocorrelation** |
|---|
| F( 1, 184) = 0.329 |
| Prob> F = 0.5164 |

**Source: Field data (2021)**

From the results of Table 4.5, the null hypothesis of no serial correlation is not rejected given that the p-value is significant (p-value = 0.5164).

### 4.3.5 Stationarity Test

Stationarity test was utilized in determining if the statistical characteristics such as variance, mean, as well as autocorrelation change with the passage of time. Table 4.6 shows Levin-Lin Chu unit root test outcomes.

**Table 4.6: Levin-Lin Chu unit-root test**

| **Levin-Lin Chu unit-root test** | | | |
|---|---|---|---|
| **Variable** | **Hypothesis** | **p value** | **Verdict** |
| ROA | Ho: Panels contain unit roots | 0.0000 | Reject Ho |
| Liquidity | Ho: Panels contain unit roots | 0.0000 | Reject Ho |
| Leverage | Ho: Panels contain unit roots | 0.0000 | Reject Ho |
| Efficiency | Ho: Panels contain unit roots | 0.0000 | Reject Ho |
| Capital adequacy | Ho: Panels contain unit roots | 0.0000 | Reject Ho |
| Credit risk | Ho: Panels contain unit roots | 0.0000 | Reject Ho |
| Bank size | Ho: Panels contain unit roots | 0.0000 | Reject Ho |

**Source: Field data (2021)**

The null hypotheses that: Panels contain unit roots were rejected for all variables since the p values were below 0.05, derived from the outcomes in Table 4.6. This meant that all of the variables' panel data were stationary.

### 4.4 Correlation Results

Correlation analysis was carried out to determine strength as well as association direction between each predictor variable and the response variable. The results in Table 4.7 show the nature of link between the research variables in terms of magnitude and direction.

**Table 4.7: Correlation Results**

| | | ROA | Liquidity | Leverage | Efficiency | Capital adequacy | Credit risk | Bank size |
|---|---|---|---|---|---|---|---|---|
| ROA | Pearson Correlation | 1 | | | | | | |
| | Sig. (2-tailed) | | | | | | | |
| Liquidity | Pearson Correlation | .005 | 1 | | | | | |
| | Sig. (2-tailed) | .947 | | | | | | |
| Leverage | Pearson Correlation | -.495** | -.140 | 1 | | | | |
| | Sig. (2-tailed) | .000 | .057 | | | | | |
| Efficiency | Pearson Correlation | .357** | -.234** | -.146* | 1 | | | |
| | Sig. (2-tailed) | .000 | .001 | .048 | | | | |
| Capital adequacy | Pearson Correlation | .057 | -.057 | .046 | .184* | 1 | | |
| | Sig. (2-tailed) | .438 | .441 | .534 | .012 | | | |
| Credit risk | Pearson Correlation | -.479** | -.049 | .114 | -.113 | .155* | 1 | |
| | Sig. (2-tailed) | .000 | .508 | .124 | .126 | .036 | | |
| Bank size | Pearson Correlation | .495** | -.147* | -.545** | .268** | -.034 | -.174* | 1 |
| | Sig. (2-tailed) | .000 | .046 | .000 | .000 | .643 | .018 | |

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
c. Listwise N=185

**Source: Field data (2021)**

The outcomes in Table 4.8 reveal that liquidity and ROA are positively but not significantly correlated (r=0.005) at 5% significance level. In addition, the results show that leverage and ROA are negatively and significantly correlated (r=-0.495**) at 5 % significance level. This implies that leverage and ROA change in the opposite direction. Further, results show that efficiency and ROA are positively and significantly correlated (r=0.357**) at 5 % significance level. This implies that both efficiency and ROA change in the same direction. Capital adequacy did not have a significant link with ROA while credit risk had a significant negative relationship with ROA (r=-0.479**) at 5 % significance level. Bank size exhibited a positive and substantial relationship with ROA (r=0.495**) at 5 % significance level.

### 4.5 Regression Results

Regression analysis was performed to determine the extent to which ROA is explained by the selected variables. The regression results were presented in Table 4.8 to Table 4.10.

**Table 4.8: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .725[a] | .525 | .509 | .026893 |

a. Predictors: (Constant), Bank size, Capital adequacy, Liquidity, Credit risk, Efficiency, Leverage

**Source: Field data (2021)**

From the findings as represented by the adjusted $R^2$, the independent variables that were studied explained 52.5% of the variations in ROA among commercial banks in Kenya. This therefore means the six variables contributed 52.5% of the variations in ROA among commercial banks in Kenya whereas other factors not researched contribute 47.5%.

**Table 4.9: ANOVA Analysis**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .142 | 6 | .024 | 32.787 | .000[b] |
| | Residual | .129 | 178 | .001 | | |
| | Total | .271 | 184 | | | |

a. Dependent Variable: ROA

b. Predictors: (Constant), Bank size, Capital adequacy, Liquidity, Credit risk, Efficiency, Leverage

**Source: Field data (2021)**

Table 4.9 ANOVA statistics depict that the data had a 0.000 level of significance hence this indicates that the data is perfect for making conclusions on the variables.

**Table 4.10: Regression Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -.080 | .038 | | -2.111 | .036 |
| | Liquidity | .014 | .052 | .015 | .261 | .794 |
| | Leverage | -.071 | .015 | -.310 | -4.836 | .000 |
| | Efficiency | .006 | .002 | .195 | 3.457 | .001 |
| | Capital adequacy | .019 | .010 | .106 | 1.976 | .050 |
| | Credit risk | -.005 | .001 | -.401 | -7.490 | .000 |
| | Bank size | .006 | .002 | .210 | 3.204 | .002 |

a. Dependent Variable: ROA

**Source: Field data (2021)**

The coefficient of regression model was as below;

$$\mathbf{Y = -0.080 - 0.071X_1 + 006X_2 - 0.005X_4 + 0.006X_5}$$

Where:

Y = ROA; $X_1$ = Leverage; $X_2$ = Efficiency; $X_3$ = Credit risk; $X_4$= Bank size

### 4.6 Discussion of Research Findings

The research objective was to determine the effectiveness of ratio analysis in predicting ROA. The study utilized a descriptive design while population was the 38 banks in

Kenya. Data was collected from 37 banks, resulting in a response rate of 97.4%, which was deemed sufficient. The study relied on secondary data which was gathered from CBK and individual banks annual reports. The specific attributes of ratio analysis considered were; liquidity, leverage and efficiency, capital adequacy and credit risk. The control variable was bank size. Data was analyzed via descriptive as well as inferential statistics. This section discusses the findings.

Regression results revealed that liquidity ratio was positively but not significantly related with ROA of banks in Kenya ($\beta$=0.014, p=0.794). These findings agree with those of Okwono, Odemwe and Ului (2020) who focused on the effectiveness of current ratio in determining share returns. The results showed that the change in share prices between the varying total assets and price income ratio was affected. The changes in stock price do not impact other independent variables such as the current ratios, equity returns, and the debt-to-equity ratio.

In addition, results reveal that leverage was negatively and significantly related with ROA of banks in Kenya ($\beta$=-0.071, p=0.000). These conclusions agree with those of Kim et al. (2019) who indicated that leverage affects the performance of banks. These findings were however inconsistent with those of Muigai (2016) who found that there was no significant link between capital structure and ROA of listed firms.

The outcomes further show that efficiency was positively and significantly related with ROA of banks ($\beta$=0.006, p=0.001). These findings agree with those of Meeme (2015) who found a positive connection between efficiency and ROA. These findings are also consistent with those of Atsango (2018) who examined the impact of efficiency on performance of banks in Kenya and established a positive and significant effect.

Credit risk exhibited a negative and significant effect on ROA of banks (β=-.005, p=0.000). These findings concur with Gadzo et al. (2019) who concluded that credit risk has a negative effect on ROA Ghanaian banks. Capital adequacy exhibited a not significant positive effect while bank size exhibited a significant positive effect. The R squared was 0.525. Implying the chosen predictor variables contributed 52.5% to variations in ROA.

# CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

This chapter summarizes the findings from the preceding chapter, as well as the conclusions and limitations discovered during the research. Moreover, it provides recommendation for policy makers and offer suggestions on areas desiring further research.

## 5.2 Summary of Findings

The objective of this research was to assess the effectiveness ratio analysis in predicting ROA of banks in Kenya. The chosen variables for research comprised liquidity ratio, leverage ratio, efficiency ratio, credit risk ratio, capital adequacy ratio and bank size. A descriptive research design was chosen in completion of the research. Secondary data was gathered from CBK and an analysis performed via SPSS. Annual data for 37 banks for five years from 2016 to 2020 was obtained from their annual reports.

The first objective was to determine liquidity effect on ROA among commercial banks in Kenya. The correlation results at 5% significance level show that liquidity ratio possessed positive though not significant link with ROA. Regression results ($\beta$=0.014, p=0.794) show that there was a positive but not significant effect of liquidity ratio on ROA among banks in Kenya. This implies that liquidity ratio is not a good predictor of financial performance.

The second objective was to assess the effectiveness of leverage ratio in predicting ROA among banks in Kenya. The correlation results at 5% significance level show that leverage had a negative correlation with ROA. Regression results ($\beta$=-0.071, p=0.000) show that there was a negative and significant effect of leverage on ROA among banks

in Kenya. This implies that leverage ratio is an effective predictor of ROA among banks in Kenya.

The third objective was to examine the effectiveness of efficiency ratio in predicting ROA among banks in Kenya. The correlation results at 5 % significance level show that efficiency possessed a positive link with ROA. This implies that enhancement in efficiency would lead to increase in ROA. Regression results ($\beta$=0.006, p=0.001) show presence of positive as well as significant effect of efficiency on ROA among banks in Kenya. This implies that efficiency ratio is a good predictor of ROA among banks.

The fourth objective was to examine the effectiveness of capital adequacy in predicting ROA among banks in Kenya. The correlation results at significance level of 5% show that capital adequacy had a positive although not significant link with ROA. As a result, increasing capital adequacy will not result in a major change in ROA. Regression results ($\beta$=0.019, p=0.05) show that there was a positive but not significant capital adequacy impact on ROA among banks in Kenya.

The fifth objective was to examine the effectiveness of credit risk in predicting ROA among banks in Kenya. The correlation results at 5 % significance level show that credit risk possessed a negative link with ROA. The link was statistically significant as well. Regression results ($\beta$=0.006, p=0.001) show that there was a negative and significant effect of credit risk on ROA among banks in Kenya. This implies that credit risk ratio is a good predictor of ROA among banks in Kenya.

The sixth objective was to examine the effectiveness of bank size in predicting ROA among banks in Kenya. The correlation results at 5% significance level show that bank size possessed a positive link with ROA. This implies improved bank size would lead

to increase in ROA. Regression results (β=0.006, p=0.002) show that there was a positive as well as significant effect of bank size on ROA among banks in Kenya.

### 5.3 Conclusions

The study results further indicated that leverage ratio is an effective predictor of ROA. This may imply that banks with more financial leverage in their books are likely to record a low level of ROA compared with banks with less financial leverage. The study concludes that leverage ratio is a good predictor of ROA among banks in Kenya.

The study conclusions depicted efficiency possessed a positive as well as significant effect on ROA. This may imply that banks which have high efficiency are likely to record a high level of ROA compared with banks with less efficiency. The study concludes that efficiency ratio is a good predictor of ROA among banks in Kenya.

In addition, the results discovered credit risk ratio has a significant negative effect on ROA. This implies that banks with high levels of NPLs in their books end up having a lower ROA. The study concludes that credit risk ratio is an effective predictor of ROA. Further, the study revealed that bank size possesses a significant positive impact on ROA. This research concludes that bank size is an effective predictor of ROA among banks.

### 5.4 Recommendations for Policy and Practice

The research findings reveal that leverage had a negative and significant impact on ROA. The research thus suggests administration and directors of commercial banks in Kenya ought to strike a balance between the benefits of leverage and the costs allied with it as high levels of leverage were found to decrease ROA.

From the study findings, efficiency had a significant effect on ROA. Thus, the research recommends that commercial banks directors in Kenya ought to come up with policy guidelines on how banks should maximize efficiency. Furthermore, management and directors of banks in Kenya should work on ensuring they have efficiency managers in place as this will have a significant contribution on ROA.

Further, bank size was found to have a significant and positive effect on ROA of banks. The study therefore recommends that banks in Kenya should strive on growing their asset base as bigger banks are able to enjoy economies of scale and have better structures that help them in managing and monitoring loans compared to small banks and this leads to enhanced ROA.

### 5.5 Limitations of the Study

The focus was on some of the elements that are thought to predict ROA of banks in Kenya. The study concentrated on six explanatory variables. Other factors, however, are likely to have an impact on a company's ROA. Some are controlled by the bank, such as internal control systems and corporate governance, while others are not.

The research used secondary quantitative data. The study also ignored qualitative data that could explain other factors that influence the relationship between ratio analysis and banks' ROA. Qualitative methods like focus groups, open-ended surveys, and interviews can aid in the development of more definite outcomes.

The research focused on a five-year duration (2016 to 2020). It is unclear whether the results will last for a longer period of time. It is too not clear if same results will be achieved after 2020. In order to account for key economic events, the research ought to have been conducted over a longer period of time.

The researchers utilized an ordinary least square regression model to analyze the data. Because of the limitations of employing regression models, such as erroneous as well as deceiving outcomes that cause the variable value to change, it was not possible to generalize the conclusions of the research with accuracy. Furthermore, if more data was included in the regression, the outcome could be varied.

### 5.6 Suggestions for Further Research

The research findings discovered an R square of 52.5%. This implies that there are other factors that predict ROA among the banks in Kenya that were not addressed by the research. Other researches ought thus to focus on other factors for example; interest rate risk, operational risk, board composition in terms of expertise, audit committee, among other corporate governance aspects that affect ROA among the banks.

The research was limited to commercial banks in Kenya. Additional research on other Kenyan financial institutions should be conducted, according to the study's suggestions. Future research should look into how ratio analysis predicts other factors besides the ROA, such as bank value, efficiency, and growth, to name a few.

Because of the readily available data, the focus of this research was drawn to the last five years. Future studies may span a longer time period, such as ten or twenty years, and might have a significant impact on this study by either complementing or contradicting its conclusions. A longer study has the advantage of allowing the researcher to catch the effects of business cycles such as booms and recessions.

Lastly, this research relied on a regression model, that has its own set of drawbacks, like errors and deceptive conclusions when a variable is changed. Future study ought to concentrate on models like the Vector Error Correction Model (VECM) in order to investigate the predictive ability of ratio analysis on ROA.

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# APPENDICES

## Appendix I: Research Data

| Bank | Year | ROA | Liquidity | Leverage | Efficiency | Capital adequacy | Credit risk | Bank size |
|---|---|---|---|---|---|---|---|---|
| 1 | 2016 | 0.008 | 0.054 | 0.539 | 1.169 | 0.1645 | 0.1426 | 16.9342 |
| | 2017 | 0.003 | 0.066 | 0.637 | 1.117 | 0.1528 | 0.1566 | 16.9451 |
| | 2018 | 0.006 | 0.099 | 1.075 | 1.096 | 0.1560 | 0.1829 | 17.0576 |
| | 2019 | 0.000 | 0.063 | 0.586 | 1.094 | 0.1844 | 0.1989 | 17.1451 |
| | 2020 | 0.002 | 0.075 | 0.595 | 1.101 | 0.1538 | 0.1490 | 17.1964 |
| 2 | 2016 | -0.015 | 0.086 | 0.602 | 0.716 | 0.1639 | 0.2325 | 18.0537 |
| | 2017 | 0.000 | 0.114 | 0.536 | 0.997 | 0.1616 | 0.2606 | 17.8408 |
| | 2018 | 0.001 | 0.095 | 0.696 | 1.010 | 0.1578 | 0.2816 | 17.8080 |
| | 2019 | 0.004 | 0.202 | 0.651 | 1.078 | 0.1602 | 0.3383 | 17.7090 |
| | 2020 | -0.046 | 0.210 | 0.659 | 0.449 | 0.1083 | 0.4139 | 17.5996 |
| 3 | 2016 | 0.030 | 0.047 | 0.512 | 2.591 | 1.9617 | 0.0754 | 18.0376 |
| | 2017 | 0.036 | 0.049 | 0.479 | 11.384 | 0.3053 | 0.0846 | 18.2332 |
| | 2018 | 0.041 | 0.045 | 0.447 | 7.477 | 0.3229 | 0.0586 | 18.3812 |
| | 2019 | 0.032 | 0.052 | 0.450 | 3.995 | 0.3466 | 0.0882 | 18.6278 |
| | 2020 | 0.029 | 0.055 | 0.511 | 3.394 | 0.3274 | 0.0828 | 18.7805 |
| 4 | 2016 | 0.035 | 0.075 | 0.193 | 1.694 | 0.1840 | 0.0420 | 19.2998 |
| | 2017 | 0.028 | 0.052 | 0.206 | 1.521 | 0.1786 | 0.0521 | 19.3751 |
| | 2018 | 0.026 | 0.060 | 0.199 | 1.521 | 0.1803 | 0.0556 | 19.4197 |
| | 2019 | 0.023 | 0.072 | 0.243 | 1.506 | 0.1638 | 0.0610 | 19.6003 |
| | 2020 | 0.020 | 0.077 | 0.253 | 1.562 | 0.1667 | 0.0560 | 19.7397 |
| 5 | 2016 | 0.026 | 0.036 | 0.517 | 3.597 | 0.4230 | 0.0202 | 17.5571 |
| | 2017 | 0.034 | 0.034 | 0.440 | 4.861 | 0.4574 | 0.0139 | 17.6829 |
| | 2018 | 0.037 | 0.039 | 0.419 | 5.024 | 0.5397 | 0.0207 | 17.8521 |
| | 2019 | 0.031 | 0.034 | 0.455 | 3.654 | 0.4392 | 0.0713 | 17.9537 |
| | 2020 | 0.037 | 0.043 | 0.451 | 4.945 | 0.4842 | 0.0936 | 17.9514 |
| 6 | 2016 | 0.039 | 0.111 | 0.211 | 2.781 | 0.2832 | 0.0580 | 18.2945 |
| | 2017 | 0.033 | 0.067 | 0.152 | 3.045 | 0.2637 | 0.0192 | 18.4534 |
| | 2018 | 0.040 | 0.084 | 0.160 | 3.027 | 0.2555 | 0.0368 | 18.4028 |
| | 2019 | 0.037 | 0.086 | 0.171 | 2.598 | 0.2764 | 0.0162 | 18.2656 |
| | 2020 | 0.030 | 0.122 | 0.146 | 2.513 | 0.2715 | 0.0257 | 18.3858 |
| 7 | 2016 | 0.017 | 0.081 | 0.512 | 1.527 | 0.1792 | 0.1059 | 19.1891 |
| | 2017 | 0.029 | 0.134 | 0.536 | 1.604 | 0.1845 | 0.0745 | 19.2507 |
| | 2018 | 0.023 | 0.095 | 0.503 | 1.507 | 0.1732 | 0.0831 | 19.3199 |
| | 2019 | 0.023 | 0.075 | 0.568 | 1.437 | 0.1573 | 0.0797 | 19.3172 |
| 8 | 2020 | 0.003 | 0.054 | 0.480 | 1.025 | 0.0939 | 0.0553 | 16.4642 |

| Bank | Year | ROA | Liquidity | Leverage | Efficiency | Capital adequacy | Credit risk | Bank size |
|---|---|---|---|---|---|---|---|---|
| | 2016 | -0.015 | 0.047 | 0.590 | 0.839 | 0.0790 | 0.1176 | 16.4487 |
| | 2017 | -0.025 | 0.064 | 0.629 | 0.744 | 0.0509 | 0.1527 | 16.4149 |
| | 2018 | -0.042 | 0.071 | 0.541 | 0.800 | 0.0280 | 0.1533 | 16.3718 |
| | 2019 | -0.045 | 0.076 | 0.555 | 0.704 | 0.1352 | 0.2568 | 16.2888 |
| 9 | 2020 | -0.006 | 0.025 | 0.492 | 0.821 | 0.1551 | 0.0638 | 16.1464 |
| | 2016 | 0.009 | 0.025 | 0.490 | 1.147 | 0.2285 | 0.0722 | 16.3200 |
| | 2017 | 0.009 | 0.020 | 0.483 | 1.152 | 0.1477 | 0.0754 | 16.4904 |
| | 2018 | 0.014 | 0.023 | 0.490 | 1.249 | 0.1451 | 0.0724 | 16.7006 |
| | 2019 | 0.010 | 0.018 | 0.571 | 1.203 | 0.1496 | 0.0870 | 16.8910 |
| 10 | 2020 | 0.034 | 0.086 | 0.369 | 1.701 | 2.1258 | 0.0342 | 19.6518 |
| | 2016 | 0.036 | 0.073 | 0.302 | 1.715 | 0.2277 | 0.0390 | 19.6787 |
| | 2017 | 0.029 | 0.063 | 0.304 | 1.642 | 0.2268 | 0.0620 | 19.7736 |
| | 2018 | 0.031 | 0.079 | 0.284 | 1.700 | 0.1618 | 0.1009 | 19.8406 |
| | 2019 | 0.031 | 0.064 | 0.283 | 1.744 | 0.1505 | 0.0979 | 19.9402 |
| 11 | 2020 | 0.004 | 0.005 | 0.724 | 1.185 | 0.2508 | 0.2601 | 16.6135 |
| | 2016 | 0.002 | 0.004 | 0.730 | 1.129 | 0.2355 | 0.2098 | 16.6072 |
| | 2017 | 0.007 | 0.008 | 0.706 | 1.461 | 0.2323 | 0.2981 | 16.5449 |
| | 2018 | 0.070 | 0.024 | 0.697 | 3.765 | 0.3147 | 0.3695 | 16.5472 |
| 12 | 2019 | 0.024 | 0.016 | 0.383 | 2.261 | 0.1463 | 0.0241 | 19.4199 |
| | 2020 | 0.024 | 0.018 | 0.395 | 2.311 | 0.1850 | 0.0325 | 19.6087 |
| | 2016 | 0.019 | 0.021 | 0.404 | 2.047 | 0.1901 | 0.0666 | 19.7107 |
| | 2017 | 0.019 | 0.021 | 0.404 | 2.040 | 0.2111 | 0.0629 | 19.7497 |
| | 2018 | 0.019 | 0.021 | 0.389 | 2.061 | 0.2091 | 0.0683 | 19.7719 |
| 13 | 2019 | -0.230 | 0.042 | 0.677 | 0.016 | 0.7005 | 38.5539 | 14.7750 |
| | 2020 | -0.119 | 0.099 | 0.709 | 0.134 | 0.2990 | 0.0037 | 15.4739 |
| | 2016 | -0.064 | 0.126 | 0.608 | 0.217 | 0.1486 | 0.0095 | 16.0114 |
| 14 | 2017 | 0.002 | 0.068 | 0.592 | 1.031 | 0.2496 | 0.0622 | 17.7749 |
| | 2018 | -0.043 | 0.048 | 0.887 | 0.308 | 0.1944 | 0.1628 | 17.6683 |
| | 2019 | -0.021 | 0.085 | 0.398 | 0.672 | 0.1599 | 0.3770 | 17.7944 |
| | 2020 | 0.004 | 0.074 | 0.366 | 1.051 | 0.1659 | 0.1735 | 17.8130 |
| | 2016 | 0.002 | 0.030 | 0.310 | 1.088 | 0.1622 | 0.1448 | 18.1380 |
| 15 | 2017 | 0.040 | 0.081 | 0.175 | 1.808 | 0.2017 | 0.0272 | 19.8748 |
| | 2018 | 0.035 | 0.049 | 0.186 | 1.827 | 0.1966 | 0.0628 | 19.9761 |
| | 2019 | 0.036 | 0.051 | 0.226 | 1.937 | 0.2041 | 0.0553 | 20.0779 |
| | 2020 | 0.035 | 0.042 | 0.218 | 1.976 | 0.1593 | 0.0710 | 20.1671 |
| | 2016 | 0.036 | 0.071 | 0.243 | 1.890 | 0.1979 | 0.0873 | 20.3283 |
| 16 | 2017 | 0.024 | 0.076 | 0.363 | 1.456 | 0.1441 | 0.0367 | 18.2134 |
| | 2018 | 0.005 | 0.079 | 0.369 | 1.076 | 0.2078 | 0.1197 | 18.0567 |
| | 2019 | -0.014 | 0.082 | 0.379 | 0.825 | 0.1986 | 0.1923 | 18.0516 |

| Bank | Year | ROA | Liquidity | Leverage | Efficiency | Capital adequacy | Credit risk | Bank size |
|---|---|---|---|---|---|---|---|---|
| | 2020 | 0.004 | 0.094 | 0.346 | 1.066 | 0.1952 | 0.1618 | 18.0204 |
| | 2016 | 0.012 | 0.088 | 0.300 | 1.214 | 0.1869 | 0.1409 | 18.1831 |
| 17 | 2017 | -0.001 | 0.168 | 0.096 | 1.008 | 0.1145 | 0.2346 | 16.4941 |
| | 2018 | -0.004 | 0.149 | 0.232 | 1.202 | 0.1399 | 0.3195 | 16.5210 |
| | 2019 | 0.009 | 0.134 | 0.208 | 0.972 | 0.1534 | 0.4078 | 16.6697 |
| | 2020 | -0.012 | 0.127 | 0.271 | 0.809 | 0.0911 | 0.4882 | 16.6992 |
| | 2016 | 0.010 | 0.168 | 0.245 | 1.184 | 0.0810 | 0.4145 | 16.7474 |
| 18 | 2017 | 0.009 | 0.079 | 0.440 | 1.349 | 0.2649 | 0.0916 | 17.5282 |
| | 2018 | 0.013 | 0.227 | 0.428 | 1.423 | 0.2547 | 0.1108 | 17.2864 |
| | 2019 | 0.007 | 0.196 | 0.430 | 1.148 | 0.2387 | 0.1088 | 17.2774 |
| | 2020 | 0.002 | 0.048 | 0.428 | 1.216 | 0.2597 | 0.1467 | 17.4516 |
| | 2016 | 0.020 | 0.053 | 0.359 | 1.364 | 0.2428 | 0.1090 | 17.1856 |
| 19 | 2017 | 0.016 | 0.090 | 0.526 | 1.387 | 0.1763 | 0.0304 | 16.4972 |
| | 2018 | 0.016 | 0.104 | 0.509 | 1.324 | 0.1904 | 0.0169 | 16.5037 |
| | 2019 | 0.010 | 0.078 | 0.513 | 1.388 | 0.2022 | 0.0453 | 16.5757 |
| | 2020 | 0.014 | 0.086 | 0.486 | 2.000 | 0.2275 | 0.0757 | 16.5997 |
| | 2016 | 0.011 | 0.096 | 0.535 | 2.000 | 0.2220 | 0.0689 | 16.6120 |
| 20 | 2017 | 0.029 | 0.089 | 0.180 | 1.623 | 0.1577 | 0.0842 | 17.0226 |
| | 2018 | 0.018 | 0.128 | 0.185 | 1.445 | 0.1872 | 0.0923 | 17.1171 |
| | 2019 | 0.005 | 0.109 | 0.222 | 1.107 | 0.1620 | 0.0929 | 17.2596 |
| | 2020 | 0.004 | 0.087 | 0.229 | 1.109 | 0.1866 | 0.1064 | 17.3218 |
| | 2016 | 0.005 | 0.064 | 0.295 | 1.088 | 0.1711 | 0.1534 | 17.3744 |
| 21 | 2017 | 0.029 | 0.053 | 0.322 | 2.399 | 0.3213 | 0.0792 | 16.1408 |
| | 2018 | 0.024 | 0.067 | 0.387 | 2.446 | 0.3911 | 0.1871 | 16.3419 |
| | 2019 | 0.011 | 0.032 | 0.476 | 1.494 | 0.2463 | 0.0745 | 16.8845 |
| | 2020 | 0.010 | 0.030 | 0.474 | 1.472 | 0.2729 | 0.0922 | 17.0273 |
| 22 | 2016 | 0.017 | 0.000 | 0.554 | 1.672 | 0.1813 | 0.0437 | 18.0874 |
| | 2017 | 0.013 | 0.070 | 0.543 | 1.517 | 0.1769 | 0.0692 | 18.0912 |
| | 2018 | 0.002 | 0.060 | 0.583 | 1.091 | 0.1700 | 0.1081 | 18.0282 |
| | 2019 | -0.010 | 0.046 | 0.597 | 0.874 | 0.1534 | 0.2494 | 17.9190 |
| | 2020 | -0.002 | 0.050 | 0.560 | 0.992 | 0.1456 | 0.2356 | 17.8490 |
| 23 | 2016 | 0.037 | 0.052 | 0.440 | 2.880 | 0.2020 | 0.0248 | 19.0716 |
| | 2017 | 0.037 | 0.053 | 0.377 | 2.137 | 0.1815 | 0.0289 | 19.1652 |
| | 2018 | 0.030 | 0.049 | 0.372 | 1.830 | 0.1858 | 0.0870 | 19.2966 |
| | 2019 | 0.026 | 0.048 | 0.411 | 1.955 | 0.1792 | 0.1079 | 19.3315 |
| | 2020 | 0.033 | 0.044 | 0.444 | 2.840 | 0.2156 | 0.0979 | 19.4287 |
| 24 | 2016 | 0.001 | 0.065 | 0.585 | 1.492 | 0.1625 | 0.0517 | 16.6358 |
| | 2017 | -0.011 | 0.044 | 0.750 | 1.279 | 0.2008 | 0.1720 | 16.5742 |
| | 2018 | -0.037 | 0.013 | 0.633 | 1.256 | 0.1933 | 0.1331 | 16.3714 |
| 25 | 2016 | 0.035 | 0.174 | 0.304 | 1.876 | 0.1536 | 0.0446 | 20.1400 |

| Bank | Year | ROA | Liquidity | Leverage | Efficiency | Capital adequacy | Credit risk | Bank size |
|---|---|---|---|---|---|---|---|---|
| | 2017 | 0.033 | 0.049 | 0.236 | 1.959 | 0.1801 | 0.0705 | 20.2045 |
| | 2018 | 0.030 | 0.045 | 0.214 | 1.819 | 0.1663 | 0.0766 | 20.2873 |
| | 2019 | 0.034 | 0.059 | 0.253 | 1.997 | 0.1955 | 0.0627 | 20.3868 |
| | 2020 | 0.028 | 0.068 | 0.234 | 1.846 | 0.1903 | 0.1016 | 20.6163 |
| 26 | 2016 | -0.013 | 0.058 | 0.630 | 0.727 | 0.3933 | 0.1590 | 15.4706 |
| | 2017 | -0.005 | 0.158 | 0.607 | 0.863 | 0.5708 | 0.1807 | 15.4489 |
| | 2018 | 0.000 | 0.066 | 0.513 | 1.002 | 0.4494 | 0.3825 | 15.4946 |
| | 2019 | 0.000 | 0.062 | 0.493 | 1.128 | 0.3119 | 0.1374 | 15.9516 |
| 27 | 2016 | 0.003 | 0.080 | 0.478 | 1.051 | 0.3869 | 0.0821 | 16.1101 |
| | 2017 | 0.009 | 0.092 | 0.470 | 1.174 | 0.3316 | 0.0718 | 16.1741 |
| | 2018 | 0.008 | 0.110 | 0.527 | 1.177 | 0.3093 | 0.0940 | 16.1683 |
| | 2019 | -0.002 | 0.086 | 0.615 | 1.113 | 0.3442 | 0.1931 | 16.3327 |
| 28 | 2016 | -0.009 | 0.131 | 0.479 | 1.151 | 0.1399 | 0.1116 | 18.6473 |
| | 2017 | 0.001 | 0.076 | 0.356 | 1.006 | 0.0715 | 0.1749 | 18.5348 |
| | 2018 | 0.007 | 0.068 | 0.327 | 1.089 | 0.0542 | 0.3001 | 18.5148 |
| | 2019 | -0.001 | 0.053 | 0.326 | 1.078 | 0.0370 | 0.3913 | 18.5591 |
| | 2020 | -0.008 | 0.113 | 0.303 | 1.090 | 0.1150 | 0.3564 | 18.5343 |
| 29 | 2017 | 0.027 | 0.054 | 0.427 | 2.133 | 0.2059 | 0.0912 | 18.9262 |
| | 2018 | 0.026 | 0.043 | 0.360 | 1.999 | 0.2304 | 0.1126 | 18.9481 |
| | 2019 | 0.020 | 0.046 | 0.394 | 1.895 | 0.2227 | 0.1089 | 19.1442 |
| | 2020 | 0.020 | 0.057 | 0.415 | 1.840 | 0.1869 | 0.1224 | 19.1550 |
| 30 | 2016 | 0.015 | 0.096 | 0.585 | 1.492 | 0.2412 | 0.0519 | 16.1693 |
| | 2017 | 0.011 | 0.081 | 0.750 | 1.279 | 0.2741 | 0.0828 | 16.0592 |
| | 2018 | 0.012 | 0.115 | 0.633 | 1.256 | 0.2946 | 0.1056 | 16.0711 |
| | 2019 | 0.024 | 0.125 | 0.636 | 1.457 | 0.2853 | 0.1318 | 16.1067 |
| | 2020 | 0.009 | 0.087 | 0.609 | 1.226 | 0.2450 | 0.1211 | 16.1615 |
| 31 | 2016 | 0.031 | 0.057 | 0.520 | 2.443 | 0.1729 | 0.0170 | 17.9899 |
| | 2017 | 0.029 | 0.041 | 0.531 | 2.058 | 0.2216 | 0.0362 | 17.9950 |
| | 2018 | 0.029 | 0.061 | 0.508 | 1.743 | 0.2248 | 0.0486 | 18.1721 |
| | 2019 | 0.023 | 0.088 | 0.530 | 1.815 | 0.3729 | 0.0606 | 18.4220 |
| | 2020 | 0.024 | 0.053 | 0.525 | 1.816 | 0.4136 | 0.1018 | 18.5049 |
| 32 | 2016 | -0.005 | 0.080 | 0.697 | 0.897 | 0.1509 | 0.1025 | 18.7977 |
| | 2017 | -0.192 | 0.031 | 0.658 | 0.233 | 0.1281 | 0.8832 | 16.0873 |
| | 2018 | -0.029 | 0.088 | 0.748 | 0.510 | 0.1644 | 0.7290 | 16.2608 |
| | 2019 | 0.019 | 0.111 | 0.581 | 1.251 | 0.2425 | 1.2528 | 18.0733 |
| | 2020 | 0.012 | 0.059 | 0.557 | 1.230 | 0.2312 | 0.8521 | 18.0994 |
| 33 | 2016 | 0.019 | 0.156 | 0.392 | 1.292 | 0.2468 | 0.1284 | 16.7655 |
| | 2017 | 0.001 | 0.149 | 0.386 | 1.025 | 0.2325 | 0.2383 | 16.8541 |
| | 2018 | -0.022 | 0.199 | 0.480 | 1.271 | 0.1646 | 0.2780 | 16.7757 |
| | 2019 | -0.015 | 0.085 | 0.498 | 1.211 | 0.1440 | 0.2035 | 17.0467 |

| Bank | Year | ROA | Liquidity | Leverage | Efficiency | Capital adequacy | Credit risk | Bank size |
|---|---|---|---|---|---|---|---|---|
| | 2020 | 0.004 | 0.125 | 0.562 | 1.028 | 0.1793 | 0.1968 | 17.0908 |
| 34 | 2016 | 0.024 | 0.054 | 0.374 | 1.856 | 0.1870 | 0.0411 | 19.1552 |
| | 2017 | 0.021 | 0.040 | 0.429 | 1.588 | 0.1812 | 0.0505 | 19.1847 |
| | 2018 | 0.017 | 0.032 | 0.362 | 1.517 | 0.1684 | 0.0666 | 19.3319 |
| | 2019 | 0.022 | 0.079 | 0.373 | 1.827 | 0.1740 | 0.0945 | 19.4537 |
| | 2020 | 0.021 | 0.091 | 0.366 | 1.555 | 0.1834 | 0.0998 | 19.4947 |
| 35 | 2016 | 0.027 | 0.061 | 0.210 | 1.557 | 0.2116 | 0.1015 | 19.2707 |
| | 2017 | 0.036 | 0.062 | 0.244 | 1.877 | 0.2091 | 0.0829 | 19.3389 |
| | 2018 | 0.024 | 0.047 | 0.300 | 1.559 | 0.1852 | 0.0896 | 19.4705 |
| | 2019 | 0.028 | 0.071 | 0.280 | 1.703 | 0.1947 | 0.1169 | 19.4694 |
| | 2020 | 0.027 | 0.068 | 0.231 | 1.785 | 0.1773 | 0.0953 | 19.5264 |
| 36 | 2016 | -0.034 | 0.054 | 0.642 | 0.548 | 0.1745 | 0.3332 | 16.4876 |
| | 2017 | -0.054 | 0.071 | 0.671 | 0.465 | 0.1627 | 0.1677 | 16.4404 |
| | 2018 | -0.101 | 0.031 | 0.735 | 0.259 | 0.1265 | 0.4271 | 16.2268 |
| | 2019 | -0.244 | 0.045 | 0.921 | 2.737 | 0.2201 | 0.5598 | 16.0372 |
| | 2020 | -0.069 | 0.020 | 0.875 | 4.314 | 0.2060 | 0.7111 | 15.7413 |
| 37 | 2016 | 0.016 | 0.097 | 0.404 | 1.332 | 0.2164 | 0.1103 | 16.1624 |
| | 2017 | 0.011 | 0.124 | 0.393 | 1.173 | 0.2230 | 0.1156 | 16.1547 |
| | 2018 | 0.004 | 0.139 | 0.388 | 1.059 | 0.2908 | 0.2416 | 16.1419 |
| | 2019 | -0.007 | 0.129 | 0.438 | 0.894 | 0.2111 | 0.2211 | 16.1414 |
| | 2020 | -0.009 | 0.087 | 0.394 | 0.941 | 0.2015 | 0.2857 | 16.0475 |
| 38 | 2016 | -0.034 | 0.031 | 0.727 | 0.534 | 0.2379 | 0.0180 | 15.8672 |
| | 2017 | 0.004 | 0.037 | 0.579 | 1.092 | 0.3868 | 0.0186 | 15.5385 |
| | 2018 | 0.003 | 0.073 | 0.443 | 1.024 | 0.3878 | 0.0436 | 15.6880 |
| | 2019 | 0.003 | 0.086 | 0.521 | 1.035 | 0.3316 | 0.1276 | 16.5455 |
| | 2020 | 0.004 | 0.026 | 0.516 | 1.126 | 0.2537 | 0.2432 | 16.5936 |
| 39 | 2016 | 0.036 | 0.066 | 0.541 | 2.223 | 0.1930 | 0.0329 | 16.8122 |
| | 2017 | 0.026 | 0.060 | 0.513 | 2.311 | 0.2545 | 0.0255 | 16.9247 |
| | 2018 | 0.024 | 0.067 | 0.470 | 2.120 | 0.2274 | 0.0008 | 17.0730 |
| | 2019 | 0.014 | 0.082 | 0.531 | 1.720 | 0.2109 | 0.0308 | 17.2917 |
| | 2020 | 0.015 | 0.078 | 0.507 | 1.737 | 0.2015 | 0.0506 | 17.4010 |