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The Effect of Cash Ratio and Loan to Asset Ratio on Return on Asset at PT. Bank Mandiri Tbk

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Abstract

The purpose of this study is to determine whether there is an influence of Cash Ratio and Loan to Deposit Ratio on Return on Assets of PT Bank Mandiri Tbk, This type of research includes Associative research, this study uses a table list instrument in the form of financial report data consisting of cash data, current liabilities, total credit, total assets, net profit for 2014-2023 at PT. Bank Mandiri Tbk, for 10 years, The population in this study is the company's financial statements in the form of balance sheets and profit and loss reports, the population in this study is 31 years from Bank Mandiri Tbk. Listed on the Indonesian stock exchange in 1990-2021, The sample in this study is 10 years starting from 2014-2023 with a sampling technique, namely purposive sampling, which is a sampling technique based on certain criteria by paying attention to the characteristics and characteristics of the research population, the data analysis techniques used are classical assumption tests, multiple linear regression, correlation coefficients, determination and significance tests. The research results state that the Cash Ratio and Loan to Deposit Ratio have an effect on the Return on Assets of PT. Bank Mandiri TBK.

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1. Introduction

Liquidity management is one of the important aspects in assessing the financial performance and sustainability of banking institutions. Banks are financial intermediaries that must maintain an optimal balance between liquidity availability and profitability objectives. Adequate liquidity enables banks to fulfill short-term obligations and maintain operational stability, while inefficient liquidity management may reduce the effectiveness of asset utilization and profitability. Therefore, liquidity indicators are frequently used to evaluate the ability of financial institutions to manage their financial resources effectively (Hasidi et al., 2024). Effective liquidity management is also essential for maintaining banking stability because it reflects the ability of banks to manage financial resources, control liquidity risk, and support sustainable operational performance (Sari et al., 2021; Sujono et al., 2025).

Cash Ratio (CR) is one of the financial ratios used to measure the liquidity level of a company by comparing cash and cash equivalents with short-term liabilities. This ratio describes the company's ability to meet immediate financial obligations using the most liquid assets available without relying on the conversion of other current assets. A higher Cash Ratio indicates stronger liquidity conditions because the company has greater capability to fulfill short-term obligations. However, an excessive level of cash availability may indicate inefficient fund utilization because idle funds could reduce opportunities for generating income through productive activities. Therefore, companies need to maintain an appropriate balance between liquidity security and profitability improvement (Hiba & Prasetyo, 2024). The evaluation of liquidity ratios, including cash availability indicators, provides important information regarding the effectiveness of financial management because it reflects the company's ability to control short-term obligations while maintaining profitability performance (Shofwatun et al., 2021).

Liquidity conditions are closely related to financial performance, particularly profitability measured through Return on Assets (ROA). ROA reflects management

effectiveness in utilizing total assets to generate profit. A sufficient level of liquidity can support business operations, reduce financial pressure, and improve the ability of companies to achieve sustainable performance. Nevertheless, the effect of liquidity on profitability depends on how effectively available funds are managed and allocated to productive activities. Previous empirical studies in Indonesia indicate that liquidity ratios have an important role in explaining variations in profitability because they reflect the efficiency of financial resource management (Widyastuti & Mandagie, 2021; Nanda & Trimeiningrum, 2025). Several studies also confirm that liquidity, operational efficiency, and financial management policies are important factors affecting profitability performance in Indonesian companies and banking institutions (Widyastuti & Mandagie, 2021; Nanda & Trimeiningrum, 2025).

In addition to liquidity, credit distribution is one of the main activities influencing the profitability of banking institutions. Loan to Asset Ratio (LAR) is a financial ratio used to measure the proportion of credit distributed compared with total assets owned by a bank. This ratio indicates the extent to which banks utilize their assets to generate income through lending activities. A higher LAR shows that a larger proportion of bank assets is allocated to credit distribution, which may increase interest income and potentially improve profitability.

However, higher credit utilization must be supported by effective credit risk management because excessive lending activities may increase the possibility of non-performing loans and negatively affect bank performance (Dwitama & Hasanudin, 2024). Credit expansion must be managed carefully because the increase in lending activities should be accompanied by maintaining credit quality, risk control, and adequate asset management to prevent deterioration in banking performance (Hertina et al., 2022; Sujono et al., 2025).

The relationship between Loan to Asset Ratio and profitability reflects the importance of asset utilization efficiency in banking operations. Credit activities represent the primary source of income for banks; therefore, effective management of credit allocation can contribute to improving Return on Assets. However, the contribution of credit distribution to profitability depends on several factors, including credit quality, operational efficiency, and risk management capability.

Research on Indonesian banking companies shows that lending activities, asset management, and credit risk control simultaneously influence financial performance, demonstrating that increasing asset utilization must be accompanied by appropriate risk mitigation strategies (Situmorang et al., 2024). Previous studies also indicate that credit risk, liquidity conditions, and loan growth are important determinants of banking profitability because they directly influence the ability of banks to generate income from their assets (Sari et al., 2021; Dwitama & Hasanudin, 2024).

The banking sector has a strategic role in supporting economic growth because banks function as institutions that collect public funds and distribute them through credit activities. As publicly listed financial institutions, banks are required to maintain good financial performance to preserve stakeholder confidence. Financial performance evaluation can be conducted through various financial indicators, including liquidity ratios, credit utilization ratios, and profitability ratios.

These indicators provide important information regarding the effectiveness of management in utilizing resources and achieving sustainable financial performance (Hasidi et al., 2024). Financial ratio analysis is widely applied in evaluating banking performance because it provides measurable information regarding liquidity position, asset utilization efficiency, credit management, and profitability achievement (Hasidi et al., 2024).

PT Bank Mandiri (Persero), Tbk. is one of the government-owned banks listed on the Indonesia Stock Exchange (IDX). As one of the largest banking institutions in Indonesia, Bank Mandiri plays an important role in supporting national economic activities through financing and credit distribution. The company operates based on public trust, making financial performance evaluation an essential aspect to maintain stakeholder confidence.

PT Bank Mandiri (Persero) Tbk. was established based on Deed No. 9 dated October 2, 1998, and conducted its initial public offering on July 14, 2003. As a publicly listed company, Bank Mandiri's financial performance can be analyzed through financial indicators such as liquidity, asset utilization, credit distribution, and profitability. Research focusing on state-owned banks in Indonesia

also highlights that liquidity management, credit quality, and capital management are important factors influencing bank profitability (Watiningsih, 2026).

The selection of PT Bank Mandiri (Persero) Tbk. as the research object is based on the importance of understanding how a large banking institution manages liquidity and utilizes its assets to support profitability. As a commercial bank with extensive lending activities, Bank Mandiri faces the challenge of maintaining sufficient liquidity while optimizing productive assets through credit distribution. The balance between liquidity availability and asset utilization becomes a critical factor because excessive liquidity may reduce income-generating opportunities, while excessive credit expansion may increase financial risk. Therefore, analyzing the influence of Cash Ratio and Loan to Asset Ratio on Return on Assets provides empirical evidence regarding the effectiveness of financial management strategies in maintaining sustainable banking performance.

Table 1. Financial Performance Indicators of PT Bank Mandiri (Persero) Tbk (2019–2023) sinta (in billions of rupiah).

Year	Cash	Current Liabilities	Net Income	Total Assets	Total Credit
2019	390,074,876	838,008,803	141,275,387	2,041,498,746	575,716,273
2020	527,217,558	3,810,696,043	205,133,062	5,175,882,232	2,299,638,355
2021	1,384,754,630	1,983,885,529	386,385,396	3,711,878,607	957,912,769
2022	1,123,877,270	2,221,000,031	380,695,061	4,133,923,766	1,381,760,758
2023	819,927,172	2,539,722,227	288,008,527	4,629,801,953	2,023,912,185

Based on Table 1, PT Bank Mandiri Tbk. experienced fluctuations in financial conditions during the 2019–2023 period. The cash value showed significant changes, with the lowest value occurring in 2019 and increasing substantially in 2021. These fluctuations indicate changes in cash management strategies related to operational activities, investment activities, and funding activities. Changes in cash availability may influence liquidity conditions and the ability of banks to manage short-term financial obligations.

Current liabilities also experienced fluctuations during the observation period. The highest increase occurred in 2020, reaching Rp3.81 quadrillion, followed by increases in 2022 and 2023. The increase in liabilities indicates changes in funding structure and financial obligations that require effective liquidity management. Banks must ensure that increasing liabilities are supported by adequate liquidity and productive asset utilization to maintain financial stability.

Furthermore, net income experienced changes during the research period. Although profitability increased from 2019 to 2021, net income declined in 2022 and 2023. The decrease in profitability may be influenced by several factors, including changes in credit distribution, operational efficiency, asset utilization, and economic conditions. Since ROA measures the effectiveness of asset utilization in generating profit, changes in net income and total assets become important indicators in evaluating banking performance.

Total assets and total credit also experienced dynamic movements during the observation period. Total assets increased significantly in 2023, while credit distribution showed recovery after experiencing fluctuations in previous years. Credit distribution is a major source of banking income; therefore, changes in total credit may influence profitability performance. However, credit expansion must be balanced with effective risk management to maintain asset quality and prevent potential losses caused by non-performing loans (Dwitama & Hasanudin, 2024).

Although previous studies have examined the relationship between liquidity, credit distribution, and profitability, the results remain inconsistent across different banking contexts. Some studies indicate that stronger liquidity conditions improve profitability because banks are able to maintain operational stability and fulfill financial obligations effectively. However, other studies suggest that excessive liquidity may reduce profitability because funds retained as liquid assets provide limited returns compared with productive asset allocation. These differences indicate that further investigation is needed to understand how liquidity management influences profitability, particularly in large banking institutions with complex financial activities.

In addition, the role of credit utilization in determining bank profitability remains an important issue because lending activities represent the main source of income for commercial banks. A higher Loan to Asset Ratio reflects greater utilization of assets through

credit distribution, but it also requires effective risk management to prevent deterioration in asset quality. Therefore, analyzing the relationship between Loan to Asset Ratio and Return on Assets provides important insights into how banks balance income generation strategies with financial risk management.

PT Bank Mandiri (Persero) Tbk. was selected as the research object because the company represents one of the largest state-owned banks in Indonesia with significant involvement in credit distribution and national economic activities. The company's financial performance during the observation period showed dynamic changes in liquidity position, asset growth, credit distribution, and profitability. These conditions provide an opportunity to examine whether liquidity management and asset utilization strategies contribute significantly to profitability performance.

Furthermore, this study differs from previous studies by focusing specifically on the combined influence of Cash Ratio and Loan to Asset Ratio on Return on Assets at PT Bank Mandiri (Persero) Tbk. during the 2019–2023 period. The use of these variables provides a comprehensive perspective regarding the relationship between liquidity capability, credit-based asset utilization, and profitability achievement. Therefore, this research is expected to contribute empirical evidence regarding financial management strategies in the banking sector and provide practical implications for improving banking performance.

Based on these phenomena, the analysis of Cash Ratio and Loan to Asset Ratio is important to understand their contribution to Return on Assets at PT Bank Mandiri (Persero) Tbk. Liquidity management, asset utilization, and credit distribution are interconnected factors that determine banking performance. Therefore, this study aims to analyze the effect of Cash Ratio and Loan to Asset Ratio on Return on Assets at PT Bank Mandiri (Persero) Tbk. during the 2019–2023 period.

2. Literature Review

2.1 Cash Ratio (*Rasio Kas*)

Cash Ratio (CR) is one of the liquidity ratios used to measure a company's ability to fulfill short-term obligations using the most liquid assets, namely cash and cash equivalents. This ratio provides information regarding the company's financial flexibility because it only considers assets that can be immediately used to settle current liabilities. A higher Cash Ratio indicates that a company has stronger liquidity because it possesses sufficient cash resources to meet short-term obligations without depending on the conversion of other current assets (Shofwatun et al., 2021). Cash Ratio is a measurement tool used to determine the availability of cash owned by a company compared with its current liabilities.

The availability of cash can be reflected through cash balances or cash equivalents, such as funds stored in bank accounts that can be withdrawn at any time. Companies that experience difficulties in meeting short-term obligations may face financial problems due to insufficient liquid funds at the maturity date of their liabilities. Therefore, maintaining adequate liquidity is important to ensure operational continuity and financial stability (Shofwatun et al., 2021).

However, excessive liquidity does not always indicate better financial performance because large amounts of idle cash may reduce opportunities to invest in productive activities that generate income. Therefore, companies need to maintain an optimal balance between liquidity availability and profitability objectives to achieve efficient financial management (Hiba & Prasetyo, 2024).

Liquidity management is particularly important in banking institutions because banks must maintain sufficient liquid assets while optimizing funds through productive activities such as credit distribution. Effective liquidity management enables banks to meet withdrawal obligations, control financial risk, and maintain sustainable profitability (Sari et al., 2021; Hasidi et al., 2024).

In banking performance analysis, Cash Ratio is not only used to evaluate the ability of banks to fulfill short-term obligations but also to assess the effectiveness of liquidity management strategies. A stable liquidity position allows banks to maintain operational activities and respond to unexpected financial conditions. However, liquidity decisions must consider the trade-off between safety and profitability because funds maintained as liquid assets generally provide lower returns compared with funds allocated into productive assets. Therefore, an appropriate liquidity level becomes an important factor in supporting sustainable financial performance (Safitri et al., 2021).

Furthermore, the relationship between liquidity and profitability depends on the ability of management to allocate available funds efficiently. A higher Cash Ratio may indicate stronger financial security, but its contribution to profitability is determined by how effectively cash resources are managed and utilized. In the banking sector, liquidity management is closely related to credit activities because banks must maintain sufficient cash reserves while continuing their intermediary function in distributing funds to generate income. Effective balance between liquidity protection and productive asset utilization can improve financial performance and strengthen the sustainability of banking operations (Wisaputri & Ramantha, 2021; Nanda & Trimeiningrum, 2025).

The Cash Ratio formula can be expressed as follows:

$$Cash\ Ratio = \frac{Cash\ and\ CashEquivalent}{Current\ Liabilities} \times 100$$

2.2 Loan to Assets *Ratio* (LAR)

Loan to Asset Ratio (LAR) is a ratio used to measure the proportion of total assets allocated for lending activities. This ratio describes the extent to which banks utilize their assets to generate income through credit distribution activities (Dwitama & Hasanudin, 2024). A higher LAR indicates that a greater proportion of bank assets is allocated to loans, which may increase interest income and potentially improve profitability.

Credit distribution represents the primary activity of banking institutions because interest income from lending activities contributes significantly to bank profitability. However, increasing credit allocation must be accompanied by effective credit risk management because excessive lending activities may increase the possibility of non-performing loans and negatively affect financial performance (Dwitama & Hasanudin, 2024).

The relationship between loan utilization and profitability depends on the bank's ability to maintain credit quality, control risk exposure, and manage assets efficiently. Banks that are able to optimize credit distribution while maintaining asset quality tend to achieve better profitability performance (Hertina et al., 2022).

Therefore, Loan to Asset Ratio does not only reflect the level of asset utilization but also represents the effectiveness of bank management in balancing income generation and financial risk. Effective credit management is required to ensure that increased lending activities contribute positively to financial performance (Situmorang et al., 2024).

In banking performance evaluation, Loan to Asset Ratio is an important indicator because it reflects the effectiveness of banks in utilizing their asset structure to generate operating income. A balanced increase in LAR indicates that banks are able to transform their available resources into productive assets through lending activities. However, the optimal level of LAR depends on the ability of banks to maintain asset quality, manage credit risk, and ensure that loan expansion remains aligned with risk management policies (Zuhroh & Cahyani, 2021).

Furthermore, Loan to Asset Ratio is closely associated with the intermediation function of banks, where banks collect funds and distribute them as credit to support economic activities. Effective credit allocation can increase interest income and improve profitability, but uncontrolled lending growth may create financial pressure due to increasing credit risk. Therefore, banks need to implement comprehensive credit management strategies to achieve a balance between maximizing asset productivity and maintaining financial stability (Sukmadewi, 2020; Nanda & Trimeiningrum, 2025).

The Loan to Asset Ratio formula can be expressed as follows:

$$LAR = \frac{Total\ Credit}{Total\ Assets} \times 100\%$$

2.3 The Effect of Cash Ratio on Return on Asset

Return on Assets (ROA) is a profitability ratio used to measure the ability of management to generate profit from total assets owned by a company. This ratio reflects the effectiveness of asset utilization because it compares the profit generated with the total resources controlled by the company (Nanda & Trimeiningrum, 2025).

ROA is widely used as an indicator of financial performance because it provides information regarding management efficiency in utilizing company resources. In banking institutions, ROA is an important measurement because most banking income is generated through asset utilization, particularly credit distribution activities (Situmorang et al., 2024).

A higher ROA indicates that management

is more effective in utilizing assets to generate earnings. Conversely, a lower ROA indicates that assets have not been utilized optimally to generate profits. Therefore, ROA is frequently used as an indicator to evaluate financial performance and sustainability in banking institutions (Nanda & Trimeiningrum, 2025).

In banking performance analysis, Return on Assets (ROA) is considered one of the most important profitability indicators because it reflects the ability of banks to convert their total assets into earnings. Since banks operate by managing financial resources obtained from deposits and other sources of funds, the effectiveness of asset management becomes a key determinant of profitability. A higher ROA indicates that management is capable of optimizing asset utilization through productive activities, while a lower ROA may indicate inefficiency in managing available resources (Safitri et al., 2021).

Furthermore, ROA is influenced by various internal factors, including liquidity management, credit distribution efficiency, operational effectiveness, and risk management capability. In banking institutions, profitability improvement requires a balance between maintaining financial stability and maximizing income-generating activities. Therefore, ROA is not only a measure of profit achievement but also an indicator of managerial effectiveness in allocating assets to support sustainable financial performance (Noviriana et al., 2026; Pramesti & Baskara, 2024).

The Return on Asset formula can be expressed as follows:

$$ROA = \frac{Net\ Income}{Total\ Assets} \times 100\%$$

H1: *Cash Ratio* affects the *Return on Assets* at PT. Bank Mandiri Tbk.

2.4 The Effect of *Loan to* Assets *Ratio* on *Return on Asset*

Cash Ratio reflects the ability of companies to fulfill short-term obligations using available cash resources. A higher Cash Ratio indicates stronger liquidity conditions, which may support operational continuity and reduce financial pressure. Adequate liquidity enables companies to maintain stable operations and improve financial performance (Shofwatun et al., 2021).

However, excessive liquidity may reduce profitability because funds retained as cash cannot be fully utilized for productive investment activities. Therefore, the relationship between Cash Ratio and ROA depends on the effectiveness of liquidity management and the company's ability to allocate available funds efficiently (Widyastuti & Mandagie, 2021).

Previous studies indicate that liquidity ratios influence profitability because they reflect the company's ability to manage financial resources effectively. Companies with efficient liquidity management tend to have better financial stability and profitability performance (Hasidi et al., 2024).

The relationship between Cash Ratio and Return on Assets indicates that liquidity management is an important factor in determining financial performance. A sufficient level of cash availability allows companies, particularly banking institutions, to maintain operational flexibility and respond to short-term financial needs. Effective liquidity management enables banks to minimize liquidity risk while ensuring that available funds can support productive activities that contribute to profitability improvement (Safitri et al., 2021).

Furthermore, the influence of Cash Ratio on profitability depends on the company's ability to achieve an optimal balance between liquidity security and asset productivity. Maintaining excessive cash reserves may reduce potential income because funds are not allocated into productive assets, while insufficient liquidity may increase financial risk. Therefore, proper liquidity management is required to ensure that cash availability contributes positively to profitability performance (Wisaputri & Ramantha, 2021).

Based on these arguments, the hypothesis is formulated as follows:

H2 : Loan to Asset Ratio affects the Return on Assets at PT Bank Mandiri (Persero) Tbk.

2.5 The Effect of *Cash Ratio* and *Loan to* Assets *Ratio* on *Return on Asset*

Cash Ratio and Loan to Asset Ratio represent two important indicators in banking financial management. Cash Ratio reflects the ability of banks to maintain liquidity, while Loan to Asset Ratio reflects the effectiveness of asset utilization through credit activities. Both indicators influence profitability because banks must maintain financial stability while maximizing income-generating activities

(Hasidi et al., 2024).

A balanced liquidity position allows banks to meet short-term obligations, while effective credit distribution enables banks to generate income from their assets. However, excessive liquidity may reduce profitability, while excessive credit expansion may increase financial risk. Therefore, optimal management of liquidity and credit allocation is required to improve banking profitability (Situmorang et al., 2024).

Previous empirical studies confirm that financial ratios related to liquidity, credit activities, and asset management collectively influence profitability performance in banking institutions (Dwitama & Hasanudin, 2024).

Based on these arguments, the hypothesis is formulated as follows:

H3 : Cash Ratio and Loan to Asset Ratio affect the Return on Assets at PT Bank Mandiri (Persero) Tbk.

3. Research Methods

3.1 Research Design

This study employs a quantitative research approach with an associative research design. Quantitative research is used because this study analyzes numerical financial data obtained from annual financial statements and examines the relationship between research variables using statistical analysis. The associative approach aims to determine the relationship and influence between independent variables and dependent variables based on empirical data (Pramesti & Baskara, 2024).

The purpose of this study is to examine the effect of Cash Ratio (CR) and Loan to Asset Ratio (LAR) on Return on Assets (ROA) at PT Bank Mandiri (Persero) Tbk. The independent variables in this study are Cash Ratio and Loan to Asset Ratio, while Return on Assets is used as the dependent variable. The selection of these variables is based on the consideration that liquidity management and asset utilization through credit distribution represent important factors influencing banking profitability (Sujono et al., 2025).

The research object is PT Bank Mandiri (Persero) Tbk., a state-owned bank listed on the Indonesia Stock Exchange (IDX). This company was selected because Bank Mandiri has complete publicly available financial reports and represents one of the major banking institutions in Indonesia. Financial ratio analysis using published financial statements is commonly applied in banking studies to evaluate liquidity, credit management, and profitability performance (Siagian & Chabachib, 2025).

3.2 Population and Sample

The population refers to the entire group of objects that have characteristics relevant to the research objectives. In this study, the population consists of the annual financial statements of PT Bank Mandiri (Persero) Tbk. listed on the Indonesia Stock Exchange. The financial statements include information related to cash, current liabilities, total credit, total assets, and net income.

The sample selection uses a purposive sampling technique. Purposive sampling is a method of selecting samples based on predetermined criteria to ensure that the collected data are relevant and meet the requirements of the research objectives. This sampling method is commonly applied in financial studies that use secondary data from annual reports because researchers require complete and consistent financial information during the observation period (Pramesti & Baskara, 2024).

The sample selection in this study was conducted using a purposive sampling technique based on predetermined criteria that are relevant to the research objectives. The criteria applied in selecting the sample were that PT Bank Mandiri (Persero) Tbk. must be listed on the Indonesia Stock Exchange (IDX), publish annual financial statements continuously during the observation period, and provide complete financial information required for calculating Cash Ratio (CR), Loan to Asset Ratio (LAR), and Return on Assets (ROA). Based on these criteria, the sample used in this study consists of annual financial statement data of PT Bank Mandiri (Persero) Tbk. during the 2019–2023 period, resulting in ten years of observation data. The selection of this period was based on the availability and completeness of financial information required to analyze the relationship between liquidity, asset utilization, and profitability performance.

Based on these criteria, the sample used in this study consists of ten years of financial statement data from PT Bank Mandiri (Persero) Tbk., covering the period 2019–2023.

3.3 Data Source

This study uses secondary data obtained from published financial statements of PT Bank Mandiri (Persero) Tbk. Secondary data are data obtained from documents or official publications that have previously been prepared by institutions. The use of secondary financial data is appropriate for quantitative financial research because annual reports provide historical information regarding company performance and financial conditions (Septianingsih et al., 2025).

The data used in this study consist of financial information obtained from the annual reports of PT Bank Mandiri (Persero) Tbk. during the observation period. The financial data collected include cash and cash equivalents, current liabilities, total credit, total assets, and net income. These financial components were selected because they represent the indicators required to measure the research variables, namely Cash Ratio (CR), Loan to Asset Ratio (LAR), and Return on Assets (ROA). The use of these financial data enables the researcher to evaluate the company's liquidity condition, asset utilization effectiveness, and profitability performance based on historical financial information reported in the annual financial statements.

The financial data are collected from official company publications and financial reports available through the Indonesia Stock Exchange. Financial statement data are used because they provide standardized information that can be processed into financial ratios for evaluating company performance (Watiningsih, 2026).

3.4 Data Collection Technique

The data collection technique used in this study is documentation. Documentation is a data collection method conducted by collecting, reviewing, and analyzing written documents related to the research variables. In financial research, documentation methods are widely used because annual financial reports contain quantitative information that can be systematically analyzed using statistical methods (Septianingsih et al., 2025).

The documentation process in this study involves collecting annual financial statements of PT Bank Mandiri (Persero) Tbk. during the 2019–2023 period. The collected financial data are then organized according to the research variables, including liquidity indicators, credit utilization indicators, and profitability indicators.

The documentation method in this study was selected because the required data are secondary data that have been officially published by the company. Secondary financial data provide reliable information regarding the company's financial position, operational performance, and profitability achievements. The use of published financial reports also enables researchers to conduct objective measurements because the data have passed through the company's financial reporting and disclosure processes (Hasidi et al., 2024).

The collected financial data were further processed to obtain the values of each research variable. Cash Ratio was calculated based on the comparison between cash and cash equivalents with current liabilities, while Loan to Asset Ratio was measured by comparing total credit with total assets. Meanwhile, Return on Assets was calculated by comparing net income with total assets. This process ensures that each variable is measured consistently based on established financial ratio concepts and can be analyzed statistically (Sari et al., 2021).

Furthermore, the documentation technique supports the validity and consistency of longitudinal financial analysis because the study uses data over a ten-year observation period. The use of annual financial reports from 2019–2023 allows researchers to identify changes in liquidity, credit utilization, and profitability performance of PT Bank Mandiri (Persero) Tbk. over time. Systematic documentation and data classification are important steps to ensure that the statistical analysis produces accurate findings regarding the relationship between financial ratios and profitability performance (Nanda & Trimeiningrum, 2025).

3.5 Operational Variables

The operational definition of variables explains the measurement indicators used in this study. This research consists of two independent variables, namely Cash Ratio (CR) and Loan to Asset Ratio (LAR), and one dependent variable, namely Return on Assets (ROA). The measurement indicators are based on financial ratio analysis commonly applied in banking performance research (Siagian & Chabachib, 2025).

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Table 2. Operationalization of Research Variables

Variable	Type	Operational Definition	Measurement Indicator
Cash Ratio (CR)	Independent Variable	A liquidity ratio that measures the ability of a company to fulfill short-term obligations using cash and cash equivalents.	Cash and cash equivalent compared with current liabilities (%)
Loan to Asset Ratio (LAR)	Independent Variable	A ratio that measures the proportion of total assets allocated for credit distribution activities.	Total credit compared with total assets (%)
Return on Assets (ROA)	Dependent Variable	A profitability ratio that measures management effectiveness in generating profit from total assets.	Net income compared with total assets (%)

Table 2 presents the operationalization of research variables used in this study. The operationalization process is conducted to clarify the measurement of each variable and ensure that the variables can be analyzed quantitatively. This study consists of two independent variables, namely Cash Ratio (CR) and Loan to Asset Ratio (LAR), and one dependent variable, namely Return on Assets (ROA). Cash Ratio is used as an indicator of liquidity performance because it reflects the company's ability to fulfill short-term obligations using available cash and cash equivalents. Meanwhile, Loan to Asset Ratio is used to measure the effectiveness of asset utilization through credit distribution activities. Return on Assets is used as a measure of profitability because it reflects management effectiveness in generating profit from total assets owned by the company. The measurement of each variable is based on financial information obtained from the annual financial statements of PT Bank Mandiri (Persero) Tbk. during the 2019–2023 observation period.

3.6 Data Analysis Technique

The data analysis technique in this study consists of descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis is used to describe the characteristics and development of each research variable during the observation period. This analysis includes the calculation of minimum value, maximum value, average value, and standard deviation of each variable.

Inferential statistical analysis is conducted to examine the relationship between independent variables and dependent variables. This study applies multiple linear regression analysis because the research aims to determine the effect of two independent variables, namely Cash Ratio and Loan to Asset Ratio, on one dependent variable, namely Return on Assets. Regression analysis is commonly used in banking financial studies to measure the influence of financial ratios on profitability performance (Sujono et al., 2025).

The regression model used in this study is:

$$ROA = \alpha + \beta_1 + \beta_2 LAR + e$$

Hypothesis testing is performed using partial significance testing (t-test) to examine the individual effect of each independent variable on ROA and simultaneous significance testing (F-test) to examine the combined effect of independent variables. In addition, the coefficient of determination (R^2) is used to determine the ability of Cash Ratio and Loan to Asset Ratio in explaining variations in Return on Assets.

4. Results

4.1 Multiple Linear Regression Analysis

This study uses multiple linear regression analysis to examine the effect of Cash Ratio (CR) and Loan to Asset Ratio (LAR) on Return on Assets (ROA) at PT Bank Mandiri (Persero) Tbk. The analysis was conducted using SPSS version 26.0 based on secondary data obtained from the company's annual financial statements during the 2019–2023 observation period. The regression analysis aims to determine the direction and magnitude of the relationship between liquidity performance, represented by Cash Ratio, and asset utilization through credit distribution, represented by Loan to Asset Ratio, toward profitability performance measured by Return on Assets.

The results of multiple linear regression analysis are presented in Table 3.

Table 3. Multiple Linear Regression Coefficients

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t-value	Sig.
Constant	1086.355	325.189	-	3.341	0.012
Cash Ratio (CR)	0.043	0.030	0.321	3.443	0.034
Loan to Asset Ratio (LAR)	0.159	0.054	0.655	2.949	0.021

Based on Table 3, the multiple linear regression equation obtained is:

ROA = 1086.355 + 0.043CR + 0.159LAR + e

The regression equation can be interpreted as follows. The constant value of 1086.355 indicates that when Cash Ratio and Loan to Asset Ratio are assumed to be zero, the predicted value of Return on Assets is 1086.355. The positive constant indicates that profitability performance is also influenced by other factors outside the regression model.

The Cash Ratio regression coefficient is 0.043, indicating that every 1% increase in Cash Ratio will increase Return on Assets by 0.043%, assuming other variables remain constant. The positive coefficient indicates that an increase in liquidity availability tends to improve profitability performance. This finding suggests that adequate cash availability allows the company to maintain operational stability and fulfill short-term obligations effectively.

The Loan to Asset Ratio regression coefficient is 0.159, indicating that every 1% increase in Loan to Asset Ratio will increase Return on Assets by 0.159%, assuming other variables remain constant. The positive coefficient indicates that increasing asset utilization through credit distribution contributes positively to profitability because lending activities represent the primary source of income for banking institutions.

The standardized coefficient values show that Loan to Asset Ratio has a greater contribution to ROA compared with Cash Ratio, indicated by the Beta value of 0.655 for LAR and 0.321 for CR. This finding indicates that asset utilization through credit distribution has a stronger relationship with profitability compared with liquidity availability.

4.2 Hypothesis Testing

The partial hypothesis test was conducted to determine the individual effect of each independent variable on Return on Assets. The decision criteria were based on a significance level of 5% (α = 0.05). The degree of freedom was calculated as:

$$df = n - k = 10 - 2 = 8$$

Based on the calculation, the t-table value is 1.859.

4.3 The Effect of Cash Ratio on Return on Assets

Based on Table 2, Cash Ratio obtained a t-value of 3.443 with a significance value of 0.034. The t-value is greater than the t-table value (3.443 > 1.859), and the significance value is smaller than 0.05 (0.034 < 0.05). Therefore, H1 is accepted, indicating that Cash Ratio has a significant effect on Return on Assets at PT Bank Mandiri (Persero) Tbk.

The positive regression coefficient (0.043) indicates that an increase in Cash Ratio tends to increase ROA. This means that better liquidity conditions provide greater financial flexibility for the company to maintain operational activities and manage short-term obligations. Adequate cash availability reduces liquidity pressure and supports effective financial management.

The result indicates that Bank Mandiri's ability to maintain cash availability during the observation period contributed positively to profitability performance. However, liquidity management must remain optimal because excessive cash holdings may reduce profitability when available funds are not utilized in productive activities.

These findings are consistent with previous research showing that liquidity indicators influence profitability because liquidity reflects the company's ability to manage financial resources effectively and maintain operational stability (Shofwatun et al., 2021; Widyastuti & Mandagie, 2021).

4.4 The Effect of Loan to Asset Ratio on Return on Assets

Based on Table 62 Loan to Asset Ratio obtained a t-value of 2.949 with a significance value of 0.021. The t-value is greater than the t-table value (2.949 > 1.859), and the significance value is smaller than 0.05 (0.021 < 0.05). Therefore, H2 is accepted, indicating that Loan to Asset Ratio has a significant effect on Return on Assets at PT Bank Mandiri (Persero) Tbk.

The regression coefficient of LAR is positive (0.159), indicating that increasing credit allocation relative to total assets contributes to increasing profitability. This occurs because lending activities generate interest income, which represents one of the main sources of revenue for banking institutions.

The result also indicates that Bank Mandiri was able to utilize its assets effectively

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through credit distribution during the research period. However, credit expansion should continue to be supported by proper credit risk management to maintain asset quality and avoid potential losses from non-performing loans.

This finding is supported by previous studies indicating that credit distribution and asset utilization have significant relationships with banking profitability because effective lending management contributes to improved financial performance (Dwitama & Hasanudin, 2024; Hertina et al., 2022).

4.5 Simultaneous Test (F-Test)

The simultaneous test was conducted to determine whether Cash Ratio and Loan to Asset Ratio collectively influence Return on Assets.

Table 4. ANOVA (F-Test)

Model	Sum of Squares	df	Mean Square	F-value	Sig.
Regression	600427.778	2	300213.889	17.736	0.002
Residual	118485.822	7	16926.546		
Total	718913.600	9			

Based on Table 4, the F-value is 17.736 with a significance value of 0.002. The F-value is greater than the F-table value (17.736 > 4.066), and the significance value is smaller than 0.05 (0.002 < 0.05). Therefore, H3 is accepted, indicating that Cash Ratio and Loan to Asset Ratio simultaneously affect Return on Assets at PT Bank Mandiri (Persero) Tbk.

The results indicate that liquidity management and credit-based asset utilization jointly contribute to profitability performance. Cash Ratio provides information regarding the ability of banks to maintain liquidity, while Loan to Asset Ratio reflects the effectiveness of asset utilization through lending activities. The combination of adequate liquidity and effective credit distribution supports sustainable profitability performance.

These findings confirm that banking profitability is not only determined by a single financial factor but is influenced by the interaction between liquidity management, asset utilization, and operational strategies. Effective balance between maintaining liquidity and maximizing productive assets is necessary to achieve optimal financial performance (Hasidi et al., 2024; Situmorang et al., 2024).

4.6 Discussion

4.6.1 The Effect of Cash Ratio on Return on Assets

The results of this study indicate that Cash Ratio has a positive and significant effect on Return on Assets at PT Bank Mandiri (Persero) Tbk. This finding shows that liquidity management has an important role in supporting banking profitability. Cash Ratio reflects the ability of banks to fulfill short-term obligations using available cash and cash equivalents. A sufficient liquidity level provides financial flexibility for banks to maintain operational activities and manage financial obligations effectively.

The positive influence of Cash Ratio on Return on Assets indicates that the availability of liquid assets owned by PT Bank Mandiri (Persero) Tbk. during the 2019–2023 period contributed to maintaining profitability performance. Adequate liquidity allows banks to reduce liquidity pressure and maintain operational continuity, particularly because banking activities depend heavily on public confidence and the ability to fulfill financial commitments. Effective liquidity management is therefore an important factor in maintaining banking stability and financial performance (Safitri et al., 2021).

The relationship between liquidity and profitability demonstrates that banks must maintain an optimal balance between liquidity availability and productive asset utilization. Excessive liquidity may reduce profitability because funds held in cash generally provide lower returns compared with funds allocated into productive activities. Conversely, insufficient liquidity may increase financial risk because banks may experience difficulties in fulfilling short-term obligations. Therefore, effective liquidity management requires proper allocation of financial resources to support profitability improvement (Wisaputri & Ramantha, 2021).

The significant effect of Cash Ratio on ROA in this study indicates that PT Bank Mandiri (Persero) Tbk. was able to manage its liquidity position effectively during the observation period. The increase in liquidity availability was not only used to maintain short-term obligations but also supported the company's ability to operate efficiently and maintain financial performance.

This finding is consistent with research indicating that liquidity-related financial indicators influence profitability because

liquidity represents management capability in controlling financial resources and maintaining business sustainability. Companies with better liquidity management tend to have stronger financial performance because they are able to balance financial security and operational needs (Fianiningsi et al., 2026).

Furthermore, profitability performance is influenced by the ability of companies to manage resources efficiently. Financial performance improvement requires effective planning and allocation of available resources because operational efficiency and financial management strategies determine the company's ability to generate sustainable returns (Asriati et al., 2024).

4.6.2 The Effect of Loan to Asset Ratio on Return on Assets

The results of this study indicate that Loan to Asset Ratio has a positive and significant effect on Return on Assets at PT Bank Mandiri (Persero) Tbk. This finding confirms that asset utilization through credit distribution contributes significantly to banking profitability. Loan activities represent the primary function of banking institutions because credit distribution generates interest income, which becomes one of the main sources of bank revenue.

The positive effect of Loan to Asset Ratio indicates that increasing the proportion of assets allocated to credit activities contributes to improving profitability. This condition shows that PT Bank Mandiri (Persero) Tbk. was able to utilize its assets productively through lending activities during the observation period. Effective asset utilization allows banks to increase income-generating activities while maintaining financial performance.

Credit distribution must be supported by appropriate risk management because higher lending activities may increase exposure to credit risk. Banks need to maintain credit quality through proper assessment mechanisms, monitoring systems, and risk control strategies. Effective credit management enables banks to maximize income opportunities while reducing potential losses from non-performing loans (Zuhroh & Cahyani, 2021).

The findings of this study support previous research showing that financial performance in banking institutions is strongly influenced by the effectiveness of asset utilization and credit management. Banks that are able to optimize productive assets tend to achieve better profitability because assets are utilized to generate operational income (Sukmadewi, 2020).

The significant influence of Loan to Asset Ratio on ROA also indicates that PT Bank Mandiri (Persero) Tbk. successfully maintained a balance between credit expansion and profitability objectives. The utilization of assets through lending activities became an important factor in improving financial performance during the research period.

This finding is also supported by research on banking profitability, which shows that credit-related factors and financial management strategies influence bank performance. The ability of banks to manage credit activities effectively contributes to improving profitability while maintaining financial stability (Zakiyah et al., 2026).

4.6.3 The Effect of Cash Ratio and Loan to Asset Ratio on Return on Assets

The results of the simultaneous test indicate that Cash Ratio and Loan to Asset Ratio jointly influence Return on Assets at PT Bank Mandiri (Persero) Tbk. This finding demonstrates that banking profitability is influenced by the interaction between liquidity management and asset utilization strategies.

Cash Ratio represents the ability of banks to maintain liquidity, whereas Loan to Asset Ratio reflects the effectiveness of asset utilization through credit distribution. Both indicators provide complementary information regarding the ability of banks to manage financial resources. Liquidity management ensures operational stability, while credit utilization supports income generation through productive assets.

The simultaneous influence of Cash Ratio and Loan to Asset Ratio indicates that profitability cannot be explained by only one financial indicator. Banking performance is determined by several interconnected factors, including liquidity capability, credit management, operational efficiency, and asset productivity. Therefore, evaluating financial performance requires a comprehensive approach involving various financial indicators (Noviriana et al., 2026).

The findings also show that maintaining liquidity and optimizing credit distribution must be conducted simultaneously. Banks that only focus on liquidity may experience

limitations in generating income, while aggressive credit expansion without adequate liquidity management may increase financial risk. Therefore, an appropriate balance between liquidity protection and productive asset utilization is necessary to achieve sustainable profitability.

Financial performance analysis requires consideration of both internal and external factors because company performance may be influenced by management strategies and economic conditions. Effective resource management and adaptation to changing economic environments contribute to maintaining financial sustainability and profitability performance (Asriati et al., 2024).

Overall, the results confirm that PT Bank Mandiri (Persero) Tbk. achieved profitability performance through effective integration between liquidity management and asset utilization. The combination of adequate cash availability and productive credit distribution became an important factor supporting Return on Assets during the 2019–2023 period.

The simultaneous effect of Cash Ratio and Loan to Asset Ratio on Return on Assets indicates that liquidity management and credit utilization should not be considered as separate aspects in evaluating banking performance. A bank with adequate liquidity capacity has greater flexibility in maintaining operational activities and fulfilling short-term obligations, while effective credit allocation allows banks to generate income from productive assets. The combination of these two factors creates a balance between financial stability and profitability improvement. Therefore, banking institutions need to develop financial strategies that integrate liquidity control with optimal asset utilization.

The findings of this study also emphasize that profitability improvement in banking institutions requires effective management of both liquid assets and earning assets. Cash availability provides protection against liquidity risk, while credit distribution contributes to income generation through interest revenue. However, maintaining excessive liquidity may reduce profitability potential, whereas excessive credit expansion may increase exposure to credit risk. Thus, the optimal allocation of financial resources becomes an important consideration in achieving sustainable financial performance (Safitri et al., 2021; Pramesti & Baskara, 2024).

Furthermore, the significant simultaneous influence of Cash Ratio and Loan to Asset Ratio suggests that management decisions regarding liquidity and lending policies are closely interconnected. Changes in liquidity conditions may affect the ability of banks to expand credit activities, while credit growth may influence the liquidity position of banks. Effective coordination between treasury management, credit policy, and risk management is required to ensure that asset utilization remains productive without reducing financial stability (Situmorang et al., 2024; Sujono et al., 2025).

From a managerial perspective, the results imply that PT Bank Mandiri (Persero) Tbk. should continue maintaining a balanced financial strategy by strengthening liquidity management while optimizing credit distribution. The significant simultaneous effect of CR and LAR confirms that profitability improvement is achieved not only through increasing income-generating activities but also through maintaining adequate financial resilience. Therefore, continuous evaluation of liquidity position, credit quality, and asset productivity is necessary to support long-term banking sustainability (Watiningsih, 2026; Nanda & Trimeiningrum, 2025).

5. Conclusion

Based on the results of the analysis, this study concludes that Cash Ratio and Loan to Asset Ratio have significant effects on Return on Assets at PT Bank Mandiri (Persero) Tbk. during the 2019–2023 observation period. The results indicate that Cash Ratio has a positive and significant effect on profitability, demonstrating that effective liquidity management contributes to maintaining operational stability and supporting the company's ability to generate returns from its assets. Furthermore, Loan to Asset Ratio also has a positive and significant effect on Return on Assets, indicating that effective utilization of assets through credit distribution plays an important role in improving banking profitability. Simultaneously, Cash Ratio and Loan to Asset Ratio significantly influence Return on Assets, confirming that liquidity management and asset utilization are interconnected factors in determining banking financial performance.

The findings imply that PT Bank Mandiri (Persero) Tbk. needs to maintain an optimal balance between liquidity availability and

productive asset utilization. Adequate liquidity is necessary to ensure financial stability, while effective credit distribution is required to maximize income generation. Therefore, bank management should continuously strengthen liquidity control and credit risk management strategies to maintain sustainable profitability.

This study has several limitations. The research focuses only on one banking institution, namely PT Bank Mandiri (Persero) Tbk., with an observation period of 2019–2023 and limited independent variables consisting of Cash Ratio and Loan to Asset Ratio. Other factors that may influence profitability, such as capital adequacy, operational efficiency, credit risk, macroeconomic conditions, and corporate governance, were not included in this study. Future research is recommended to expand the research scope by involving more banking companies, extending the observation period, and incorporating additional variables such as Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), Net Interest Margin (NIM), and operational efficiency ratios to provide a more comprehensive understanding of factors affecting banking profitability.

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