Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE)
e-ISSN: 2621-606X
Vol. 8. No. 3 (2025)
Page: 11450-11460

DETERMINING FACTORS OF BANKING OPERATING EFFICIENCY IN INDONESIA

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Abstract

This study aims to determine the factors that affect the operating efficiency of banking in Indonesia. This study uses the Pane Datal method. The data used during the period 2019-2023 were obtained from the Indonesia Stock Exchange. The dependent variable used in this study is operating efficiency. While the independent variables are credit risk, return on assets, return on equity, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size, equity to liability ratio and ratio of loans loss provisions to net interest income. The results of this study indicate that return on assets has a positive effect on operating efficiency, while return on equity and loans loss provisions to net interest income have a negative effect on operating efficiency of banking in Indonesia and the credit risk ratio, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size and equity to liability ratio do not affect operating efficiency of banking in Indonesia. It is hoped that the results of this study can be used by investors to determine the factors of operating efficiency of banking in Indonesia.

Keywords: Bank Size, Credit Risk, Deposit to Liability Ratio, Equity to Asset Ratio, Equity to Liability Ratio, Ratio of Loans Loss Provisions to Net Interest Income, Return on Asset, Return on Equity, Total Expense Ratio

INTRODUCTION

Banks, as financial institutions, play a very important role in the country's economy. Banks act as intermediaries between parties who have excess money (plus shares) who deposit funds in the bank and distribute them to parties who lack funds (deficit parts) in the form of credit or loans. This intermediary function works well when surplus and deficit units trust the bank. The operation of the bank's intermediary function increases the use of money. The money collected is then distributed to the community for various productive activities. These productive activities then increase production and employment, which ultimately increases income and community welfare (Muharam & Pusvitasari, 2007).

Banking is also one of the financial institutions that plays an important role and requires good performance. One important aspect in measuring the operational efficiency of banks is by increasing efficiency, for example, by reducing production process costs. Berger, Hancock, & Humprey (1993) said that when there is a rapid change in capital structure, there needs to be cost and income efficiency. More efficient banks are expected to obtain optimal income, more loan funding, and better service to customers. The efficiency achieved reflects good quality (Ma'ruf et al, 2025). One important reason for maintaining bank health is because the banking sector plays a dominant role in the financial system. This is reflected in the large composition of assets of Indonesian financial institutions.

Bank operational efficiency can be measured by comparing the output produced and the input invested. Not only that, management efficiency in managing available resources with all their limitations is also needed to generate optimal profits. A bank is said to be efficient compared to its competitors if it is able to generate higher income with certain inputs or a number of outputs with lower inputs. Tecles & Tabak (2010) and Haryanto (2018) argue that measuring bank performance is a tool for management and decision makers to improve bank performance by providing information related to the performance of domestic and foreign banks. Endri (2008), efficiency is the most important aspect that must be considered by the banking industry in order to achieve healthy and sustainable financial performance.

This study refers to previous research conducted in Jordan by Istaiteyeh et al. (2024) entitled Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach. The study used independent variables, including credit risk, return on assets, return on equity, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size, equity to liability ratio and ratio of loans loss provisions to net interest income. The dependent variable used in this study is the operating efficiency ratio. The results of the study showed that return on assets, return on equity, bank size and ratio of loans loss provisions to net interest income have a positive effect on operating efficiency. Total expense ratio was found to have a negative effect on operating efficiency. Credit risk, equity to asset ratio, equity to liability ratio and deposit to liability ratio were not found to have a significant effect on operating efficiency.

Based on the description of the results of previous studies that examined the determinants of banking operating efficiency that have been presented above, this study was conducted using a sample of banks listed on the Indonesia Stock Exchange in 2018 - 2023 to obtain results on whether there are differences or similarities regarding this topic.

REVIEW OF LITERATURE

Operating Efficiency

Operating efficiency of any commercial institution is the most important variable that determines sustainability, efficiency, and productivity (Ghosh & Sanyal, 2019). Bank liquidity and capital adequacy are related to bank operating efficiency (Lotto, 2019). In very large banks, asset quality, capital adequacy, credit risk, and liquidity have a positive and significant impact on operating efficiency (Eldomiaty et al., 2016). More efficient banks have greater market power. Concentration also has a positive impact on market power (Kasman & Carvallo, 2014). Operational efficiency measures the ability of a bank to transform financial inputs into financial products and services at a lower cost than the revenue generated from operations (Olarewaju & Obalade, 2015). This relates to the efficient use of human and material resources or the efficient use of human, machine tools, and material funds to improve products and services at a lower cost (Chen, 2001).

The ability of a bank to minimize or manage its expenses in such a way as to produce output without compromising quality. Thus, theoretically, a bank that can manage its expenses efficiently and effectively is expected to be more profitable. The ratio of total operating income to total operating expenses is considered a proxy for a bank's operational efficiency. A high operational efficiency ratio reflects a bank's ability to manage its operational costs effectively and thus tends to have a positive impact on profitability (Hassan, 2002).

Operating efficiency is the key to success for financial institutions, especially in the banking industry. Improving bank operational efficiency can reduce operational costs, increase profitability, and provide better service to customers. Operating efficiency also helps banks to allocate resources better, reduce risks, and increase market competitiveness (McKinsey & Company, 2019).

According to research conducted by Jones and Rhodes (2016), operational efficiency can be used as an indicator of company performance. The higher the operational efficiency of a company, the more efficient the use of resources owned by the company, such as labor, capital, and equipment. Thus, operational efficiency can help companies increase their productivity and profitability, because they can produce more output using the same or less input. In addition, operational efficiency has a significant impact on the company's stock price. Investors tend to give higher valuations to companies that have high levels of operational efficiency, because this is considered an indication that the company is able to manage risk and achieve profits efficiently (Smith & Brown 2018).

The operating efficiency variable can be measured by dividing operating income by operating costs. Operating income is the income generated from the company's operations, such as income from the sale of products and services, while operating costs are the costs required to run the company's operations, such as labor costs, raw material costs, and other costs. Operating efficiency is influenced by various factors, such as the level of efficiency in managing capital, the ability to manage inventory, and the ability to manage operating costs. Bank Indonesia sets the best figure for the operating efficiency ratio at around 50%, because if the operating efficiency ratio exceeds 50% to close to 100%, the company can be said to be inefficient in running its operations.

Several other studies highlight the effect of operational efficiency on bank profitability (Alexiou & Vogiazas, 2009; Olson & Zoubi, 2011; Zafar et al., 2016). However, other studies consider risk as an input factor to explore efficiency analysis (Huang & Paradi,

2011; Y. C. Chen et al., 2013; M. J. Chen et al., 2015). Other studies also link capital structure variables with bank effectiveness index (Amidu, 2007; Anafo et al., 2015; Zafar et al., 2016; (Siddik et al., 2017).

This study refers to previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) entitled Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach. The study used independent variables, including credit risk, return on assets, return on equity, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size, equity to liability ratio and ratio of loans loss provisions to net interest income. The dependent variable used in this study is the operating efficiency ratio.

Credit Risk

Credit risk or credit risk According to the Basel Committee on Banking Supervision (1988) refers to the possibility of bank debtors not fulfilling their obligations under the agreed contract. Banks direct or invest their money in various financial instruments other than credit, such as acceptances, interbank transactions, currency exchange transactions, bank guarantees, derivative transactions; futures, exchanges, bonds, options, and more. Bank Indonesia defines credit risk as the possibility of losing money because debtors or other parties do not fulfill their obligations to the bank (PBI No. 15/12/PBI/2013). Huang et al. (2009) explain the systemic risk in the financial system due to the simultaneous failure of large financial institutions. The traditional way to measure this risk is to look at the information contained in the bank's financial statements, such as the ratio of non-performing loans to the amount of credit provided, yields and profitability, liquidity and solvency ratios (NPL, profit). and profitability, liquidity, and solvency.

The CR variable is calculated by dividing Non-Performing Loans (NPL) by Total Loans. NPL is the amount of bad or problematic loans, where the debtor is late or unable to pay their installments. Total Loans, on the other hand, is the total value of all loans that have been provided by a financial institution. Based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) said that credit risk was not found to have a significant effect on operating efficiency.

Return on Asset

Return on assets, according to Riyadi (2024), is a profitability ratio that shows the comparison between profit (before tax) and total bank assets. This ratio is also used to show the level of efficiency of asset management carried out by the bank. Return on assets is a ratio that compares net income after tax to total assets owned by the company (Ang, 1997). Return on assets is one of the measures used to measure the high and low operating efficiency and performance of a bank or company. The higher the return on assets, the more efficient the bank's operations or vice versa. The lower the return on assets, which can be caused by many unused assets or too much investment in inventory and so on.

Wahyuni (2012) refers to the term return on assets as Net Earning Power Ratio (Rate of Return on Investment), which is the ability of capital invested in all assets to generate net profit. Net profit is profit after tax. Research by K, Isna & Sunaryo (2012), return on assets is one of the profitability ratios used to measure the effectiveness of a company in generating profit by utilizing the total assets owned.

Return on Assets (ROA) is a profitability ratio that measures how effectively a company uses assets to generate profits, calculated by dividing net income by total assets.

ROA also shows the percentage of profit generated from each rupiah of assets owned by the company. The higher the ROA value, the more efficient the company is in managing assets and generating profits. Return on assets based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) has a positive effect on operating efficiency.

Equity to Asset Ratio

Equity to asset ratio is a ratio that compares equity with all assets owned. According to Kurnia (2012) equity to asset ratio is a financial indicator used to measure the attachment or motivation of the owner for the continuity of the bank's business. This ratio shows how much equity is used to fund all company assets. Equity to asset ratio is used to measure long-term financial capability or solvency (Jumingan, 2009). The high or low equity to asset ratio will reflect the management of equity. The higher the equity to asset ratio, the lower the external funding needs, as well as the interest rate will be low, ultimately impacting on increasing profits (Dewi & Candradewi, 2018).

The equity to asset ratio (EAR) variable can be calculated by dividing the total equity by the company's total assets. This calculation produces a TETA (Total Equity to Total Assets) value which shows the proportion of equity in funding the company's assets. A high TETA value indicates that the company relies more on equity than debt to finance bank operations. TETA is generally considered an indicator of good financial health, as it shows that the company has fewer liabilities and more financial flexibility. The equity to asset ratio based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) did not find a significant effect on operating efficiency.

Deposit to Liability Ratio

Deposit to liability ratio is a measure that shows the proportion of deposits held by a bank to total liabilities. This ratio is important in banking analysis because it provides an overview of the liquidity and financial stability of the bank. According to "Banking and Financial Services" by Benton E. Gup and James W. Kolari. Deposit to liability ratio is calculated by dividing total deposits by total liabilities of the bank. A high deposit to liability ratio indicates that the bank has a larger proportion of deposits compared to liabilities which can be interpreted as a sign of better bank liquidity.

The deposit-to-liability ratio (DTLR) variable is an important indicator to measure the level of liquidity and funding structure of a company. DTLR is calculated by dividing total deposits by total liabilities. The DTLR (Deposit to liability ratio) ratio value shows the proportion of funds from customers (deposits) in funding the company's liabilities. The deposit-to-liability ratio based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) did not find a significant effect on operating efficiency.

Total Expense Ratio

Total Expense Ratio (TER) is a measure used to assess the cost efficiency of a mutual fund or investment portfolio by comparing the total costs incurred with the total assets managed. TER includes all costs associated with managing a mutual fund, including management fees, administration fees, and other costs. According to Pratomo in his book "Mutual Fund Investment Management", the total expense ratio is a ratio that describes the

percentage of total operating costs imposed on the assets managed by a mutual fund in one year. TER is calculated by dividing the total operating costs of the mutual fund by the total assets managed and expressed as a percentage. This ratio is important for investors because it provides an overview of how efficient the investment manager is in managing operating costs, which in turn can affect the returns received by investors. A lower ratio is generally better because it indicates that operating costs are more efficient where this variable can be measured by dividing total costs by total assets. The total expense ratio based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach) was found to have a negative effect on operating efficiency.

Bank Size

According to Rahman (2023), bank size can affect overall bank activities, such as investment, asset selection for additional profit and ease of access to capital. According to the theory of economic scale, banks with larger assets have lower average operating costs because banks have the opportunity to increase the number of loans provided which can ultimately reduce the average cost of banking which ultimately leads to a decrease in interest rates on loans provided (Tan, 2016). Banks with higher asset levels also have the opportunity to diversify loan portfolios which can increase interest income with lower risk. (Ym. Kazo, 2010).

Bank size, which is often measured by the natural logarithm of total assets, is one of the important variables in banking analysis. Total assets reflect the scale of bank operations and financial resources. Some statistical analyses use total assets directly which can be problematic due to its exponential nature. Bank size based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) was found to have a positive effect on operating efficiency.

Equity to Liability Ratio

The debt to equity ratio (DER) variable, according to several sources, such as Kasmir (2014), Andri and Hanung (2007), and Agus and Martono (2011), is a ratio used to assess debt with equity. This ratio is calculated by comparing all debts, including current debt, with all equity. DER is used to determine how the company manages the combination of debt and equity, which can affect the value of the company.

The equity to liability ratio (TETL) variable or the ratio of equity to liabilities, is an important indicator for measuring the level of solvency and funding structure of a company. TETL is calculated by dividing total equity by total liabilities. The TETL value shows the proportion of equity in funding the company's liabilities. The equity-to-liability ratio based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) did not find a significant effect on operating efficiency.

Loan Loss Provisions to Net Interest Income

Loan loss provisions to net interest income is a financial measure used to assess how much of a portion of net interest income is allocated to cover potential losses from defaulted loans. This ratio is calculated by dividing the amount of loan loss provisions by net interest income. According to experts, this ratio is an important indicator to assess the financial health and credit risk management of a financial institution. The Federal Reserve explains that a

high loan loss provisions to net interest income ratio can indicate increased credit risk or changes in the institution's risk management policies.

The loan loss provisions to net interest income ratio can be calculated by dividing the amount of loan loss provisions by net interest income. Loan loss provisions are reserves set aside by financial institutions to cover potential losses from defaulted loans, while net interest income is the difference between interest income earned from loans and interest expenses paid on deposits and other loans. This ratio provides an overview of how much of a portion of net interest income is allocated to cover potential loan losses, which can be an important indicator in assessing the financial health and quality of the institution's loan portfolio. By calculating this ratio, management and stakeholders can evaluate the efficiency of the institution in managing credit risk and the stability of its income.

The ratio of loans loss provisions to net interest income based on previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) (Determinants of Operating Efficiency for the Jordanian Banks: A Panel Data Econometric Approach 2024) found a positive effect on operating efficiency.

RESEARCH METHOD

The study was conducted based on the objective to test the effect of credit risk, return on assets, return on equity, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size, equity to liability ratio, and ratio of loans loss provisions to net interest income on operating efficiency ratio. The analysis method used in this study is panel data regression, while the data taken is secondary data that is quantitative. The subjects of this study are Banks listed on the Indonesia Stock Exchange from 2019-2023, and the analysis tool used is Eviews 9 software.

RESULTS AND DISCUSSION

Based on hypothesis testing with the T-test, the influence of credit risk, return on assets, return on equity, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size, equity to liability ratio, and ratio of loans loss provisions to net interest income on the operating efficiency ratio can be interpreted as follows:

The Effect of Credit Risk on Operating Efficiency Ratio

Credit risk, based on the results of the study, has no effect on the operating efficiency ratio. The results of this study are in line with the research conducted by Istaiteyeh, Milhem, Najem and Elsayed (2024) that no significant effect of credit risk on the operating efficiency ratio was found. The results of the study showed that NPL had a negative effect on the operating efficiency ratio. NPL is an indicator that measures the quality of a bank's productive assets, in this case, loans given to customers. The higher the NPL value indicates that the higher the number of bad loans. In order for a bank to get a low NPL figure, the bank must optimize existing resources to collect on the credit that has been created. Optimizing resources requires a lot of money. Therefore, the higher the NPL, the lower the efficiency will be, meaning that along with the increase in a bank's NPL, the bank's operations will be increasingly inefficient.

The Effect of Return on Equity on Operating Efficiency Ratio

The results of the study indicate that there is a negative effect of return on equity on the operating efficiency ratio. This study is not in line with the study conducted by Istaiteyeh, Milhem, Najem, and Elsayed (2024) that there is no effect of return on equity on the operating

efficiency ratio. Corbae's (2018) research supports the results of this study which shows that bank efficiency decreased in both developing and developed countries during the global financial crisis has observed a negative effect of return on equity on operating efficiency in Tunisia. ROE shows how effective it is to manage a bank, namely, handling shareholders' money and how much profit is generated. Investors prefer to buy shares of companies with high ROE because it will increase the company's stock price (Saragih, 2018). Therefore, a higher ROE is preferred.

The Effect of Equity to Asset Ratio on Operating Efficiency Ratio

Equity to Asset Ratio, according to the research results, does not affect the operating efficiency ratio. The results of this study are in line with research conducted by Istaiteyeh, Milhem, Najem and Elsayed (2024) that there was no significant effect of the equity to asset ratio on operating efficiency. The high or low equity-to-asset ratio does not affect the operating efficiency ratio. Equity to asset ratio shows the amount of equity invested in the company to meet the company's capital needs (Judisseno, 2002). This ratio also shows the availability of capital to maintain liquidity (protective function) and operational continuity so that it can protect capital owners from bankruptcy or bankruptcy. The role of the owner is able to encourage management to increase performance efficiency, which will have an impact on the company's profits, in addition, the existence of capital can protect customers from losses that arise and maintain public trust because the available capital maintains bank funds.

The Effect of the Deposit to Liability Ratio on the Operating Efficiency Ratio

It can be seen from the results of the study that there is no effect of the deposit-to-liability ratio on the operating efficiency ratio. This result is in line with previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) that the deposit-to-liability ratio does not affect operating efficiency. The size of the deposit to liability ratio does not affect the operating efficiency ratio. The deposit-to-liability ratio is a measure that shows the proportion of deposits held by a bank to total liabilities. This ratio is important in banking analysis because it provides an overview of the liquidity and financial stability of the bank. According to "Banking and Financial Services" by Benton E. Gup and James W. Kolari. The deposit-to-liability ratio is calculated by dividing total deposits by the bank's total liabilities. A high deposit-to-liability ratio indicates that the bank has a larger proportion of deposits compared to liabilities, which can be interpreted as a sign of better bank liquidity. The deposit-to-liability ratio (DTLR) variable is an important indicator for measuring the level of liquidity and funding structure of a company. DTLR is calculated by dividing total deposits by total liabilities. The DTLR (deposit to liability ratio) value shows the proportion of funds from customers (deposits) in funding the company's liabilities.

The Effect of Total Expense Ratio on Operating Efficiency Ratio

The results of the total expense ratio variable test show that it does not affect the operating efficiency ratio. This study is in contrast to previous research conducted in Jordan by Istaiteyeh, Milhem, Najem, and Elsayed (2024), which found that the total expense ratio has a negative effect on operating efficiency. Total expense ratio (TER) is a measure used to assess the cost efficiency of a mutual fund or investment portfolio by comparing the total costs incurred with the total assets managed. TER includes all costs associated with managing mutual funds, including management fees, administration fees, and other costs. According to Pratomo in his book "Mutual Fund Investment Management", the total expense ratio is a ratio that describes the percentage of total operating costs imposed on the assets managed by a mutual fund in one year. TER is calculated by dividing the total operating costs of the mutual

fund by the total assets managed and expressed as a percentage. "This ratio is important for investors because it provides an overview of how efficient the investment manager is in managing operating costs, which in turn can affect the returns received by investors. A lower ratio is generally better because it indicates that operating costs are more efficient where this variable can be measured by dividing total costs by total assets.

The Effect of Bank Size Ratio on Operating Efficiency Ratio

Bank size ratio, according to research results, has a negative effect on the operating efficiency ratio. The results of this study are not in line with previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) that bank size ratio was found to have a positive effect on operating efficiency. Large banks are generally superior to medium or small banks. Large banks have larger capital, making it possible to act more in generating profits, either through interest income or income other than interest. Banks using more capital will have the opportunity to adopt new technologies, so they can increase profits and minimize costs (Perwitaningtyas & Pangestuti, 2015). Large banks also have larger assets and make it easier to obtain loans from other parties. The large size of the bank will give a positive signal to the operating efficiency ratio.

The Effect of Equity to Liability Ratio on Operating Efficiency Ratio

The results of the study indicate that the equity-to-liability ratio does not affect the operating efficiency ratio. This study is in line with previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) that the Equity to liability ratio was found to have no effect on operating efficiency.

The Effect of the Ratio of Loan Loss Provisions to Net Interest Income on the Operating Efficiency Ratio

Based on the results of the study, the ratio of loan loss provisions to net interest income has no effect on the operating efficiency ratio. This study is in line with previous research conducted in Jordan by Istaiteyeh, Milhem, Najem and Elsayed (2024) that the ratio of loans loss provisions to net interest income was found to have no effect on operating efficiency. This ratio provides an overview of how much portion of net interest income is allocated to cover potential loan losses, which can be an important indicator in assessing the financial health and quality of the institution's loan portfolio. By calculating this ratio, management and stakeholders can evaluate the efficiency of the institution in managing credit risk and the stability of its income. The ratio of loans loss provisions to net interest income has no effect on the operating efficiency ratio, indicating that the size of the ratio of loans loss provisions to net interest income does not affect the operating efficiency ratio.

CONCLUSION

The study was conducted based on the objective to test the effect of credit risk, return on assets, return on equity, equity to asset ratio, deposit to liability ratio, total expense ratio, bank size, equity to liability ratio, and ratio of loans loss provisions to net interest income on operating efficiency ratio. The object of this study focuses on banks listed on the Indonesia Stock Exchange from 2019 - 2023. Purposive sampling is the method chosen for sampling, namely selecting samples determined based on criteria. Based on the results of the analysis and discussion, the following conclusions can be drawn:

1. Credit risk has no effect on operating efficiency
2. Return on assets has a positive effect on operating efficiency
3. Return on equity has a negative effect on operating efficiency

4. Equity to asset ratio has no effect on operating efficiency
5. Deposit to liability ratio has no effect on operating efficiency
6. Total expense ratio has no effect on operating efficiency
7. Bank size ratio has a negative effect on operating efficiency
8. Equity to liability ratio has no effect on operating efficiency
9. Ratio of loans loss provisions to net interest income has no effect on operating efficiency

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