THE INFLUENCE OF INTELLECTUAL CAPITAL, LIQUIDITY, AND OPERATIONAL EFFICIENCY ON THE GROWTH OF BANKING PROFITABILITY IN INDONESIA (CASE STUDY OF BANKING COMPANIES 2020-2023)

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ABSTRACT

The phenomenon of increasing ROA in banking since 2021, the importance of intellectual capital, liquidity, and operational efficiency in a company and the results of previous research motivate this research. The purpose of this study is to determine whether Intellectual Capital, Liquidity, and Operational Efficiency affect banking growth in Indonesia.The type of research used is casual explanatory. The data analysis method is multiple linear regression analysis. The technique of determining the sample is purposive sampling. The results showed that partially Intellectual Capital has a positive and significant effect on the growth of banking profitability, Liquidity does not affect and is insignificant to the growth of banking profitability, and Operational Efficiency has a negative and significant effect on banking growth in Indonesia listed in BEl in 2020-2023. In addition, simultaneously shows that Intellectual Capital, Liquidity, and Operational Efficiency have a positive and significant effect.

Keywords: Intellectual Capital, Liquidity, Operational Efficiency, Profitability and Banking in Indonesia

INTRODUCTION

The banking industry in Indonesia plays a crucial role in supporting the country's economy. Banks are institutions that collect funds from the public through demand deposits, savings, and time deposits, then channel these funds to those in need in the form of loans or credit, as well as offering other banking services (Asiska et al. 2023). The primary goal of banks is to generate profit from their operational activities (Aini et al. 2020).

Table 1: Research Phenomenon

No.	Tahun	ROA (%)
1.	Desember 2020	1,59%
2.	Desember 2021	1,85%
3.	Desember 2022	2,45%
4.	Desember 2023	2,76%

Source: Secondary data obtained, 2024

From the table above, it can be seen that ROA in 2021 has increased from the previous year. In 2022 it increased significantly from 2021 to 2.45% and in 2023 it also increased, indicating that ROA has increased consistently over the past 4 years. From the ROA phenomenon table, the researcher wants to examine more deeply whether the factors are the reason for the growth of ROA over the past 4 years, where the researcher takes the variables of intellectual capital, liquidity and operational efficiency as a reference for whether the three variables are the reason for the growth in profitability of banking companies in Indonesia. The reason the researcher took the intellectual capital variable was because in the competitive competition between banking companies today, intellectual capital consists of human capital, customer relations and innovation which are banking assets in increasing the competitiveness of the company. The reason researchers took the intellectual capital variable is because in the current competitive competition between banking companies, intellectual capital consists of human resources, customer relations and innovation which are banking assets in adding to the competitiveness of the company. This study is to assess how far intellectual capital can influence the growth of banking. in liquidity, researchers want to understand how liquidity can affect profitability by looking at the ability of banks to manage customer funds. in some cases that researchers see, the inability of banks to manage liquidity can have an impact on the growth of banking profitability. Operational efficiency was analyzed due to increased banking competition in Indonesia where banks are required to manage funds efficiently without reducing the ability to increase banking profitability.

Profitability is a ratio that shows how efficiently a company generates profit or earnings (Kasmir, 2019). Profitability is also a factor that influences the sustainability of a bank; the higher the profitability, the better it is for the bank's continuity (Asiska et al. 2023). The ratio used to measure this is Return on Assets (ROA), which indicates how effectively a company uses its assets to generate profit.

To enhance profitability, it is essential for banks to manage their intellectual capital. A bank's success is determined not only by its tangible assets but also by its intangible assets, which include the knowledge, expertise, and creativity of its human resources. Although most companies can manage their tangible assets, not all realize the importance of managing their intangible assets (Rahmadi et al. 2021). Effective intellectual capital management is crucial for banks to stay competitive and improve profitability.

In addition, bank liquidity is vital to determine a bank's ability to meet short-term obligations, or in other words, the bank’s capacity to settle debts as they come due (Kasmir, 2019). The

Loan to Deposit Ratio (LDR) is used to assess a company's liquidity level. Operational efficiency is also crucial in determining a bank's profitability. The more efficiently a bank manages its resources and conducts its operations, the higher the profitability it can achieve (Putri et al. 2019). The operational efficiency ratio used in this study is the Operational Expense to Operating Income (BOPO) ratio. A lower BOPO ratio indicates higher profitability.

In addition, researchers are interested in comparing the results of research conducted by Angraini et al. (2021) who found that intellectual capital partially has a significant effect on profitability in manufacturing companies. With that, researchers want to examine in depth whether intellectual capital can also have a significant effect on the profitability of banking companies. The results of research conducted by Suryadi et al. (2022) who found that liquidity had a positive and insignificant effect on banking companies in Indonesia in 2016-2020. Therefore, researchers conducted research on banking companies in the 2020-2023 period to see whether banking companies have been able to manage their liquidity. Research conducted by Ilmiha et al. (2023) found that operational efficiency has a positive and insignificant effect on manufacturing companies. in that case, researchers want to examine in depth how operational efficiency in banking companies in Indonesia.

LITERATURE REVIEW

Intellectual Capital

According to Halim (2021), intellectual capital refers to human resources in the form of employees, skills, and experience that companies use to generate profits. In this study, intellectual capital is measured based on the value added from VACA, VAHU, and STVA. The combination of these three value-added components is known as VAIC (Value Added Intellectual Coefficient), a model developed by Pulic (1998, 1999, 2000). The formulation and calculation steps for VAIC, as outlined in Berliana et al. 2021, are as follows:

1. Calculating Value Added (VA)

   Value Added (VA) is computed as the difference between a company's output and input:

   VA= Output − Input

   Output: Total sales and other income

   Input: Sales expenses and other costs (excluding employee costs)

2. Calculating Value Added Capital Employed (VACA)

VACA measures the amount of Value Added generated by one unit of physical capital, indicating the contribution of each unit of Capital Employed (CE) to the organization's value added.

$$\mathbf{VACA = VA / CE}$$

CE (Capital Employed): Funds available, including equity and net income

VA: Value Added

3. Value Added Human Capital (VAHU)

VAHU is an indicator of how much Value Added (VA) can be produced with the funds spent on labor. This ratio shows the contribution made by each rupiah invested in Human Capital (HC) to the organization's Value Added (VA)

$$\mathbf{VAHU = VA / HC}$$

VA: Value Added

HC (Human Capital): Total expenses related to employees

4. Calculating Structural Capital Value Added (STVA)

This ratio measures the amount of Structural Capital (SC) required to generate 1 rupiah of Value Added (VA) and indicates the effectiveness of Structural Capital in creating value.

$$\mathbf{STVA = SC / VA}$$

SC (Structural Capital): Calculated as VA−HC

VA: Value Added

5. Calculating Value Added Intellectual Capital (VAIC)

VAIC indicates the intellectual capability of an organization, which can also be considered as a Business Performance Indicator (BPI). VAIC is the sum of the three previously calculated components, which are:

$$\mathbf{VAIC = VACA+VAHU+STVA}$$

Previous research on the relationship between Intellectual Capital and profitability, conducted by Mahardika et al. 2018 and Yustyarani et al. (2020), provides empirical evidence that Intellectual Capital has a positive and significant impact on profitability.

Liquidity

According to Kasmir (2019), the liquidity ratio functions to show or measure a company's ability to meet its obligations that have already matured, both to external parties and within the company itself.

The Loan to Deposit Ratio (LDR) can be formulated as follows:

LDR = Total Loans Given / Total Deposits X 100%

Previous research on the relationship between liquidity and profitability, conducted by Asiska et al. (2023) and Wulandari et al. (2022), provides empirical evidence that liquidity has a negative impact on profitability.

Efficiency Operational

According to Moorcy et al. (2020), the ratio used to measure the operational efficiency of a bank is the Operational Expense to Operating Income (BOPO) ratio. A lower BOPO ratio indicates that the bank is managing its operational costs efficiently and generating greater profits.

The BOPO ratio can be formulated as follows:

BOPO = Operational Expenses / Operating Income x 100%

Previous research on the relationship between operational efficiency and profitability, conducted by Janah et al. (2018) and Faradilla et al. (2021), provides evidence that operational efficiency has a negative impact on profitability

Profitability

According to Kasmir (2019), the profitability ratio is used to assess a company's ability to generate profits. The higher the Return on Assets (ROA) of a bank, the higher the level of profitability and the more efficient the bank is in using its assets to generate profit.

The Return on Assets (ROA) ratio can be formulated as follows:

ROA = Net Profit After Tax / Total Assets x 100%

Research Hypothesis

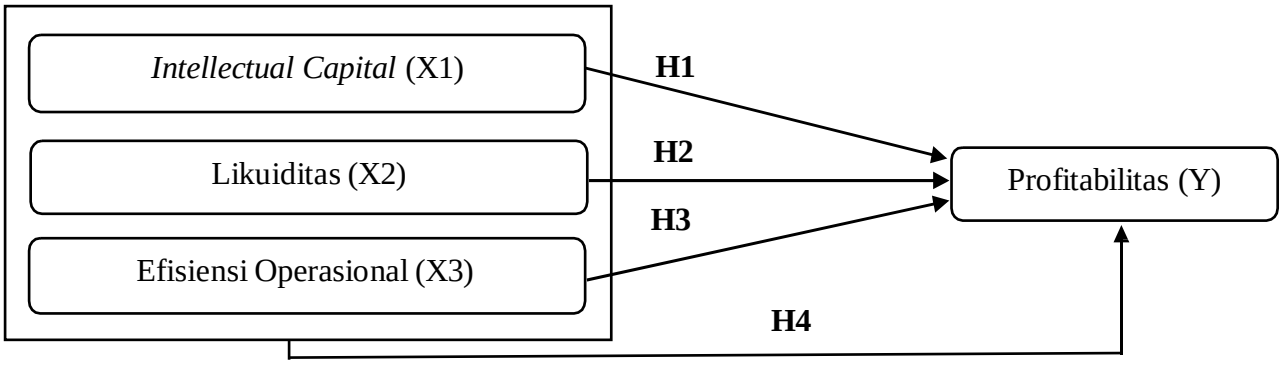

Figure 1. Research Framework

METHODS

The method used is a quantitative research approach. This approach is carried out by collecting data in the form of numbers and analyzed using statistical testing methods. The type of research used is causal explanatory which aims to determine the relationship between several independent variables and the dependent variable.

The type of data used is secondary data, namely annual banking financial reports obtained from the Indonesia Stock Exchange (IDX) website.

In this study, data were obtained through the documentary method, by searching for supporting data or theories from books, journals and articles related to the issue being studied, as well as collecting banking financial statement data from the official website of the Indonesia Stock Exchange site for 2020-2023. The analysis method used is descriptive with a quantitative approach.

According to Sugiyono (2013), Population is a generational area consisting of objects / subjects that have certain qualities and characteristics set by researchers to study and draw conclusions. The population that will be used in this study is the financial statements of banking companies listed on the Indonesia Stock Exchange (IDX) in 2020-2023. According to Sugiyono (2013), the sample is a small part of the number or characteristics possessed by the population, therefore the sample taken from the population must be truly representative. The samples used in this study are banking companies listed on the Indonesia Stock Exchange (BEI) in 2020-2023. In this study, sampling was carried out using Purposive Sampling technique with the process of selecting sample criteria in the following table:

Tabel 2. Sampel Selection Tabel

Criteria	Total
Banking companies listed on the IDX consecutively in 2020-2023	47
Banking companies that did not publish audited financial statements for the years 2020-2023.	(2)
Banking companies that made a profit (loss) in 2020-2023	(17)
Sample Quantity	28
Number of Research Samples (28 x 4)	112

Source: Processed Data, 2024

With the criteria above, there are 28 companies that qualify as research samples with a research span of 4 years (28 x 4).

Hypothesis Test used is Multiple Linear Regression Analysis. Multiple Linear Regression Analysis is used to measure how influential the independent variable (X) is on the dependent variable (Y).

RESULTS

Classical Assumption Test

1. Normality Test

Tabel 3. Normality Test Before Outlier

One-Sample Kolmogorov-Smirnov Test

			Unstardarized Residual
N			112
Test Statistic			.305
Asymp. Sig (2-tailed)			.0001
Monte Carlo Sig (2-tailed)	Sig.		.0001
	99% Confidence Interval	Lower Bound	.000
		Upper Bound	.000

Source: Processed Data, 2024

Based on table 3. Above, shows the value of *Asymp. Sig (2-tailed)* value of 0,0001. This value does not meet the assumption of normality whose significance value is 005. In this situation, what must be done is to treat the abnormal data to normal by deleting the oulier data. According to Ghozali (2018) outliers are data that have unique characteristics that look different from

other observations and appear in the form of extreme values in both single variables and combination variables.

Outlier testing uses*casewise diagnostics* to remove data that has extreme values, so the results of the normality test after removing outliers are in the following table

Tabel 4. Normality Test After Outlier

One-Sample Kolmogorov-Smirnov Test

			Unstardarized Residual
N			94
Test Statistic			.091
Asymp. Sig (2-tailed)			.052
Monte Carlo Sig (2-tailed)	Sig.		.051
	99% Confidence Interval	Lower Bound	.045
		Upper Bound	.057

Source: Processed Data, 2024

From table 4. shows that the value of Asymp. Sig (2- tailed) is 0.052, where this value meets the normality test whose significant value is 0.05.

Apart from using the Kolmogorov-Smirnov test, there is also a normality test by looking at the histogram and probability plot.

a. Histogram

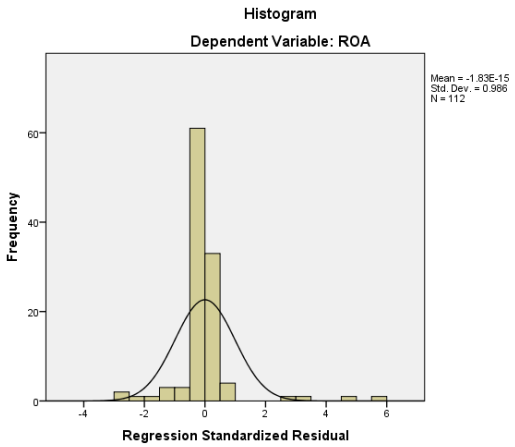

Figure 2. Before Outlier

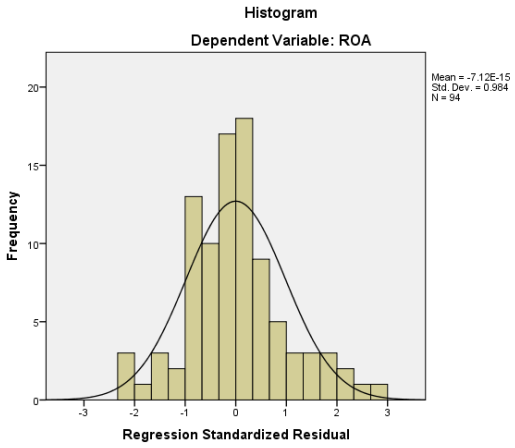

Figure 3. After Outlier

Source: Processed Data, 2024

The test results in Figure 2. before outliers show that the data does not form a bell curve and leans to the left so it can be concluded that the data is not normally distributed and in Figure 3.

After outliers shows that the data forms a bell curve and is not normally distributed leaning to the right and left, which can be concluded that the data is normally distributed.

b. Probability Plot

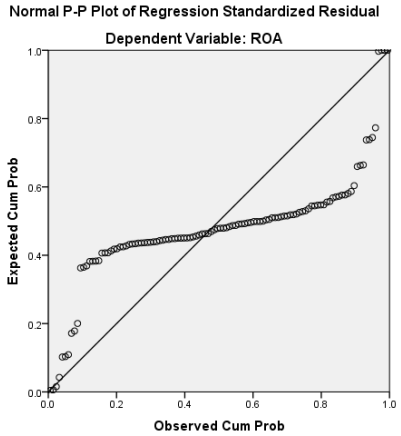

Figure 4. After Outlier

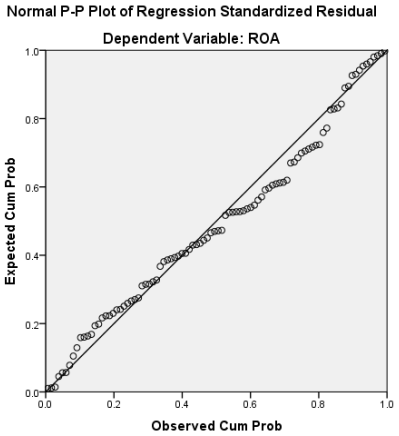

Figure 5. Before Outlier

Source: Data Processed 2024

In the test results it can be seen that in Figure 4. before outliers shows that the data moves away and does not spread following the diagonal line, it can be concluded that the data is not normally distributed. In the results of testing Figure 5. after outliers shows that the data approaches and follows the diagonal line, which can be concluded that the data is normally distributed.

2. Multicollinearity Test

Tabel 5. Multicollinearity Test Before Outlier

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	IC	.994	1.006
	LDR	.808	1.237
	BOPO	.808	1.238

Source: Processed Data, 2024

Tabel 6. Multicollinearity Test after Outlier

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	IC	.996	1.004
	LDR	.666	1.502
	BOPO	.668	1.498

Source: Processed Data, 2024

From table 5. multicollinearity test before outliers can be seen that the tolerance value of intellectual capital (X1) worth 0.996, liquidity (X2) worth 0.808 and operational efficiency (X3) worth 0.808 has a tolerance value > 0.1. While the VIF value of intellectual capital (X1) worth 1.006, liquidity (X2) worth 1.237 and operational efficiency (X3) worth 1.238 has a VIF value < 10. In table 6. multicollinearity test after outliers can be seen that the tolerance value of intellectual capital (X1) worth 0.996, loan to debt ratio (X2) worth 0.666 and operational efficiency (X3) worth 0.668 has a tolerance value > 0.1. While the VIF value of intellectual capital (X1) worth 1.004, liquidity (X2) worth 1.502 and operational efficiency (X3) worth 1.498 has a VIF value < 10. So it can be concluded that there is no multicollinearity.

3. Autocorrelation Test

Tabel 7. Autocorrelation Test before Outlier

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
1	.604[a]	.365	.347	1.48870	2.482

Source: Processed Data, 2024

Tabel 8. Autocorrelation Test After Outlier

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
1	.977[a]	.955	.954	.22163	1.532

Source: Processed Data, 2024

It can be seen in table 7. autocorrelation test before outliers that the Durbin-Watson value is 2.482. The dU value in the DW table is 1.7472 so that the 4-dU value is 2.2528, so there is autocorrelation because dU < d > 4- dU (1.7472 < 2.482 > 2.2528). In tabel 8 the autocorrelation test after outliers has a Durbin-Watson value of 1,532. The dU value in the DW table is 1.7306 so that the 4-dU value is 2.2694, so there is autocoleration because dU > d < 4-dU (1.7306 > 1.532 < 2.2694). to make it so that there is no autocorrelation, the researcher conducts the cochrane- orcutt test.

Table 9. Autocorrelation Test After Cochrane-Orcutt Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson

1	.981[a]	.962	.960	.21620	1.996

Source: Processed Data, 2024

The conclusion from the table above shows that there is no autocorrelation because dU < d < 4-dU (1.7306 < 1.996 < 2.2694).

4. Heteroscedasticity Test

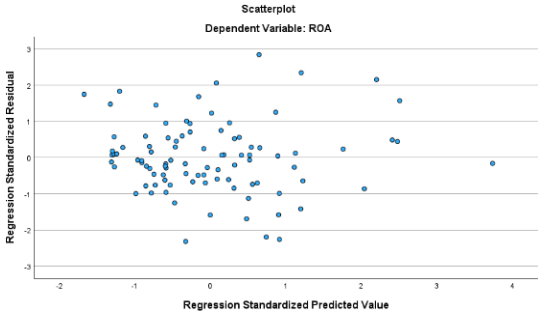

Figure 6. Before Outlier

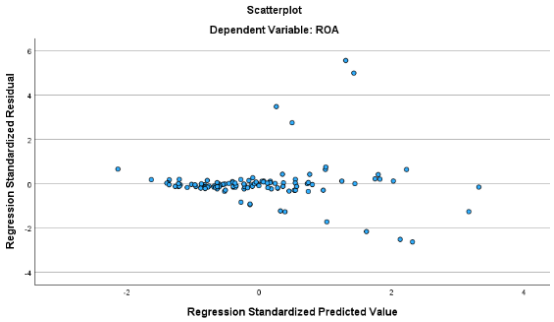

Figure 7. After Outlier

Source: Processed Data, 2024

It can be seen from Figure 6. before outliers can be seen that the distribution of points looks quite random above and below the zero axis, so the data does not experience heteroscedasticity. In Figure 7. after outliers shows that the points spread randomly with an even distribution above and below the zero axis, which means that the data does not experience heteroscedasticity.

Hypothesis Test

1. Multiple Linear Regression Analysis

Tabel 10. Results of Multiple Linear Regression Analysis Results

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig
1	(Constant)	8.261	.237		34.862	.001
	IC	.006	.001	.130	5.802	.001
	LDR	-.001	.001	-.037	-1.364	.176
	BOPO	-.082	.002	-.984	-35.968	.001

Source: Processed Data, 2024

Based on the results of the table above, the conclusions that can be drawn are

$$Y = a + 11 - 22 - 33 + e$$

$$ROA = 8.261 + 0.006 (IC) - 0.001 (LDR) - 0.082 (BOPO) + e$$

2. Coefficient of Determination (R^2) Testing

Tabel 11. Results of Coefficient of Determination (R^2) Testing

Modal Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.977[a]	.955	.954	.22163

Source: Processed Data, 2024

Based on the table above, it shows that the Adjusted R^2 value is 0.954 which means that the effect of intellectual capital, liquidity and operational efficiency variables on profitability variables is 95.4% and 4.8% is influenced by other factors that are not included in the research mode

3. Simultaneous Hypothesis Testing (F-Test)

Tabel 12. Results of the F-Test

ANNOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	93.838	3	31.279	636.796	.001
	Residual	4.421	90	.049		
	Total	98.259	93			

Source: Processed Data, 2024

From the table above, it is known that the Fcount value is 636.796 which shows that Fcount> Ftable which is 2.70. The Ftable value is obtained from the formula Ftable = (k; n-k) where k is the number of independent variables and n is the number of research samples. The final result of the Ftable formula can be used as a reference to find the Ftable value in the distribution of statistical Ftable values. The conclusion that can be drawn is that the variables of *intellectual capital*, liquidity and operational efficiency simultaneously have a positive and significant effect on the profitability of banking companies in Indonesia.

4. Partial Hypothesis Testing (T-Test)

Tabel 13. Result of the T-Test

	Model	T	Sig.
1	(Constant)	34.862	.001
	IC	5.802	.001
	LDR	-1.364	.176
	BOPO	-35.968	.001

Source: Processed Data, 2024

With a significance level of 0.05 and Ttabel of 1.984 which is obtained from the formula Ttabel = (a/2; n-k-1) where α is the research confidence level which is 0.05 then n is the number of research samples and k is the number of independent variables. The final results of the Ttabel formula can then be used to find the Ttabel value in the distribution of statistical Ttabel values. Then the conclusions from the table above are as follows:

a. The intellectual capital (IC) variable obtained a Tcount > Ttabel value of 5.802 > 1.984 with a significant value of 0.001 < 0.05. It can be concluded that the intellectual capital (IC) variable partially has a positive and significant effect on profitability (ROA).
b. The liquidity variable (LDR) obtained a Tcount < Ttable value of 1.364 < 1.984 with a significant value of 0.176 > 0.05. It can be concluded that the liquidity variable (LDR) partially has a negative and significant effect on profitability (ROA).
c. The operational efficiency variable (BOPO) obtained a Tcount < Ttabel value of 35.968 < 1.984 with a significant value of 0.001 < 0.05. It can be concluded that the operational efficiency variable (BOPO) partially has a negative and significant effect on profitability (ROA).

DISCUSSION

The first hypothesis in SPSS statistical testing shows Tvalue > Ttabel of 5.802 > 1.984 with a significant value of 0.001 < 0.05 which states that intellectual capital affects the growth of banking profitability in Indonesia. The results of this study are in line with previous research conducted by Aini et al. (2020), Nabila et al., (2021) and Carolina et al. (2023) which states that intellectual capital partially has a positive and significant effect on profitability. This shows that the management and utilization of intellectual capital in the form of human resources can increase profitability. Increased profitability has a positive impact on the company because it can attract investors to invest in the company.

The second hypothesis in SPSS statistical testing shows Tcount < Ttabel of 1.364 < 1.984 with a significant value of 0.176 > 0.05 which states that liquidity partially has no effect and is not

significant on the growth of banking profitability in Indonesia. The results of this study are in line with previous research conducted by Desmon et al., (2023), Chandra et al. (2020), Nurhasanah et al. (2021) and Fanesha et al., (2021) which state that liquidity has no effect on profitability. This shows that banks do not utilize lending productively which makes liquidity high because it is caused by bad credit cases so that it can reduce the bank's ability to generate profits because banks must continue to pay interest expenses to third party funds.

The third hypothesis in SPSS testing shows the value of the calculated t-value is greater than the critical t-value with a value of 35.968 < 1.986 and a significance level of 0.001 < 0.05. This indicates that operational efficiency has a negative and significant effect on the growth of banking profitability in Indonesia. The results of this study are in line with previous research conducted by Oktaviani et al., (2019), Huda et al., (2019) and Amalia et al. (2022) which state that operational efficiency has a negative effect on profitability. This shows that banking companies are unable to manage operational efficiency costs properly. Low efficiency makes operating costs high which can reduce revenue. When BOPO increases, more revenue must be allocated to cover employee costs and company maintenance. The results of this study are not in line with research conducted by Lestari et al. (2020) and Pratama (2021) which state that operational efficiency affects profitability.

CONCLUSION

Based on the results of the research and discussion that has been described, the conclusions of this study are Intellectual Capital has a positive and significant partial effect on the growth of banking profitability in Indonesia for banks listed on the Indonesia Stock Exchange (IDX) from 2020 to 2023, Liquidity partially has a negative and insignificant effect on the growth of banking profitability in Indonesia listed on the IDX in 2020-2023, and Operational Efficiency partially has a negative and significant effect on the growth of banking profitability in Indonesia listed on the IDX in 2020-2023. In addition Intellectual Capital, Liquidity and Operational Efficiency simultaneously affect the profitability growth of banks listed on the IDX in 2020-2023.

Based on the results of data analysis in this study, suggestions can be given to future researchers to expand the research variables because in this study there are 4.8% influenced by other variables that can affect profitability and it would be better if the data used covers a long period of time so that the sample used will be wider to increase the validity of the research results.

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