

UDC 332

THE ROLE OF INTELLECTUAL CAPITAL IN MODERATING THE EFFECT OF CREDIT RISK AND OPERATIONAL EFFICIENCY ON PROFITABILITY

Prawidyasanti Kadek Ranita*, Purbawangsa Ida Bagus Anom

Faculty of Economics and Business, University of Udayana, Bali, Indonesia

*E-mail: ranitadyas@gmail.com

ABSTRACT

Banks play a central role in the economy, and it is generally agreed that sound banking is a prerequisite for sustainable economic development. Banking profitability fluctuated during 2016 – 2019, and in 2019 there was a downward trend in profitability. The purpose of this study was to obtain empirical evidence regarding the effect of credit risk and operational efficiency on profitability and to examine the role of intellectual capital in moderating the effect of credit risk and operational efficiency on profitability. The sampling technique used was saturated sample with the census method. The data used in this study is secondary data obtained from the financial statements of banking companies listed on the Indonesia Stock Exchange in 2019. The data analysis technique uses multiple linear regression and moderated regression analysis (MRA). The results of this study indicate that there is no significant relationship between credit risk and profitability, while operational efficiency has a significant negative effect on profitability. Intellectual capital weakens the positive relationship between credit risk and profitability, while intellectual capital strengthens the negative relationship between operational efficiency and profitability. The implications that can be given from the research findings are that it can enrich the research model and support other empirical studies related to the effect of credit risk and operational efficiency on profitability and the role of intellectual capital in moderating the effect of credit risk and operational efficiency on profitability.

KEY WORDS

Credit risk, operational efficiency, profitability, intellectual capital.

Economic developments in Indonesia are rapidly affecting the business world, especially in the financial sector. Companies engaged in financial services are increasingly being felt by the public in connection with efforts to improve the quality of financial services. Bank is a business entity that collects funds from the public in the form of savings and distributes them to the public in the form of credit and or other forms in order to improve the standard of living of the people at large (Law No. 10 of 1998).

The banking sector, which has a strategic position as an intermediary and supporting institution, is a very decisive factor in the process of policy adjustment in the economic sector. In this regard, it is necessary to improve the national banking system, which includes not only the restructuring of individual banks but also the restructuring of the banking system as a whole. Efforts to revitalize the national banking system are a shared responsibility between the Government, the banks themselves and the public using bank services. The existence of this shared responsibility can help maintain the health level of the national banking system so that it can play a maximum role in the national economy (Law No. 10 of 1998).

Banks play a central role in the operation of the economy, and it is generally agreed that sound banking is a prerequisite for sustainable economic development (Menicucci & Paolucci, 2016). Banks are required to carry out business activities based on prudential principles in order to maintain or improve the Bank's Soundness Level (Bank Indonesia Regulation 6/10/PBI/2004). Bank Soundness Level is the result of a qualitative assessment of various aspects that affect the condition or performance of a Bank through the assessment of capital factors, asset quality, management, profitability, liquidity, and sensitivity to market risk.

Profitability is an important output for the continuity of bank activities and sustainable growth due to intense competition (Yildirim & Ildokuz, 2020). Profitability is the value of a company's profits on assets, equity and net sales used in production. The bank's profitability performance shows the success of management and is one of the most important performance indicators for investors (Menicucci & Paolucci, 2016). There are various ratios used in financial theory to measure company profitability. The ROA (Return on Assets) ratio is used as a method to measure profitability. This ratio shows how effectively an entity uses its assets; in other words how much return is generated from its assets.

Table 1 – Banking Performance Based on ROA 2016-2019 (in percentage units %)

No	Bank	Year				Average (2016-2019)	Bank Soundness Level (2019)
		2016	2017	2018	2019		
1	Conventional Commercial Bank	2.23	2.45	2.55	2.47	2.42	Very healthy
2	Conventional Commercial Banks - BUKU1	1.43	1.49	1.39	1.17	1.37	Healthy enough
3	Conventional Commercial Banks - BUKU 2	1.66	1.57	1.54	1.42	1.54	Healthy
4	Conventional Commercial Banks - BUKU 3	1.41	1.77	1.82	1.72	1.68	Very healthy
5	Conventional Commercial Banks - BUKU 4	3.1	3.15	3.29	3.11	3.16	Very healthy
6	Islamic Commercial Banks - BUKU 1	-3.51	-2.33	0.09	0.74	-1.25	Healthy enough
7	Islamic Commercial Banks - BUKU 2	1.08	0.94	1.58	1.83	1.36	Very healthy
8	Performance of Islamic Commercial Banks - BUKU 3	0.59	0.59	0.88	1.69	0.94	Very healthy
9	Conventional State-Owned Bank	2.77	2.98	3.08	2.81	2.91	Very healthy
10	Conventional Foreign Exchange BUSN	1.65	2.04	2.2	2.27	2.04	Very healthy
11	Conventional Non-Foreign Exchange BUSN	0.98	1.12	1.34	1.21	1.16	Healthy enough
12	Conventional BPD	2.58	2.4	2.38	2.15	2.38	Very healthy
13	Conventional Mixed Bank	1.34	1.43	1.13	0.62	1.13	Healthy enough
14	Conventional Foreign Bank	2.68	2.63	2.67	3.27	2.81	Very healthy

Source: Indonesian Banking Statistics, OJK January 2020.

Table 1 shows the financial performance of banks in Indonesia in terms of profitability based on ROA. From 2016 to 2019 the lowest average ROA value was -1.25%, namely Islamic Commercial Banks – BUKU 1 and the highest average was 3.16%, namely Conventional Commercial Banks - BUKU 4. In 2019 the highest ROA was at Conventional Foreign Banks, which was 3.27% and the lowest is 0.62% at Conventional Mixed Banks. When viewed from each type of bank, ROA fluctuated during 2016-2019. In 2019 banking ROA showed a decline from the previous year, especially for Conventional Commercial Banks (BUKU 1 to 4), Conventional State-Owned Banks, Conventional Non-Foreign Exchange BUSN, Conventional BPD and Conventional Mixed Banks. In addition, in 2019 there were still banks that were not categorized as healthy based on the ROA value. Healthy rating based on Bank Indonesia Circular Letter No. 6/23/DPNP Year 2004 is 1.25% < ROA 1.5% , while Conventional Commercial Banks - BUKU 1 (1.17%), Islamic Commercial Banks - BUKU 1 (0.74%), Conventional Non-Foreign Exchange BUSN (1.21%) and Mixed Banks Conventional (0.62%) in 2019 has not been included in the rating of a healthy bank. Identification of internal factors that determine bank profitability is important, because banks have an important role in the economy.

Previous research has shown that there are differences in factors that can affect bank profitability. For example, research conducted by Albulescu (2015) using ROA and ROE as a measure of profitability, the results show that bank capital, liquidity and interest rate margins have a positive effect on bank profitability, while non-performing loans and non-interest expenses have a negative effect. In contrast to the research conducted by Buchory (2015) with secondary data in the form of financial reports of 26 Regional Development Banks in Indonesia as the object of research, the credit risk as measured by NPL (Non-Performing Loan) has a positive and significant effect on ROA, while operational efficiency as measured by BOPO (Operational Cost of Operational Income) has a negative and significant effect on ROA. Yildirim & Ildokuz (2020) conducted research by analyzing bank internal factors such as capital adequacy, asset quality, management adequacy, liquidity status and sensitivity to market risk, and the influence of these factors on ROA and ROE. As a result, the variables of capital adequacy, management adequacy and liquidity are effective on profitability. This

study reveals the importance of capital, management and liquidity variables which are internal factors in increasing bank profitability.

CAMELS is one of the most popular methods of analysis and evaluation of bank health represented by the framework (Roman & Şargu, 2013). This framework, which was first known as CAMEL, was created in 1979 in the US by bank regulatory agencies, and after that its use was extended, it is considered a useful tool for regulatory authorities of various countries to assess the soundness of financial institutions. The abbreviation CAMEL comes from the five main segments of the bank's operations: capital adequacy, asset quality, management quality, earnings capability and liquidity. Since 1996, due to the desire to focus more on risk, the five components were added to the sixth "S" component, so that the CAMEL approach became the CAMELS approach. Where "S" is the sensitivity to market risk. The six parameters are relevant indicators for assessing the financial health of banks, also recommended by the IMF and the World Bank (2005). Asset quality is the instability of banking health caused by bank assets that are not paid off due to high non-performing loans (Ledhem & Mekidiche, 2020). Asset quality is considered as one of the main problems in the health of a bank. Loan and down payment failures as well as low asset quality have a significant impact on the entire economy of a country (Mostak Ahamed, 2017). Lending is one of the main activities of banks to generate income. But the lending business inherits the risk of default if it does not meet commitments on the part of the borrower. This situation is called credit risk which has attracted a lot of attention from banking regulators to design and review strict credit risk management practices so that risk in credit activities can be controlled properly in a timely manner at various stages or minimized to zero. Therefore, banks urgently need to follow credit risk management practices for their survival and growth in the long term and help them to maintain and increase profitability through adequate formation (Ali & Dhiman, 2019)

Mostak Ahamed (2017) finds that banks with lower asset quality, both in terms of allowance for loan losses and non-performing loans, can benefit from higher income diversification compared to banks with higher asset quality. Research conducted by Saif-Alyousf et al., (2017) revealed that asset quality as measured by NPL has a negative and significant effect on bank profitability, ROA, ROE, this shows that higher non-performing loans result in a decrease in bank profitability. This research is in line with research conducted by Ali & Dhiman (2019) who conducted research on public sector commercial banks in India for the period 2010-2017, and research conducted by Ekinici & Poyraz (2019) using 26 commercial banks in Turkey operating 2005-2017 shows that there is a significant negative effect between credit risk and ROA with NPL as an indicator of credit risk. Thus, banks should focus more on credit risk management, especially in controlling and monitoring NPLs.

Credit risk is a determinant of performance, so the importance of managing credit risk is increasing. An effective credit risk management process is very important for banks. Banks should focus more on credit risk management, particularly in monitoring loans. Managers should focus more on modern credit risk management techniques. The fact that banks are diversifying in income-generating activities also strengthens effective credit risk management (Ekinici & Poyraz, 2019). However, research conducted by Yildirim & Ildokuz (2020) shows that there is no significant effect between asset quality and profitability, where profitability is measured by ROA and ROE, while asset quality is measured by NPL divided by TL (Total Loan), TL divided by TA (Total Loan). Assets) and TL divided by the total deposit. While the research conducted by Adelopo et al. (2018) in contrast to other studies, showing a significant positive effect between credit risk and profitability during the financial crisis in West Africa. This shows that there are still inconsistencies from the results of previous studies related to the effect of NPL on profitability, so it is necessary to know other variables that can influence the relationship between credit risk and profitability.

Operational efficiency is very important for banks to increase the level of profit to be achieved. The more efficient and large a bank is, the more profit it can get (Gadzo et al., 2019). One of the ratios commonly used to measure the level of bank efficiency is the ratio of operating expenses to operating income (OEOI – Operating Expense Operating Income).

Bank Indonesia as a supervisor also uses OEOI as an indicator to measure the efficiency level of a bank. The OEOI variable can be used as a guideline for bank management in managing a healthy bank, therefore these factors must be managed properly by management in addition to other determinants of bank profitability (Buchory, 2015). Based on the results of research conducted by Buchory (2015) it was found that the most significant determinant of bank profitability in BPD in Indonesia in 2014 was the operational efficiency factor (OEOI).

Research conducted by Swarnapali (2014) shows that operational efficiency as measured by operating costs has a significant negative effect on the profitability of Banks in Sri Lanka. In line with this research, Hartini (2016) reveals that there is a significant negative relationship between operating costs and operating income on profitability as measured by ROA at Islamic banks in Indonesia in 2012-2014. The ratio of operating expenses to income has a negative effect on profitability as measured by NIM (Net Interest Income) across a sample of banks, Kazakhstani, and Belarus, but has a positive impact on the NIM of SIBs (systemically important banks) in Russia (Pak, 2020), while operational inefficient ones affect ROA negatively, except for SIB and Kazakhstani banks in the study. The same thing was found in Banks in Saudi Arabia in 2000-2014 where operating expenses to the total income of foreign banks were significant but negatively related to profitability, this indicates that cost management inefficiency has a negative effect on profitability (Saif-Alyousf et al., 2017). However, this study also shows that operating expenses on the total income of domestic banks do not have a significant effect on profitability as measured by ROA. The non-effect of operating income on ROA was also found in research conducted by Muh Sabir et al. (2012) on conventional banks in Indonesia. The inconsistency of the results of previous studies causes the need for further research on the effect of operational efficiency on bank profitability and whether there are other variables that can strengthen or weaken this influence.

Resource-based theory or Resource Based View (RBV) argues that ownership of strategic resources provides an organization with a golden opportunity to develop a competitive advantage over its competitors (Barney, 1991). This competitive advantage can, in turn, help organizations enjoy large profits, over time. The era of the global economy challenges companies to be more competitive towards knowledge-based resources as the main factor in maintaining competitive advantage (Arifin, 2017). With the advent of the knowledge-based economy, intellectual capital compared to physical and financial capital has become a major factor in creating corporate value and maintaining competitive advantage. The emergence of a "new economy" which is principally driven by the development of information technology and science, has also triggered a growing interest in the disclosure of intellectual capital. This is in accordance with the resource-based and knowledge-based theory, companies gain competitive advantage and achieve superior performance by controlling both tangible and intangible assets (Arifin, 2017).

Developments in Indonesia, PSAK No. 19 revisions in 2010 regarding intangible assets have started to cause the phenomenon of intellectual capital in Indonesia, so that it seems to be growing even though it is not explicitly explained about intellectual capital. PSAK No. 19 revision of 2010 divides intangible assets into two groups, namely intangible assets whose existence is regulated through regulations (such as: patents, copyrights, lease rights), and intangible assets whose expiration period cannot be determined (such as trademarks, confidential processes, innovation, and goodwill). There are changes in PSAK No. 19 of 2015 revision of 2012 regarding intangible assets explained that the benefits of these intangible assets include income from the sale of goods or services, cost savings incurred, and other benefits from the use of assets on company equity.

In the era of knowledge-based economy, managers need to understand in depth the critical role of intellectual capital in improving financial performance (Soewarno & Tjahjadi, 2020). The research conducted by Soewarno & Tjahjadi (2020) implies that banking companies in Indonesia must properly manage the efficiency of each element of intellectual capital consisting of human capital, structural capital, innovation capital and capital used. Intellectual capital is proven to play a strategic role in achieving financial performance and

banking competitive advantage. Thus it can be recognized that the influence of intellectual capital to create value and competitive advantage, but the right measure of intellectual capital is still being developed. (Pulic, 2000) suggests an indirect measurement of intellectual capital by measuring the efficiency of the benefits generated by the company's intellectual ability (Value Added Intellectual Coefficient - VAIC). The results of a study conducted (Ramírez et al., 2020) reveal that the efficiency of intellectual capital (as measured by VAIC) and its components (human capital efficiency and structural capital efficiency) has a significant positive impact on the performance (measured by ROA) of Spanish SMEs. This means that Spanish small and medium-sized manufacturing companies are able to significantly increase their profitability by using their Human Capital (HC) and Structural Capital (SC) more efficiently. Therefore, the results obtained allow the authors to argue that intellectual capital is important for the organizational performance of SMEs and appears to be a source of competitive advantage in the Spanish context. In the context of intellectual capital (IC), many studies have also been directed to examine the role of IC in improving financial performance (Nadeem et al., 2019; Shahwan & Fathalla, 2020; Soetanto & Liem, 2018). The key findings of this study empirically support the role of IC as a strategic asset in increasing firm competitiveness, firm value, asset management capabilities and hence minimizing the risk of financial distress. In a study conducted by (Soetanto & Liem, 2018) using the Generalized Method of Moment (GMM) dynamic panel regression system Blundell and Bond (1998) to address the potential endogeneity problem between intellectual capital and firm performance, this study found a positive and significant relationship between intellectual capital and firm performance in both the low-level and high-level knowledge industries.

IC in previous studies has shown empirical evidence that can affect the financial performance of a company. So for now the company is aware of the importance of intangible assets consisting of innovation, information systems, organizational management and human resources (Nurmawati et al., 2020). However, there is no research that uses intellectual capital as a moderating variable in the relationship between the influence of credit risk, operational efficiency and bank profitability. So it is necessary to conduct research considering the role of intellectual capital which is currently one of the factors that improve financial performance.

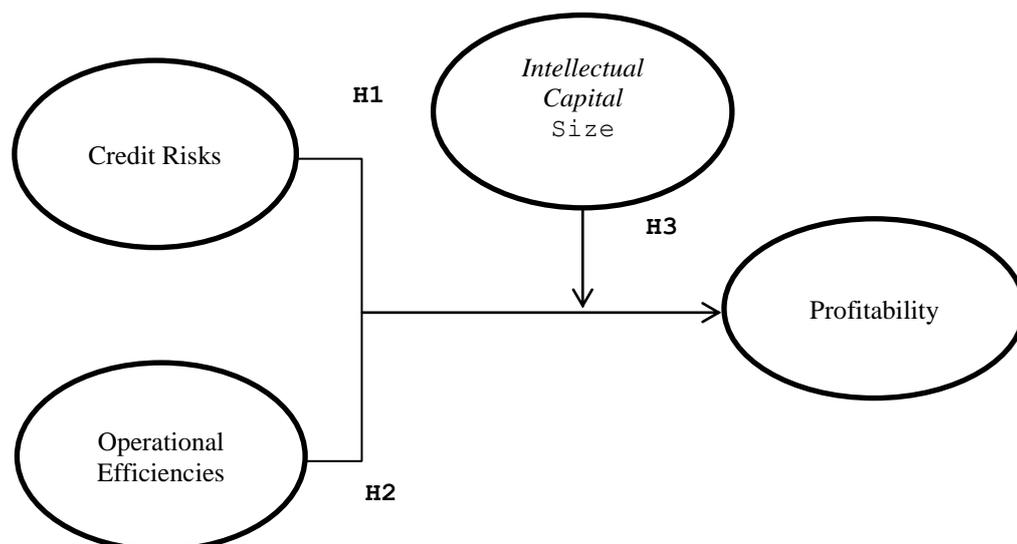


Figure 1 – Research Conceptual Framework

The author is interested in conducting research on the banking industry, where this industry has been maintaining and paying attention to the health of banks which is closely monitored by regulators but in practice it still tends to weaken when viewed from the ROA. In

addition, the banking industry in Indonesia was chosen for the following reasons (Soewarno & Tjahjadi, 2020): (1) the banking industry is one of the most intensive sectors that use intellectual capital; (2) the industry struggles against foreign competitors using advanced technology (3) the industry develops intellectual capital to meet global challenges, and (4) it is also interesting to investigate whether intellectual capital also plays a role in certain industries in developing economies. In addition, Arifin (2017) also reveals that banks are also included in the service sector, where customer service is very dependent on the intelligence of human resources, banks in carrying out their operational activities are more associated with risk when compared to manufacturing companies and other companies and banks are considered to have high level regulations. as regulated in a Bank Indonesia Regulation. Based on previous research and the background of this research, the formulation of the hypothesis and conceptual framework of this research is as follows:

- H1. Credit risk has a negative effect on bank profitability;
- H2. Operational efficiency has a negative effect on bank profitability;
- H3a. IC strengthens the negative effect of credit risk on bank profitability;
- H3b. IC strengthens the negative effect of operational efficiency on bank profitability.

METHODS OF RESEARCH

This study uses a quantitative approach in the form of associative. The scope of this research area is banking sector companies listed on the Indonesia Stock Exchange in 2019, by accessing the website www.idx.co.id. The data collection method used in this study is a non-participant observation method, namely by observing and recording the necessary data on banking sector companies on the IDX. The secondary data in this study is the annual report of banking companies listed on the IDX for the period 2019. The population in this study are all banking companies listed on the Indonesia Stock Exchange, of which there are 43 in 2019. Saturated sample is a sampling technique if all the population be sampled. This research examines all elements of the population or is called a census. The sample in this study was 40 companies. Analysis of the data in this study using multiple linear regression analysis method. In addition to using multiple regression analysis, this study also uses the MRA method to analyse the effect of the moderator variable on the relationship between the independent variable and the dependent variable.

RESULTS AND DISCUSSION

Multiple linear regression analysis was used to determine the effect of the independent variables, namely credit risk (X1), Operational Efficiency (X2) on the dependent variable, namely profitability (Y1) in banking companies listed on the IDX for the 2019 period. The results of multiple linear regression in the study this can be seen in Table 2.

Table 2 – Multiple Linear Regression Test Results

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9,678	,169		57,288	,000
	NPL	,057	,035	,027	1,633	,111
	OEOI	-,098	,002	-,999	-60,043	,000

Source: Data processed, 2021.

This regression test is used to determine the effect of NPL and OEOI on ROA. The resulting equation is as follows”

$$ROA = 9,678 + 0,057NPL - 0,098OEOI$$

The multiple linear regression equation shows the direction of each independent variable to the dependent variable, where the regression coefficient of the independent

variable NPL is positive, meaning it has a unidirectional effect on ROA, so that when the company experiences an increase in the value of NPL, ROA will increase, and vice versa when NPL decreases, ROA will also decrease. While the regression coefficient which is negative, namely the OEOI variable, means that it has the opposite effect on ROA, so that when there is an increase in OEOI it will be accompanied by a decrease in ROA, on the contrary, a decrease in OEOI will be accompanied by an increase in ROA.

Coefficient of Determination Test Results

The coefficient of determination serves to see the extent to which the entire independent variable can explain the dependent variable. The value of the coefficient of determination is between zero and one. The value of the coefficient of determination is close to one, then the independent variable provides almost all the information needed to predict the dependent variable and if the value of the coefficient of determination = 0 means that the independent variable has no effect on the dependent variable.

Table 4 – Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.995 ^a	.990	.990	.3135179	1.993

Source: Data processed, 2021.

The adjusted R² value in this study is 0.990, which means that the independent variables in this study, namely credit risk and operational efficiency in the regression model, simultaneously affect the dependent variable, namely profitability by 99.0% percent, while the 1% percent is explained by other factors. outside the independent variables used in this study.

Table 5 – F Test Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	361.938	2	180.969	1841.109	.000 ^b
	Residual	3.637	37	.098		
	Total	365.575	39			

Source: Data processed, 2021.

Table 5 shows the Sig value of 0.000 < 0.05; it can be concluded that simultaneously the independent variables, namely credit risk and operational efficiency, have an effect on the dependent variable, namely profitability.

Table 6 – t test results

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9,678	,169		57,288	,000
	NPL	,057	,035	,027	1,633	,111
	OEOI	-,098	,002	-,999	-60,043	,000

Source: Data processed, 2021.

Hypothesis Testing with Moderated Regression Analysis (MRA)

In addition to using multiple regression analysis, this study also uses the MRA method to analyze the effect of the moderator variable on the relationship between the independent variable and the dependent variable. This study uses three regression equations with different objectives related to the formulation of the problem.

Equation 1 is a multiple linear regression that has been described previously and has been able to answer H1 and H2 in this study. Equation 1 is contained in Table 7 Multiple Linear Regression Test Results The resulting equation:

$$ROA = 9,678 + 0,057NPL - 0,098OEOI$$

Equation 2 is used to determine the effect of IC as proxied by VAIC on profitability as proxied by ROA. The results of the regression test in equation 2 are presented in Table 7 below.

Table 7 – Multiple Linear Regression Test Results Equation 2

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1,936	,915		-2,115	,041
	NPL	-,425	,456	-,139	-,931	,358
	OEOI	-,525	,353	-,223	-1,485	,146
	VAIC	,562	,219	,383	2,571	,014

Source: Data processed, 2021.

Based on table 7, the resulting equation is as follows:

$$ROA = -1,936 - 0,425NPL - 0,525OEOI + 0,562VAIC$$

The multiple linear regression equation shows the direction of each independent variable to the dependent variable, in equation 2 it can be seen that when the VAIC variable is included in the equation as an independent variable, it can be seen that the VAIC regression coefficient is positive, meaning VAIC has a unidirectional effect on ROA.

The regression test in equation 3 is used to determine the effect of VAIC in moderating the effect of NPL and OEOI on ROA, presented in Table 8 below.

Table 8 – Multiple Linear Regression Test Results Equation 3

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2,716	,670		-4,052	,000
	NPL	-,270	,333	-,088	-,812	,423
	OEOI	-,617	,265	-,262	-2,329	,026
	VAIC	-,586	,411	-,179	-1,425	,163
	NPL*VAIC	-,617	,121	-1,445	-5,092	,000
	OEOI*VAIC	,022	,004	1,646	6,179	,000

Source: Data processed, 2021

Based on table 8, the resulting equation is as follows.

$$ROA = -2,716 - 0,270NPL - 0,617OEOI - 0,586VAIC - 0,617NPL*VAIC + 0,022OEOI*VAIC$$

The multiple linear regression equation shows the direction of each independent variable towards the dependent variable, in equation 3 it can be seen the effect of VAIC in moderating the effect of NPL and OEOI on ROA. The negative NPL*VAIC regression coefficient means that VAIC weakens the effect of NPL on profitability, while the positive OEOI*VAIC regression coefficient means that VAIC is able to strengthen the OEOI effect on ROA.

The adjusted R2 value in this study is 0.992, which means that the independent variables in this study, namely credit risk, operational efficiency and IC in the regression model, simultaneously affect the dependent variable, namely profitability by 99.2% percent, while 0.8% percent is explained by the following factors: other factors outside the independent variables used in this study.

Table 9 – MRA Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.996 ^a	.993	.992	.2813670	1.967

Source: Data processed, 2021*u*

Table 10 – MRA F Test Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	224.992	5	44.998	10.883	.000 ^b
	Residual	140.583	34	4.135		
	Total	365.575	39			

Source: Data processed, 2021*u*

Table 10 shows the Sig value of $0.000 < 0.05$; it can be concluded that simultaneously the independent variables, namely credit risk, operational efficiency and IC have an effect on the dependent variable, namely profitability.

Table 11 – MRA t-test results

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2,716	,670		-4,052	,000
	NPL	-,270	,333	-,088	-,812	,423
	OEOI	-,617	,265	-,262	-2,329	,026
	VAIC	-,586	,411	-,179	-1,425	,163
	NPL*VAIC	-,617	,121	-1,445	-5,092	,000
	OEOI*VAIC	,022	,004	1,646	6,179	,000

Source: Data processed, 2021*u*

The Effect of Credit Risk on Profitability

Based on the results of the tests conducted, credit risk has no effect on profitability. This is indicated by the results of the regression test where the significance level of the credit risk variable is $0.111 > 0.05$ and the regression coefficient value is 0.057. The results of this study indicate that credit risk has a positive but not significant effect on profitability, meaning that any changes that occur in the independent variable credit risk as measured by NPL do not have a significant effect on profitability as measured by ROA.

Credit risk can be defined as the risk that neither the interest component nor the principal component of a loan will be paid and at maturity. It can also be considered a risk of not paying off the principal or cash flows associated with the investment in accordance with the terms and conditions set out in the credit agreement. The main cause of credit risk is that it is too easy for banks to provide loans and make investments because they are required to immediately take advantage of excess liquidity, so credit assessments are less accurate in anticipating various possible business risks financed by banks (Erzha et al., 2019). Agency theory explains that debtors as third parties often ignore the interests of creditors (banks) in managing funds lent or invested by banks. The existence of debtor behavior that is detrimental and poses such risks causes banks to tend to be more careful in channeling loans/investments to customers/debtors.

There is information asymmetry where managers and shareholders are more aware of internal information and company prospects than creditors or debtors, so risk-averse shareholders target risk-adjusted returns and seek higher income to compensate for higher credit risk. Flamini et al. (2009). Previous research conducted by Ahokpossi (2013) and Flamini et al. (2009) argue that it reflects the simple logic of higher risk – higher rate of return (high risk, high return). Thus, banks adjust their fees to reflect the calculated risk they are exposed to. As a result, they demand higher collateral and charge higher interest rates for high-risk transactions, and in the context of high information asymmetry (Adelopo et al.,

2018). Thus, this may result in no significant effect between credit risk and profitability.

In 2019, based on statistical data published by the OJK, commercial bank income sourced from loan interest income was 48.19% of total other income. Table 12 shows the components of banking operating income and their nominal and percentage to total banking operating income in December 2019.

Table 12 – Commercial Bank Operating Income December 2019

Operating Income	Nominal (Billion Rp)	Percentage
Interest income		
a. From Bank Indonesia	7.353	0.64%
b. From Placements with other banks	10.205	0.89%
c. From Securities	64.336	5.61%
d. From Credits given	552.425	48.19%
e. Others	193.878	16.91%
Operating Income Other Than Interest		
a. Increase in Fair Value and gain on sale of securities	12.839	1.12%
b. Increase in Fair Value and credit sales profits granted	38	0.00%
c. Increase in Fair Value and gain on sale of other financial assets	59	0.01%
d. Advantages of Spot and Derivative Transactions	144.697	12.62%
e. Dividend, gain from equity method participation, commission/provision/fee	82.320	7.18%
f. Others	78.298	6.83%
Total Operating Income	1.146.448	100%

Source: Indonesian Banking Statistics, OJK January 2020.

Based on these data, operating income derived from lending is 42.19% of the bank's total operating income, while 57.81% of other income is derived from non-credit activities. This means that in order to obtain the expected income or profit, banks cannot only concentrate on credit management and pay less attention to other sources of income. In order to reduce the negative impact of high credit risk (NPL), fee base income has a very important role. High income from asset management can cover losses arising from credit risk (Sukarno & Syaichu, 2006). In forming total income, it shows that high non-performing loans as proxied in the NPL ratio will still be able to increase profits proxied in the ROA ratio because the company can optimize other sources of income apart from lending. Current banking activities have led to modern activities such as convenience in payment transactions, both through internet banking and mobile banking, in line with technological developments and customer needs. Of course, these services also generate fee base income which can affect banking income apart from interest on credit loans.

The results of this study are not in accordance with the first hypothesis (H1) which states that credit risk affects profitability and is not in accordance with the results of research from several previous researchers, namely research conducted by Saif-Alyousf et al., (2017); Ali & Dhiman (2019) ; Ekinci & Poyraz (2019) ; Albulescu (2015) stated that there was a negative and significant relationship between NPL and ROA, while research conducted by Adelopo et al. (2018; Ahokpossi (2013); Flamini et al. (2009) which state that there is a positive and significant relationship between credit risk and profitability. However, the results of this study are in line with research conducted by (Yildirim & Ildokuz, 2020).

Effect of Operational Efficiency on Profitability

Based on the results of the tests carried out, operational efficiency has a negative and significant effect on profitability. This is indicated by the results of the regression test where the significance level of the operational efficiency variable is $0.000 < 0.05$ and the regression coefficient value is -0.098 . The results of this study indicate that when the OEI value of a company increases, which means the company is increasingly inefficient in its operational activities, the profitability as measured by ROA will decrease and vice versa when OEI decreases, which means the company's operations are more efficient, the resulting ROA will increase.

Operational efficiency is very important for banks to increase the level of profit to be

achieved. The more efficient and large a bank is, the more profit it can get (Gadzo et al., 2019). Since better management of operating costs will increase efficiency and therefore increase bank profits, the ratio of operating expenses to operating income is negatively related to profitability. This implies that higher operating costs result in lower profits. If the OEOI ratio is higher, it indicates that the management's performance is less efficient in using its resources, which results in reduced profit before tax which will affect the decline in the ROA ratio in banks.

The results of this study are in accordance with the second hypothesis (H2) which states that operational efficiency affects profitability and is in accordance with the results of research from several previous researchers, namely research conducted by Buchory (2015); Swarnapali (2014); Hartini (2016) ; Pak (2020) which states that there is a negative and significant relationship between OEOI and ROA.

IC strengthens the negative effect of credit risk on bank profitability

Based on the results of the tests conducted, there is a moderating effect of IC on the relationship between credit risk and bank profitability. This is indicated by the results of the regression test where the significance level of the interaction of credit risk and IC is $0.000 < 0.05$ and the regression coefficient value is -0.617 . The results of this study indicate that IC is able to moderate by weakening the positive influence of credit risk on profitability and belongs to the type of quasi moderation.

IC as measured by VAIC consists of efficiency of human resource capital (HCE), structural capital (SCE) and efficiency of capital used (CEE). Value creation in this context is by utilizing all the potential of the company, both employees (human capital), physical assets (physical capital), and structural capital. Good management of all these potentials will create added value for the company (in this case called VAIC™) which can then encourage the company's financial performance for the benefit of stakeholders (Ulum, 2007).

Resource-based theory assumes that IC is a key strategic asset in creating and maintaining a company's competitive advantage (Buallay & Hamdan, 2019). Intellectual capital as a moderating variable is expected to be able to oversee the process of providing financing with the knowledge, skills and experience of employees, which is expected to minimize non-performing financing, so that financing provided to customers will also provide income for the bank. In the era of knowledge-based economy, managers need to understand in depth the critical role of intellectual capital in improving financial performance (Soewarno & Tjahjadi, 2020)

When a bank is faced with a low NPL condition, this is an indicator that the health of the bank is getting better, when viewed from the previous influence that NPL has a positive and insignificant effect on ROA, so that a decrease in NPL can be accompanied by a decrease in ROA. One of the things that can affect this is the existence of a restructuring policy, where bad debtors can be given credit repayments in accordance with the specified scheme, as a result, it will affect the bank's profitability which is disrupted because the bank does not receive interest payments in accordance with the credit agreement at the beginning.

With good IC management by banks, it can weaken the positive relationship between NPL and ROA, meaning that banks are able to take advantage of all the potential of the company, both employees, physical assets, and structural capital, so that when banks experience conditions as mentioned earlier, they can maintain their profitability (ROA). In line with research conducted by Ulum (2007) that banks can utilize and maximize the expertise, knowledge, networks, and thinking of their employees to create value for the company, this shows management's ability to manage the organization for the benefit of shareholders (owners). This is also evidenced by statistical data that the measure of performance that is influenced by IC is ROA which is one measure for the benefit of shareholders.

Good human resources will be able to manage other sources of bank income not only from credit income so that they will still be able to maintain bank profitability. If human resources are strongly influenced by the ability of their employees, it is different from structural capital. Structural capital can be said as knowledge that remains with the company

even after employees have left it (Ur Rehman et al., 2021), SCE is non-human knowledge, which includes organizational charts, databases, process manuals, routines, strategies, and other things. other things with a value that exceeds its material value. If the structural capital is efficient and well managed, when the NPL is low, the bank will be able to manage its resources by utilizing its database, process manuals and technology to increase profits. Capital employed efficiency is the marginal contribution per unit of physical and financial capital to added value (Tran & Vo, 2018), by concentrating more on company decisions related to tangible and financial assets and investing in bank capital instead of employees or system. The better the use of capital used, the higher the profit earned by the company as suggested by financial theory. If capital assets are managed properly, it will increase profitability. Capital utilisation is better if it produces a higher return from each unit of capital used.

The results of this study are not in accordance with the third hypothesis (H3a) which states that IC strengthens the negative effect of credit risk on bank profitability, but the results show that IC is able to weaken the positive influence of credit risk on bank profitability. Partially these results are in accordance with the results of research from several previous researchers, namely research conducted by Soetanto & Liem (2018); Ramirez et al. (2020) ; Ur Rehman et al. (2021); Alfraih (2018) ; Tran & Vo (2018) which states the influence of IC on bank profitability.

IC strengthens the negative effect of operational efficiency on bank profitability

Based on the results of the tests conducted, there is a moderating effect of IC on the relationship between operational efficiency and bank profitability. This is indicated by the results of the regression test where the significance level of the interaction between operational efficiency and IC is $0.000 < 0.05$ and the regression coefficient value is -0.022 . The results of this study indicate that IC is able to moderate by strengthening the negative effect of operational efficiency on profitability and belongs to the type of quasi moderation.

The three components of VAIC, namely the efficiency of human resources, structural capital and the efficiency of capital used will strengthen the negative influence of OEI on ROA. When OEI is low, it can be said that operational activities are carried out efficiently, then ROA will increase. The lower the OEI value, the more efficient the company can be or able to control its operating expenses as low and efficient as possible compared to its operating income.

With good human resources, employees will be able to mobilize information and knowledge to be able to manage operational activities properly, so that this will strengthen the effect of operational efficiency on profitability. Structural capital which is knowledge that remains in the company even after employees have left it, such as organizational charts, databases, process manuals, routines, strategies, and other things will support operational efficiency to be able to generate optimal profits. By concentrating more on company decisions related to tangible and financial assets and investing in bank capital instead of employees or systems, which is the efficiency of capital used, can help generate higher returns from each unit of capital used, this will encourage increased profit from operational efficiency carried out by the bank.

The results of this study are in accordance with the fourth hypothesis (H3b) which states that IC strengthens the negative effect of operational efficiency on bank profitability and is partially in accordance with the results of research from several previous researchers, namely research conducted by Soetanto & Liem (2018); Ramirez et al. (2020) ; Ur Rehman et al. (2021); Alfraih (2018) ; Tran & Vo (2018) which states the influence of IC on bank profitability.

CONCLUSION AND SUGGESTIONS

The conclusions from the results of research and discussions that have been carried out regarding the role of Intellectual Capital in moderating the effect of credit risk and operational efficiency on profitability are as follows: Credit risk does not affect the profitability

of banking companies listed on the IDX in 2019. Operational efficiency has a negative effect on profitability. In banking companies listed on the IDX in 2019, IC was able to weaken the positive influence of credit risk on profitability and IC was able to strengthen the negative effect of operational efficiency on profitability in banking companies listed on the IDX in 2019.

Based on the results of the research that has been carried out, it is expected to be able to provide an overview of the role of Intellectual Capital in moderating the effect of credit risk and operational efficiency on profitability. Suggestions that can be given are as follows. This research is expected to be an input for the company's management in the efficiency of intellectual capital and the importance of the role of this intangible asset in improving company performance. So that the company can properly manage human capital, structural capital and physical capital used in making more appropriate decisions in order to optimize the company's profitability. These results are also expected to be input for management regarding the factors that affect profitability, namely operational efficiency and become a consideration for companies in making decisions related to the management of expenses and operating income so as to create a balance between improving company performance and shareholder prosperity. With more efficient banking operations, it is hoped that banks will be able to provide competitive interest rates and ultimately improve the standard of living of the people as mandated by Law No. 10 of 1998 article 1 paragraph 2.

For prospective investors and shareholders, institutional investors and shareholders in deciding to invest in a company, apart from considering the company's fundamental factors, are also expected to consider the company's intellectual capital, which in this study plays a role in moderating the influence of the relationship between credit risk and operational efficiency on bank profitability.

For further researchers, further research is expected to extend the research period and use quarterly reports to determine the factors that affect profitability. Future research is expected to use other measurement methods that can describe the company's intellectual capital more realistically.

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