

# THE INFLUENCE OF INTELLECTUAL CAPITAL AND MARKET SHARE ON BANK EFFICIENCY

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## Abstract

Bank efficiency is an important aspect in the development of banks in Indonesia. Several previous literatures indicate differences in research results on the effect of intellectual capital and market share on bank efficiency. This research aims to find the influence of intellectual capital and market share on bank efficiency in developed countries, emerging markets, and Indonesia. This research uses descriptive methods and causality. The unit of analysis in this study was commercial banks, thus the population of this study was commercial banks, both conventional commercial banks and Syariah commercial banks. In this study, the population and sample are all commercial banks registered with the Financial Services Authority (OJK) between the 2006-2017 period, which are categorized into the group of state-owned banks, foreign exchange national private commercial banks (BUSN Devisa), and non-foreign exchange national private banks (BUSN). Non-Foreign Exchange), Mixed Banks, Regional Development Banks (BPD), and Foreign Banks. The results showed that the market share of third-party funds significantly affected bank efficiency in a negative direction. Credit market share has a significant effect on bank efficiency in a positive direction. Intellectual capital has a significant effect on bank efficiency in a negative direction.

**Keywords:** Intellectual Capital, Market share, Bank Efficiency.

**JEL Classification:** E44, G24, O34

## INTRODUCTION

Commercial banks in Indonesia consist of conventional commercial banks and Syariah commercial banks. The existence of these two types of commercial banks has contributed significantly to economic development in Indonesia. However, the existence of conventional banks in Indonesia during the period 2006 - 2017 shows a decline. Meanwhile, Syariah banking experienced an increase.

Bank efficiency in Indonesia is an aspect that is highly emphasized after the enactment of the era of the ASEAN Economic Community (MEA), where Bank Indonesia (BI) issued Bank Indonesia Regulation (PBI) Number 14/26 / PBI / 2012 concerning Business Activities and Office Networks Based on Bank Core Capital who stated that in line with the plan to integrate the ASEAN financial sector in 2020 which has been started in 2015, which allows banks with certain qualifications (Qualified ASEAN Banks - QAB) to operate freely in the ASEAN region, national banks need to increase resilience and competitiveness, efficiency and productivity.

According to OJK, Indonesia's banking efficiency has not reached the ideal level of banks in ASEAN countries. The efficiency level of conventional commercial banks and Syariah

commercial banks as measured by BOPO shows that they are still above 80%. This figure reflects that the operating costs incurred are greater than the operating income received.

To encourage lower bank efficiency, the Financial Services Authority (OJK) through OJK Circular Number 14 / SEOJK.03 / 2016 officially enacted a regulation on incentivizing efficient banks. The incentive is given in the form of a core capital allocation discount (AMI) for the requirements for establishing branch offices. OJK measures these banks' efficiency through two things, namely NIM and operating expenses to operating income (BOPO). (Coase & Coase 1937) believed that corporate behavior is primarily focused on the distribution of resources through an interconnected system. The whole system is determined by the company manager's behavior, in this case, the entrepreneur.

The company's theory, which is quite popular in explaining company behavior concerning competitiveness as seen from its resources, is the company's strategic theory. (Lipczynski, Wilson, & Goddard 2005) explain that corporate strategic theory discusses the view that competitive ability is based on resource ownership, the scope of the company's business activities, and the ability to act appropriately within limited information (bounded rationality).

Resources are defined as the input factors used by a company to produce a product or service. Resources are not limited to physical inputs and intangible inputs, either in physical capital (goods), intellectual capital, or organizational capital. Resources include employees, capital, raw materials, new knowledge, experts, and good relations with trade unions. The higher the company ownership of unique resources and a good relationship between company elements, the company tends to have higher competitiveness.

Financial Intermediation Theory highlights the role of intermediary financial institutions in the economy. Initially, the theory of financial intermediation was developed by Gurley and Shaw in 1960, the theory of financial intermediation is based on the theory of informational asymmetry and agency theory. This theory distinguishes between the functions of financial intermediaries: (i) reducing transaction costs, (ii) reducing liquidity risk, (iii) providing information, (iv) debt negotiation (Andries & Capraru, 2014).

Financial intermediation theory is included in the 12 main building blocks of modern finance theory (building blocks of modern finance theory). The literature on financial intermediation theory is concentrated on both sides of the balance sheet, namely assets and liabilities. Financial intermediation presupposes no financial self-sufficiency, the existence of some economic units whose revenues exceed expenditures, and other units whose expenditures exceed revenues. The financial intermediary then sends excess funds efficiently and immediately from the surplus unit to the unit deficit (Allen & Santomero, 1998).

Intermediation theory addresses the existence of intermediary financial institutions, especially commercial or commercial banks, because banks have a clear competitive advantage over the capital market for all but the very largest types of corporate financing (Megginson, 1997). Financial intermediation theory is closely related to macroeconomics, that modern financial intermediation theory discusses how financial intermediation affects the economy as a whole and the impact of government policies on financial intermediaries (Andries & Capraru, 2014).

Almost all literature and articles on financial institutions state the important role of financial institutions in channeling funds from surplus units as savers to deficit units in the form of loans. This important role of financial institutions is known as financial intermediation institutions (intermediary financial function). Excess funds show financial institutions' importance as intermediary financial institutions in an economy on the one hand (loan supply) and lack of funds (loan demand) on the other.

Empirically, Gofman's (2017) research researched banks in the United States. Based on these findings, it is revealed that efficiency determines bank stability. Likewise, in Malaysia, research (Sulong, Yahya, & Salleh, 2020) found that both conventional commercial banks and Syariah commercial banks in Malaysia affect bank stability. This finding is reinforced by banks' conditions, generally at a low-efficiency level and have a low value of stability than conventional commercial banks.

Research that links intellectual capital with financial performance generally focuses on performance in the form of profitability, this is as expressed in research (Mavridis 2005; Kamath 2007; Heryana & Saputra 2013; Ozkan et al. 2017), which conclude that capital, intellectual property proxies by value-added intellectual capital (VAIC) has an effect on financial performance proxies by bank profitability. However, in various studies in the banking sector, no relationship has been found with bank stability.

Based on these studies, this study focuses on examining the effect of intellectual capital and market share on banks' efficiency in Indonesia to find research patterns compared with studies in developed countries, emerging market countries, and other research in Indonesia.

## LITERATURE REVIEW

Signal theory, formulated by Ross (1977), explained that the company is encouraged to distribute comprehensive information regarding corporations to prospective investors to increase stock prices. Based on this theory, corporations will try to give signals to the market using positive information to potential investors through various channels, including financial statements and annual reports (Widarjo, 2011).

Intellectual Capital is a collective knowledge embedded in personnel, organizational routines and organizational networking relationships (Choo & Bontis, 2002). Intellectual Capital has been recognized as an essential source that organizations need to develop to gain a sustainable competitive advantage (Ming Chen & Jun Lin, 2004; Yudawisastra et al., 2018). According to Guthrie et al., (1999) have examined the use of content analysis as a research method in understanding intellectual capital disclosure. They finally concluded that content analysis is one of the most widely used research methods to investigate the frequency and type of IC reporting (Solikah et al., 2020). Management of companies that have a good value of resources including IC will attempt to signal this fact by disclosing more IC information in the financial statements to its stakeholders. Thus, investors will respond to this information through their investment decisions, which are reflected in the value of the company. In addition, disclosure of information about ICs can enable users of that information to better

determine the future value of the business, which might potentially increase the stock price in the market (Anam et al., 2011; Rahman et al., 2020).

The relationship between intellectual capital and economic performance identifies that only one conducts research, namely Alhassan & Asare's (2016) research, which found that intellectual capital influences efficiency and productivity. However, as with the relationship to financial performance, research on intellectual capital related to economic performance is still rare. Therefore, this study focuses on the relationship between intellectual capital and bank stability and bank efficiency as something new to be investigated in Indonesia's context.

In the management of a knowledge-based system, conventional sources of money, like financial resources and tangible assets, become less critical compared to knowledge-based capital (Meso & Smith, 2000). By using knowledge, procedures on aiming, securing, managing, and defending critical resources efficiently and economically can be obtained, allowing the creation of sustainable competitive advantage. In achieving excellent performance and market value, stable organizational structures, as well as good relations with customers, are the foundation of intellectual capital (Solikhah et al., 2020). According to (Wahab et al., 2020), some positive relationships of the intellectual capital to firms' performances and values, directly and indirectly, with a substantial effect on the second model compared to the first model. This study highlighted knowledge's capacity as a vital basis to gauge the banks' performance and valuation. However, a better formulation of intellectual capital is required to capture a better measurement.

Research using the competition-fragility hypothesis includes research by Berger et al. (2009) conducted on 8,235 banks in 30 developing countries during the 1999–2015 observation periods. The results of his research found that the market share of savings and loan products as a proxy for market power has a positive effect on bank stability. The same finding was expressed by Beck, et al. (2013), who examined banks in 79 countries with the 1994-2009 observation periods. They found that market share as a proxy for market power has a positive effect on bank stability. These researchers' findings certainly provide evidence that competition in the banking industry triggers banks to go bankrupt.

Whereas research by (Berger et al. 2009; Beck, De Jonghe, et al. 2013) found a positive relationship between competition and the fragility of a bank, the results of research in a different direction were found by Yaldiz and Bazzana (2010) who examined 45 banks government-owned, private, and foreign-owned companies in Turkey from the 1999-2001 observation year, revealed that market share has a negative effect on bank stability. The same findings as Yaldiz and Bazzana's (2010) research were also expressed by Amidu and Wolfe (2013), who examined 978 banks in 55 countries from 2000-2007, which found that market share savings and loan products had a negative effect on bank stability. These findings suggest that the relationship between competition and fragility is non-linear.

The difference between the research and the research group above was also revealed in (Nicolo & Lucchetta 2013; Troug & Sbia 2015), which found that bank market share did not affect bank stability. Thus, their research findings do not provide support for the competition-

fragility hypothesis. In other words, according to them, bank competition has no impact on bank fragility. They argue that a bank cannot experience pure competition because if that happens, it will cause the collapse of many banks, which has implications for a serious financial crisis in one country and can even impact other countries.

Research on competition and efficiency has also been studied in Indonesia; Hafidz & Astuti (2013) examined all conventional commercial banks in Indonesia in 2010-2012, finding that the level of competition in Indonesian banks tends to increase. In addition, the level of banking efficiency also increased, seen from the trend of the OEOI ratio as well as the efficiency value generated from the data envelopment analysis (DEA) and stochastic frontier analysis (SFA) methods. The analysis of the relationship between competition and efficiency carried out using the granger causality test method shows that the "competition-efficiency hypothesis" applies to Indonesian banks with an increase in competition that will encourage banks to operate more efficiently.

Different research results regarding competence and efficiency are stated in research (Apergis&Polemisis2016), which examines banks in countries in the Middle East and North Africa region in 1997-2011 with results that reveal bank competition does not affect efficiency. Completing their findings, they explained that banks in the region are banks with a very high level of vulnerability, thus requiring the attention of regulators and government officials to a deeper revision of competition policy in the banking sector.

The same finding regarding bank competition has no effect on bank efficiency was stated in (Nguyen & Nghiem, 2018) research, which examined private banks in Vietnam during 2000-2014. The results of his research also revealed that only a few banks dominate banks in Vietnam, and even banks with large market share tend to be inefficient. Based on these findings, it is concluded that it supports the quiet life hypothesis, a condition in which banks enjoy market control benefits in terms of previous income or cost-saving efforts (Leibenstein, 1966).

## **METHOD**

Researchers used two methods, namely descriptive methods, and causality. Kothari (2004) explains that a descriptive approach is an approach that seeks to explain the empirical fact picture of the object under study based on the research data obtained. At the same time, causality research is a research approach that seeks to explain the causal relationship of the variables under study. The unit of analysis in this study was commercial banks, thus the population of this study was commercial banks, both conventional commercial banks and Syariah commercial banks. In this study, the population and sample are all commercial banks registered with the Financial Services Authority (OJK) between the 2006-2017 period, which are categorized into the group of state-owned banks, foreign exchange national private commercial banks (BUSN Devisa), non-foreign exchange national private banks (BUSN). Non-Foreign Exchange), Joint Venture Banks, Regional Development Banks (BPD), and Foreign Banks,

This study conducted an empirical test of all 107 conventional commercial banks and Syariah banks from 2006 to 2009 and 114 from 2010 to 2017. The difference in the number of banks, especially Syariah banks, was in 2006-2009 only there were 3 banks, and in 2010-2017 there were 10 different banks. The data collection technique used by researchers is the documentation method. The use of panel data regression provides three choices of regression models, which later have compatibility with efforts to obtain practical answers from the interaction of the variables studied, explaining three approaches in calculating the panel data regression model: Fixed Effect Model.

## RESULT AND DISCUSSION

In accordance with the design, the research model consists of two research model structures, namely the influence of bank market share variables and intellectual capital on bank efficiency as the first model. Furthermore, the analysis is followed by a second model that examines the effect of efficiency, bank market share, and intellectual capital on bank stability. Therefore, empirically the model is written as follows:

$$EFFI_{it} = a + b_1 * SDPK_{it} + b_2 * SLOA_{it} + b_3 * VAIC_{it} + e_1$$

### Information:

$EFFI_{it}$  = Bank efficiency i in the year of t

$SDPK_{it}$  = Market share of bank's Third-Party Funds i in the year of t

$SLOA_{it}$  = Bank credit market share i in the year of t

$VAIC_{it}$  = The intellectual capital of the bank i in the year of t

$e_1$  = Epsilon, the first model error variance

**Table 1: Chow and Hausman Model 1 Test Results**

Testing Techniques	Prob.	Results	Description
Chow Test	0,001	F-Test < 0,05, reject $H_0$	Fixed Effect
Hausman Test	0,762	Prob $c^2 > 0,05$ , accept $H_0$	Fixed Effect

Table 1 shows that in the first model, panel regression is considered the best is fixed effects. The first fixed-effect model panel data regression is presented as follows:

**Table 2: Fixed Effect Panel Data Regression**

### Dependent Variable: EFFI?

Variable	Coefficient	t-Statistic	Prob.	Results
C	0.1406	0.6264	0.5312	-
SDPK?	-0.0002	-2.1943	0.0284	Not Effect ( $H_0$ )
SLOA?	0.9303	1147.043	0.0000	Not Effect ( $H_0$ )
VAIC?	0.9305	1130.348	0.0000	Not Effect ( $H_0$ )
Effects Specification				
R	0.7996		F-Statistic	26084.79
Adj. R-squared	0.7995		Prob. (F-Statistic)	0.0000

Table 2 shows that the fixed effect model is at the R-Squared value, which is included in the very strong category with an effect value of 0.7996 or 79.96%. In other words, the bank efficiency variable can be explained by the TPF market share, credit market share, and intellectual capital, while the remaining 20.04% is influenced by other variables not explained in this study. Furthermore, partially, the hypothesis testing results between each independent variable on the dependent variables are as follows: First, the probability value of the TPF market share variable on efficiency is 0.0284 with a regression coefficient of -0.0002. These results indicate that the resulting probability value is smaller at 5% and 10% alpha levels. This means rejecting H<sub>0</sub>, which indicates that the TPF market share affects bank efficiency negatively. In other words, an increase in the TPF market share has an impact on decreasing bank efficiency.

Second, the probability value of the credit market share variable on bank efficiency is 0.0000, with a regression coefficient of 0.9303. These results indicate that the resulting probability values are smaller at the alpha levels of 1%, 5%, and 10%. Thus, the hypothesis testing results reject H<sub>0</sub>, which means that the credit market share positively affects bank efficiency. In other words, an increase in the credit market share impacts, increasing bank efficiency, and vice versa.

Third, the probability value of the intellectual capital variable on bank efficiency is 0.0000, with a regression coefficient of 0.9305. These results indicate that the resulting probabilities are smaller at the alpha levels of 1%, 5%, and 10%. This means rejecting H<sub>0</sub>, which indicates that intellectual capital has a positive effect on bank efficiency. In other words, the higher the added value of intellectual capital produced, the more efficient the bank.

The results of the study were compared with the research of (Firer and Williams 2003), Chen et al. (2005), and Tan et al. (2007), which have proven that intellectual capital has a positive effect on company efficiency. Intellectual capital was tested on the company's efficiency in the same year using VAIC™, formulated by Pulic (2004) to measure its intellectual ability. Intellectual capital has a positive effect on the company's efficiency for the current year, but intellectual capital can also predict the next year's financial year (Ulum, 2007). According to the Chen et al. (2005), taking a sample of public companies in Taiwan, proved that IC has a positive effect on market value and corporate financial performance. Chen et al. (2005) also prove that IC can be an indicator to predict company performance in the future.

Puspitosari (2016) research results show that the components of intellectual capital in the banking industry consisting of VACA, VAHU, and STVA have a significant positive effect on company efficiency as proxies by ROA. In this study, the measurement of intellectual capital uses the Public model. This method was formed to provide information about the company's tangible and intangible assets' efficiency value during the company's operations (Kuryanto and Syafrudin, 2009). The results showed that VACA, VAHU, and STVA had a significant positive effect on ROA. VACA has the strongest influence than the other 2 components of intellectual capital components, followed by STVA and VAHU.

The research results conducted by Sianipar (2009) show that there is a significant influence between value-added intellectual capital and company efficiency. Botosan (1997) indicates that the higher disclosure of intellectual capital will provide credible or trustworthy information and reduce investors' mistakes in evaluating its stock price while increasing market capitalization.

Abdolmohammadi (2005) proves that the amount of disclosure of intellectual capital components in the annual report significantly affects a company's market capitalization value. This means that companies that disclose more intellectual capital components in their annual reports tend to have a higher market capitalization value. Research conducted by Sihotang and Winata (2008) by taking a sample of technology-based public companies in Indonesia found evidence that there is an increasing trend in intellectual capital disclosure during the observation period. The study also found evidence that there is a positive relationship between the level of disclosure of intellectual capital and market capitalization.

Kooistra and Zijlstra (2001) suggest that intellectual capital at the individual level includes knowledge, skills, and talents. At the organizational level, intellectual capital includes databases, technology, methods, procedures, and organizational culture. The various coverage contained in intellectual capital will certainly assist in doing work most efficiently so that costs can be reduced but still obtain high income. Thus, the higher the intellectual capital, which in this study is proxied by VAICTM, the lower the BOPO, which means the bank, is more efficient. Rustiarini and Gama (2012) found that intellectual capital has a negative and significant effect on OEOL.

Firer and Williams (2003) Using a sample of 75 companies listed on the South African stock exchange. Using the multiple regression analysis methods, it is found that intellectual capital has the most significant influence on company efficiency, as indicated by ROA, ATO, and MB.

Ahangar (2011) investigated a company in Iran for 30 years (1980-2009). By using ROA, sales growth, and employee productivity through multiple regression analysis, it is found that only intellectual capital has a significant effect on company efficiency, then intellectual capital and physical capital have a significant effect on company growth, but physical capital has a negative effect. Furthermore, intellectual capital has a significant positive effect on bank efficiency. Gupta and Singh (2015) this study examines the relationship between intellectual capital and financial performance as proxied by NPM, ROA, and ATR. The results of the study indicate that there is a positive and significant relationship between VAIC and company efficiency.

Ousama and Fatima (2015) this research is about the relationship between intellectual capital and financial performance with Islamic banking objects in Malaysia in 2008-2010. In this study, company performance was measured by ROA and ROE and used leverage and company size as control variables. The results of this study as a whole VAIC and its components influence company efficiency.

Based on comparisons with previous studies, the research pattern shows that in developed countries and emerging market countries such as Taiwan, Malaysia, and South Africa it shows that intellectual capital consistently affects bank efficiency, while the results of research in Indonesia show that there is an inconsistency in the influence Intellectual capital on bank efficiency, even in Indonesia based on comparative research shows that physical capital is more influential in bank companies.

The pattern of the influence of market share on bank efficiency shows the consistency of influence in developed countries and emerging market countries, however, in Indonesia, there is an inconsistency indicating positive and negative effects. This is due to the differences in the research objects used by various researchers in Indonesia.

## CONCLUSION

The market share of third-party funds has a significant effect on bank efficiency in a negative direction. This finding reveals that commercial banks' use of third-party funds in Indonesia is distributed into various banking products. Credit market share has a significant effect on bank efficiency in a positive direction. This indicates that the creation of efficiency offsets the expansion of the credit market share to increase profitability in the net interest margin. Intellectual capital has a significant effect on bank efficiency in a negative direction. Empirically, the intellectual capital generated in Indonesia's general banking is included in the common performer's category, which means that Indonesian banks do not make the most of their intellectual capital and have a low-efficiency level. This finding proves that human resources' synergy (human capital) has not been maximized by utilizing physical and structural capital.

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