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The Moderating Effect of Income Diversification on Intellectual Capital and Company Performance in Indonesian Banking

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Abstract

This research investigates the impact of intellectual capital on company performance, with a focus on the moderating role of revenue diversification. Utilizing data from 38 banks listed on the Indonesia Stock Exchange, linear regression and moderated regression analyses were conducted. Findings reveal a positive relationship between intellectual capital (measured by VAIC) and company performance. However, income diversification was found to have no moderating effect on this relationship. While VACA and VAHU positively influence company performance, STVA does not. These results provide valuable insights into the dynamics of intellectual capital within the banking sector.

Keywords : Banking, Firm Performance, Intelectual capital, Income diversification.
JEL Classification : G32, G21, G24

1. Introduction

Increasingly competitive business competition requires companies to continue to innovate to maintain their position. Currently, capital in the form of money or tangible assets alone cannot support the company's position (Siska et al., 2022). Before technology developed as rapidly as it does today, the principal capital required by a company was capital that looked like money or other tangible assets. However, as time goes by, capital in the form of tangible assets alone is not enough. Still, intangible assets called intellectual capital are also needed to add value to the company (Asare et. al., 2020). Capital in the form of intangible assets is referred to as intellectual capital. When a company has developed and begun implementing a knowledge-based economy, the company becomes dominant. Proponents of science-based resource theory assume that intellectual capital is a particular and rare resource (Githaiga, 2022b).

In the modern economic concept, intellectual capital can support innovation, as well as competitiveness and company sustainability, which can increase added Value, making the company a priority compared to its competitors (Pertiwi & Suhartini, 2022; Soetanto & Liem, 2019). Intellectual capital can also be defined as skills, experience and abilities in managing information that can be used to improve company performance (Alvino et al., 2021). As an intermediation institution, the banking industry has played an essential role in global economic progress. However, as time goes by, banking does not only provide savings and loan services. Still, it has developed into a business offering non-interest financial services such as derivative transactions, financial guarantees, investments and

foreign exchange transactions (Uniamikogbo et al., 2020). This change in the banking business model is driven by competition, forcing banks to look for alternative business activities to maintain their income and competitive advantage (Githaiga, 2022a). However, diversifying revenue too high can disrupt capital stability and increase company risk, so managers need to find an optimal balance for investing in intellectual capital components and market expansion (Githaiga, 2022a; Nguyen et al., 2023).

In the banking industry, which prioritizes service and knowledge, non-physical assets are crucial, especially with the integration of ICT in financial innovations and operations. Direct customer interaction and evolving expectations demand constant innovation from banks. Therefore, effectively utilizing intellectual capital is essential for their success (Githaiga, 2022a). Research conducted by Duho & Onumah, (2021) ; Ni et al., (2020) revealed that capable employees can increase innovation through services that satisfy customers, thereby increasing company value. A similar statement was also expressed by Siska et al., (2022), who revealed that intellectual capital positively affects company value. Supported by Asare et al., (2020) ; Soetanto & Liem (2019), intellectual capital positively affects company performance.

Apart from improving performance in intellectual capital companies, it can also improve the quality of assets owned by banks, predominantly intellectual capital in the human resources and capital structure components. Similar results, which stated that intellectual capital positively affected company performance, were also expressed by Ousama et al., (2020). Although the average intellectual capital is lower than in other studies, the positive influence on financial performance is evident. The findings also show that human resources (HC) are higher than capital employed (CE) and capital structure (SC). This study reveals that capital structure (SC) has an insignificant influence on the financial performance of Islamic banks compared to CE and HC. Anik (2021) ; Ocak & Findik, (2019), their research even found that balanced intellectual capital with good corporate governance can improve a company's financial performance and ultimately increase its value. Cenciarelli et al., (2018) their research states that intellectual capital can improve company performance, preventing companies from the risk of default and avoiding bankruptcy.

Even though it is considered capital that can support innovation, research conducted by Riyani et al., (2022) found that the absence of standard disclosures regarding the application of intellectual capital means that companies cannot fully disclose intellectual capital. Intellectual capital is long-term capital, so the impact will be visible if observed over an extended period. This argument is also supported by research results Alvino et al., (2021), but research Weqar et al., (2021) which observes the influence of intellectual capital on financial sector companies in India found that intellectual capital did not affect company performance even though the observation period was ten years, namely from 2009 to 2019. Weqar et al., (2021) also revealed that the effectiveness of intellectual capital did not affect the performance of companies due to other factors, including lack of training, development and proper management of human resources. Apart from that, companies also still use physical resources to develop their business. Veranita Br Tarigan, (2022) added that intellectual capital does not positively affect company value. This could be due to the absence of mandatory disclosure of intellectual capital.

From previous research, it can be concluded that intellectual capital will influence company performance only if it uses and maximizes the intellectual capital to diversify income in knowledge-intensive sectors. Apart from that, the effectiveness of the influence of intellectual capital is also influenced by the company's strategy in developing intellectual capital. However, whether intellectual capital can improve company performance is still uncertain because several studies have revealed that intellectual capital does not affect company performance.

Previous studies by Githaiga (2022b) and Nguyen et al. (2023) highlight the complex relationship between intellectual capital, income diversification, and company performance in the banking sector. While Githaiga's research in East Africa suggests that income diversification moderates the impact of specific components of intellectual capital but diminishes overall VAIC's influence, Nguyen et al. found income diversification strengthens certain aspects of company performance while weakening the overall relationship with intellectual capital. These inconsistent findings underscore the need for further research to elucidate the precise impact of intellectual capital

on company performance, particularly in the banking sector. This study aims to contribute to this understanding by investigating the influence of intellectual capital on banking sector performance in Indonesia, while exploring the moderating role of income diversification.

2. Hypotheses Development

Company performance refers to the profits a company can obtain to provide added value for shareholders and other stakeholders (Majumder et al., 2023). Several factors influence company performance, including the work environment and corporate governance (Aydoğmuş et al., 2022). Other factors, such as intellectual capital, which refers to the capabilities of a company such as knowledge, skills, and equity, can also influence company performance (Albertini & Berger-Remy, 2019;Jeandry & Fajriyanti,2023). The diversification strategy implemented by the company also impacts the company's performance.

Intellectual Capital and Company Performance.

Intellectual capital is intangible capital. According to Githaiga (2022b), intellectual capital is vital for companies, especially companies operating in knowledge-intensive sectors such as banking, telecommunications and pharmaceuticals. In today's dynamic environment, intellectual capital becomes a valuable resource for companies to achieve competitive advantage. Research conducted by Githaiga (2022b), which examined the influence of intellectual capital on bank performance, shows that intellectual capital has a positive effect, so it can be interpreted that intellectual capital can influence banking performance. In research conducted by Ni et al., (2020), who questioned whether intellectual capital was necessary for increasing company value, it was revealed that it affected growing company value. This research is measured using a comparison of the average net profit per employee by showing that wages increase to increase their resources. This research also examines how goodwill also influences company value. Those who examined the influence of intellectual capital on financial performance in Islamic banks stated that intellectual capital, especially in the human resources section and the capital used, has a positive effect on the financial performance of Islamic banks (Asutay & Ubaidillah, 2023; Ousama et al., 2020). Research Majumder et al., (2023) reveals that intellectual capital positively affects bank performance, especially in the capital component used.

Research conducted by Duho & Onumah, (2021) revealed that capable employees can increase innovation in the form of services that satisfy customers, thereby increasing company value. A similar statement was also expressed Duho & Onumah, (2019) that intellectual capital influences company performance, especially the human resources component and capital structure. Supported by Asare et al., (2020) and Soetanto & Liem, (2019), also reveal that intellectual capital positively affects company performance. Apart from improving performance in intellectual capital companies, it can also improve the quality of assets owned by banks, predominantly intellectual capital in the human resources and capital structure components. Ali et al., (2022) in their research found that all parts of intellectual capital have a positive effect on company performance. Based on previous research related to this research, it can be concluded that intellectual capital positively affects company performance. Thus, the hypothesis can be formulated as follows:

H_1: As measured by the Value-Added Intellectual Coefficient (VAIC), intellectual capital positively affects company performance.
H_2: Value-added Capital Employed (VACA) positively affects company performance.
H_3: Value-Added Human Capital (VAHU) positively affects company performance.
H_4: Value Added Structural Capital (STVA) positively affects company performance.

3. Method, Data and Analysis

This research is quantitative, where the analysis is carried out based on data processed in statistical data processing software, namely SPSS, to prove hypotheses made previously and that a specific variable influences other variables (Hardani et al., 2020). This research uses 38 banks as samples from 47 banks listed on the Indonesia Stock Exchange (BEI). The method used in determining the sample is purposive sampling by considering several provisions, namely that the bank has been registered on the Indonesia Stock Exchange (BEI) at least from 2015 to 2022 and published financial reports successively from 2015 to 2022.

Hypothesis testing uses two regression methods: linear regression and Moderated Regression Analysis (MRA). Linear regression analysis is used to test the influence of intellectual capital on company performance and to test the impact of intellectual capital components on company performance. Moderated Regression Analysis (MRA) tests the moderating effect of income diversification on intellectual capital and company performance and the moderating impact of income diversification on the components of intellectual capital and company performance. The following is the model used to analyze the data in this research:

Model 1

$ROA=a+\beta.VAIC+\varepsilon$

Model 2

$ROA=a+\beta\_1\ VACA+\beta\_2\ VAHU+\beta\_3\ STVA+\varepsilon$

Model 3

$ROA=a+\beta\_1\ VAIC+\beta\_2\ ID+\beta\_3\ VAIC*ID+\varepsilon$

Model 4

$ROA=a+\beta\_1\ VACA+\beta\_2\ VAHU+\beta\_3\ STVA+\beta\_4\ VACA*ID+\beta\_5\ VAHU*ID+\beta\_6\ STVA*ID+\varepsilon$

Where, ROA: Return on Assets; VAIC: Value-added Intellectual Coefficient; VACA: Value-added Capital Employed; VAHU: Value Added Human Capital; STVA: Value-Added Structural Capital; ID: Capital diversification; α: Constant value; β: Regression coefficient; ε: Error value.

Dependent Variable

In this research, company performance is an independent variable. Company performance is measured using a profitability ratio known as Return on Assets (ROA) as a measure of company performance, ROA is calculated by comparing the net profit that the company can generate in a certain period with the assets owned by the company (Majumder et al., 2023).

$$ROA = \frac{Return}{Aset}$$

Where, ROA: Return on Assets; Return: Net profit for the year; Assets: Total Assets (equity + liquidity)

Independent Variable

An independent variable is a variable that is not bound by other variables in this research. Intellectual capital is an independent variable. VAIC concept, developed by Pulic (1998), is based on a combination of Value added Capital Employed (VACA), Value-Added Human Capital (VAHU), and Value Added Structural Capital (STVA). VAIC is calculated by adding up VACA, VAHU, and STVA. VAIC comes from the company's ability to create added value (Ulum, 2022). Adding value is obtained from the difference between output and input. VACA is an indicator to measure how much physical capital a company has to produce value for the company, VAHU shows the added value that can be generated from funds spent on labor, and STVA provides an idea of how much structural capital can give importance to the company (Ulum, 2022).

Several steps are taken to obtain the VAIC value, starting with calculating the Value Added (VA), which is obtained by subtracting the total income received by the company in a certain period from operating expenses but not including employee expenses. VACA is obtained from the division between VA and equity. The VAHU value is obtained from the division between VA and employee expenses. This indicator determines the added value employees generate from the capital the company has spent. The next step is to measure STVA, and this is an indicator of the company's capital structure. STVA is first calculated by finding the difference between VA and employee expenses, known as Structural Capital (SC). After getting SC, it is then divided by the VA value. VAIC is the sum of the three previous components, so mathematically, it can be written as follows:

$$VAIC = VACA + VAHU + STVA$$

Moderating Variable

Moderating variables are variables that can strengthen or weaken the relationship between the independent variable and the dependent variable. Intellectual capital in this research is a moderating variable. The most commonly used way to measure the income diversification ratio is the Herfindahl Hirschman Index (HHI). The HHI can be mathematically calculated using the following formula (Githaiga, 2022b). HHI indicates how far a company is diversified in terms of earning income, provided that the smaller the result of the HHI calculation, it can be said that the company is diversified, but the more significant the development of the HHI calculation, the company is declared to be more concentrated in generating income.

$$HHI = \left[\left\{\left(\frac{Interest\ Income}{Total\ Income}\right)^2 + \left(\frac{Noninterest\ Income}{Total\ Income}\right)^2\right\}\right]$$

$$ID = 1 - \left[\left\{\left(\frac{Interest\ Income}{total\ income}\right)^2 + \left(\frac{Noninterest\ Income}{Total\ Income}\right)^2\right\}\right].$$

4. Results

Banks support economic growth and state financial stability (Asma, 2018; Jeandry & Fajriyanti, 2023). In general, banks are financial institutions whose role is to collect funds from the public and then redistribute these funds through loans or credit schemes that can be given to companies or individuals (Duho & Onumah, 2019; Ovi et al., 2020). Besides providing credit, banks offer other services such as asset management, risk management and investment (Asma, 2018).

Banks are an industry that focuses on knowledge in their operational activities (Asutay & Ubaidillah, 2023; Silitonga & Wulandari, 2018). Banks use technology, information, and human resources to develop their products and services. With their significant role, banks must have adequate knowledge of resource management. Hence, this research chooses banks as the object of industrial study, which illustrates intellectual capital's importance in achieving good performance (Asutay & Ubaidillah, 2023).

This research will examine the influence of intellectual capital on the performance of banking companies in Indonesia, with income diversification as a moderating variable. This research uses 38 banking companies as research samples from 47 companies listed on the Indonesia Stock Exchange. The sample was determined using a purposive sampling method by considering several provisions, namely that the bank was registered on the Indonesia Stock Exchange (BEI) at least from 2015 to 2022 and published financial reports consecutively from 2015 to 2022.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	304	-0.060	0.070	0.004	0.022
VAIC	304	-409.760	431.420	10.794	152.264
VACA	304	-0.290	0.640	0.172	0.169
VAHU	304	-2.710	5.480	1.379	1.484
STVA	304	-411.540	430.080	9.242	152.344
IHI	304	0.500	1.110	0.780	0.131
Valid N	304				

Based on table 1 the results of the descriptive analysis explaining the data used in this research, it is known that ROA consists of 304 lines of data with a minimum value of -0.060, a maximum value of 0.07, and an average data of 0.004 and a standard deviation of 0.02214. VAIC consists of 304 lines of data with a minimum value of -409.760, a maximum value of 431.420, an average data of 10.794 and a standard deviation of 152.264. VACA consists of 304 rows of data with a minimum value of -0.290, a maximum value of 0.640, a data average of 0.172, and a standard deviation of 0.169. VAHU consists of 304 rows of data with a minimum value of -2.710, a maximum value of 5.48, an average data of 1.379, and a standard deviation of 1.48. STVA consists of 304 rows of data with a minimum value of -411.54, a maximum value of 430.080, an average data of 9.242, and a standard deviation of 152.344. HHI

consists of 304 rows of data with a minimum value of 0.50, a maximum value of 1.11, an average data of 0.780, and a standard deviation of 0.131.

This research examines the influence of intellectual capital and its components on company performance and the moderating effect of income diversification. Intellectual capital is measured using a method developed by Pulic (1998) called the Value Added Intellectual Coefficient (VAIC) which consists of three components, namely Value added Capital Employed (VACA), Value-Added Human Capital (VAHU), Value Added Structural Capital (STVA) and company performance are measured using Return on Assets (ROA), while income diversification is calculated using the Herfindahl Hirschman Index (HHI) method.

Table 2. Hypotheses testing summary

Hypothesis	T value	sig	Conclusion
H1: VAIC → ROA	14.753	0.000	*H1* is supported.
H2: VACA → ROA	6.610	0.000	*H2* is supported.
H3: VAHU → ROA	12.469	0.000	*H3* is supported
H4: STVA → ROA	0.364	0.716	*H4* is not supported.
H5: VAICxHHI → ROA	-3.415	0.001	*H5* is supported
H6: VACAxHHI → ROA	0.270	0.787	*H6* is not supported.
H7: VAHUxHHI → ROA	-1.622	0.106	*H7* is not supported.
H8: STVAxHHI → ROA	-1,615	0.107	*H8* is not supported.

NOTE: *VAICxHHI, VACAxHHI, VAHUxHHI, STVAxHHI are interaction variables between VAIC and the VAIC component of income diversification.*

Based on table 2 the results of a simple linear regression analysis that examines the effect of intellectual capital on company performance, it shows that intellectual capital has a positive impact on company performance (β = 0.000, ρ < 0.05), it can be concluded that hypothesis 1 (H_1) states that intellectual capital has a positive effect on performance. Company is acceptable. For the intellectual capital component, when tested together, it shows a positive influence on company performance. Still, when tested individually, the VACA variable shows a positive impact on company performance (β = 0.000, ρ < 0.05), and the VAHU variable also indicates a positive influence on company performance (β = 0.000, ρ < 0.05). However, in contrast to VACA and VAHU, the STVA variable does not show an influence on company performance (β = 0.716, ρ < 0.05), so it can be concluded that hypothesis 2 (H_2) which states that VACA has a positive effect on company performance is acceptable, hypothesis 3 (H_3) which states saying that VAHU has a positive impact on company performance is proper, while hypothesis 4 (H_4) which states that STVA has a positive effect on company performance is rejected.

The results of testing the moderating relationship between income diversification and intellectual capital components show that income diversification does not moderate the relationship between all parts of intellectual capital and company performance with the value of VACA (β = 0.787, ρ < 0.05), VAHU (β = 0.106, ρ < 0.05), STVA (β = 0.107, ρ < 0.05), so hypothesis 6 (H_6) which states income diversification has a positive moderating effect on VACA cannot be accepted, hypothesis 7 (H_7) which states income diversification has a positive moderating effect on VAHU is unacceptable, and hypothesis 8 (H_8) which states that income diversification has a positive moderating effect on STVA is also intolerable.

This research reveals new findings income diversification moderates the relationship between intellectual capital and company performance. This can be seen from the moderation regression test, which examines the effect of income diversification on intellectual capital and company performance. However, this only occurs for intellectual capital and the intellectual capital component. Not occur. So, banking companies in developing intellectual capital to improve company performance are advised to establish a good income diversification strategy because this can increase the influence of intellectual capital on company performance.

5. Discussion

The regression analysis results show that intellectual capital positively affects company performance, but not all intellectual capital components influence company performance. The VACA and VAHU components influence company performance, but STVA does not. Similar results were also

obtained from research results (Asare et al., 2020; Githaiga, 2022b; Soetanto & Liem, 2019), which found that intellectual capital positively affected company performance. (Asutay & Ubaidillah, 2023; Ousama et al., 2020) In addition, although the average intellectual capital is lower than in other studies, the positive influence on financial performance is evident.

These findings also show that human resources are higher than capital used and capital structure. This study reveals that capital structure has an insignificant influence on the financial performance of Islamic banks compared to the capital employed and human resources. Research (Majumder et al., 2023) reveals that intellectual capital positively affects bank performance, especially in the capital component used. The results of the moderation regression analysis test show that income diversification has a moderating effect on intellectual capital and company performance. In contrast, for the intellectual capital component, income diversification cannot moderate the relationship with company performance.

The results of this research are in contrast to the effects of research from Nguyen et al., (2023), which revealed that income diversification strengthens the relationship between capital used, human resources, and capital structure on company performance, but when tested with the overall intellectual capital variable, income diversification weakening the relationship between intellectual capital and bank performance. Similar results were also revealed by research by Peter Nderitu Githaiga (2022b), which examined the influence of intellectual capital on company performance with income diversification as moderation in banking in East Africa, finding that income diversification measured using the Herfindahl Hirschman Index (HHI) could moderate the components in intellectual capital measured using VAIC (HCE, SCE, and CEE).

However, Githaiga (2022) and Nguyen et al., (2023) also found that over-diversifying will have an impact on increasing banking risk, especially in small-scale banking, so an appropriate strategy for diversification is needed. Income diversification can moderate the components of intellectual capital and company performance but cannot moderate the relationship between intellectual capital and company performance, while this research reveals that income diversification does not moderate the relationship between capital components (Githaiga, 2022; Nguyen et al., 2023). Intellectual capital, namely VACA, VAHU, and STVA, on company performance when tested individually, but income diversification can moderate the relationship between intellectual capital (VAIC) and company performance. So, this is a discovery in this research.

6. Conslusion, Limitations and Suggestions

Conclusions

The regression analysis indicates that intellectual capital (VAIC) positively impacts company performance, while income diversification moderates this relationship. Specifically, VACA and VAHU positively influence performance, while STVA does not. However, income diversification does not moderate the relationship between intellectual capital components and performance. This study underscores the nuanced role of intellectual capital in performance and contributes to economic theory. Future research could explore additional factors affecting this relationship. These findings offer insights for the Indonesian banking industry, informing strategies leveraging intellectual capital. Investors and stakeholders can use this research to assess growth potential and make informed decisions.

Limitations and Suggestions

This study offers insights into how intellectual capital affects bank performance but needs refinement in several areas for future research. Firstly, it should differentiate the impact on banks with large and small capitalizations to better understand variations in performance. Secondly, while examining the moderating effect of revenue diversification, it overlooks other pertinent variables like market factors, company size, and risk management, which should be integrated for a more comprehensive analysis. Lastly, employing more accurate and comprehensive techniques than the VAIC method to measure intellectual capital would enhance precision in assessing its influence on banking companies' performance.

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