The Effect of Intellectual Capital On Financial Performance Through Competitive Advantage As An Intervening Variable (Empirical Study On The Banking Industry Listed On The IDX 2025)

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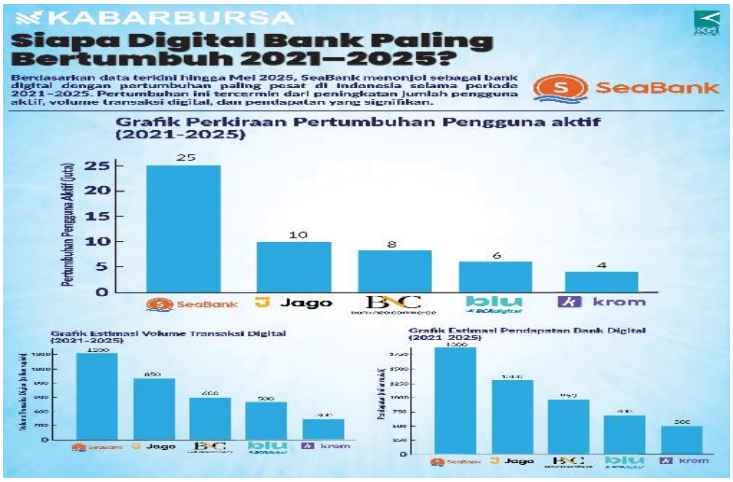
Abstract.

This study aims to analyze the effect of Intellectual Capital on Financial Performance with Competitive Advantage as a mediating variable in banking companies listed on the Indonesia Stock Exchange for the period 2022-2024. The research method used is quantitative with a population of 42 banking issuers, while the sample is determined by purposive sampling so that 11 issuers meet the criteria. Secondary data in the form of annual reports were obtained from the official websites of each bank and the Indonesia Stock Exchange. The analysis technique used is Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results showed that Intellectual Capital has a positive and significant effect on Financial Performance, Intellectual Capital has a positive and significant effect on Competitive Advantage, and Competitive Advantage has a positive and significant effect on Financial Performance. In addition, Intellectual Capital also has an indirect positive effect on Financial Performance through Competitive Advantage as a mediating variable. These findings indicate that strengthening Intellectual Capital can increase competitive advantage which in turn encourages operational efficiency and financial performance of banks.

Keywords: *Intellectual Capital; Competitive Advantage; Financial Performance; Banking and SEM-PLS.*

I. INTRODUCTION

The banking industry in Indonesia faces increasingly fierce competitive dynamics along with the development of digital technology, increasing customer demands, and more complex regulations [1]. Under these conditions, banks are not only required to have healthy financial performance, but also required to be able to create sustainable added value [2]. So far, the measurement of financial performance has focused more on traditional indicators such as profitability, liquidity, or leverage [3]. However, these indicators do not fully describe the company's ability to manage knowledge-based resources, which is the main advantage in the modern economic era [4]. In line with that, Stewart [5] emphasizes that Intellectual Capital (IC) as an intangible asset in the form of knowledge, information, skills, and experience, has a major role in creating sustainable added value. Intellectual Capital includes human capital, structural capital, and relational capital, which if managed properly will strengthen competitiveness and improve company performance.



The data in Figure 1 shows that the growth of digital banks in Indonesia for the period 2021-2025 has increased significantly, with SeaBank occupying the highest position reaching 25 million active users, a transaction volume of around Rp1,200 trillion, and an estimated revenue of Rp1,800 billion. Meanwhile, other digital banks such as Jago, Bank Neo Commerce, Blu, and Krom show lower performance in terms of number of users, transactions, and revenue. This difference in performance illustrates the gap in knowledge-based resource management, where strengthening Intellectual Capital and creating competitive advantages are crucial factors for digital banks to improve financial performance and maintain competitiveness in the banking industry [6]. This is in line with Pulic's findings [7], [8] who developed the Value Added Intellectual Coefficient (VAIC™) model as a quantitative approach to measure the efficiency of Intellectual Capital in creating added value through indicators of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE). One concept that is widely discussed in management literature is that Intellectual Capital is believed to be an important factor in increasing competitiveness and ultimately has an impact on financial performance [9][10].

However, in practice, many banks have not maximized in managing Intellectual Capital [10]. This can be seen from the low level of product and service innovation, limitations in the use of information technology, and the suboptimal quality of human resources in facing global competition. In fact, financial performance itself, as explained by [11], does not only reflect profitability, but also the company's effectiveness in managing resources through liquidity, solvency, and operational efficiency ratios [12]. Another problem that arises is that the effect of Intellectual Capital on financial performance is often indirect . Intellectual Capital will only have a real impact if it can be realized in the form of competitive advantage. Without a competitive advantage, Intellectual Capital management will only be a potential resource that does not provide significant added value to the company. This is in line with the concept of VRIN (valuable, rare, inimitable, non-substitutable) proposed by [5], where competitive advantage is achieved if the company's resources are difficult to imitate and replace by competitors. In the context of banking, competitive advantage can be realized through cost efficiency, digital service innovation, service quality, and customer reputation and loyalty [13].

Some previous studies also showed inconsistent results; some found a positive relationship between Intellectual Capital and financial performance, but some stated that the effect was not significant. This indicates that there are other variables at play, one of which is competitive advantage as an intervening variable [14]. Thus, the research gap as well as practical problems that need to be studied more deeply is the extent to which Intellectual Capital can improve financial performance when mediated by competitive advantage [15]. The context of this research is focused on the banking industry listed on the Indonesia Stock Exchange (IDX) in 2025, because this sector is highly dependent on public trust, service innovation, and the quality of human resources as the main basis for value creation. This study was conducted to analyze the effect of Intellectual Capital on financial performance with competitive advantage as an intervening variable. The results of the study are expected to contribute to academic literature and provide practical input for banking management in managing Intellectual Capital more optimally to improve competitiveness and financial performance.

II. METHODS

This research uses quantitative methods because it aims to test the relationship between variables empirically through numerical data processing sourced from annual reports of banking companies listed on the Indonesia Stock Exchange (IDX) for the period 2022-2024 [16]. The variables studied consist of Intellectual Capital (X) as measured by the VAIC™ model, Competitive Advantage (Z) as measured by cost efficiency indicators (BOPO), digital banking innovation, reputation, and customer loyalty, and Financial Performance (Y) proxied using the BOPO ratio as a measure of operational efficiency. Data were analyzed with Structural Equation Modeling-Partial Least Squares (SEM-PLS) to test the direct and indirect effects between variables [17]. The population of all banking companies listed on the Indonesia Stock Exchange (IDX) in 2025 was 42 issuers. Sample determination was carried out by purposive sampling with the following criteria: (1) banking companies that consistently publish complete annual reports in the 2022-2024

period, (2) have relevant financial data to measure research variables, and (3) are not currently subject to serious sanctions from the OJK or IDX that can affect the validity of the data and it is known that the number of samples that meet the criteria is 11 companies.

III. RESULT AND DISCUSSION

Data Description

The data in this study is presented to provide an overview of the development of research variables in 11 banking issuers that were sampled during the period 2022-2024. The variables analyzed include Intellectual Capital (VAIC), financial performance proxied by the BOPO ratio, and competitive advantage described through indicators of cost efficiency, digital innovation, reputation, and customer loyalty.

Table. Intellectual Capital, Financial Performance, and Competitive Indicators of Indonesian Banks (2022–2024)

Bank	Year	Intellectual Capital (VAIC)	Financial Performance (BOPO)	Competitive (Indicators)
BBNI	2022	3.2	78%	Good cost efficiency, digital banking growth, strong reputation
	2023	3.5	76%	Increased mobile banking innovation, higher customer loyalty
	2024	3.8	74%	High competitive advantage, rising brand value
BBTN	2022	2.1	84%	Efficiency still low, limited digitalization
	2023	2.3	82%	Starting to enhance digital innovation, deposit growth (DPK)
	2024	2.6	80%	Competitiveness improved with digital services
BBRI	2022	4.0	72%	Excellent efficiency, largest customer base, strong reputation
	2023	4.2	71%	Market dominance increased, expanded digital innovation
	2024	4.5	70%	Market leader, superior brand, high loyalty
BMRI	2022	3.5	75%	Strong efficiency, large-scale digital services
	2023	3.7	74%	Advancing digital banking innovation
	2024	3.9	73%	Competitiveness increased, international reputation
BBCA	2022	4.1	70%	Best efficiency, strong digital service innovation
	2023	4.3	69%	Competitive advantage becoming more dominant
	2024	4.6	68%	Leading bank with high reputation
BNGA	2022	2.8	80%	Fairly efficient, developing digital banking
	2023	3.0	79%	Competitiveness improved through customer service
	2024	3.2	78%	Rising reputation, higher customer loyalty
BBHI	2022	2.2	85%	Still limited, early stage of digital adaptation
	2023	2.4	83%	Beginning digital service expansion
	2024	2.7	82%	Competitiveness improved through digital innovation
BACA	2022	1.9	88%	Low efficiency, limited digital services
	2023	2.0	87%	Competitiveness improving slowly
	2024	2.2	85%	Growth starting to be positive
BABP	2022	2.0	86%	Still weak in innovation
	2023	2.1	85%	Beginning digitalization growth
	2024	2.3	84%	Competitiveness improving
BTPS	2022	3.0	77%	High efficiency, strong sharia banking services
	2023	3.2	76%	Competitiveness through sharia differentiation
	2024	3.4	75%	Competitive position getting stronger
BTP	2022	2.9	79%	Good efficiency, superior digital service

				(Jenius)
	2023	3.1	78%	Competitiveness through Jenius innovation
	2024	3.3	77%	Competitive advantage becoming more solid

1. Intellectual Capital (VAIC)

The data show that most banks experienced a consistent increase in Intellectual Capital over the 2022–2024 period. For instance, BBRI improved from 4.0 in 2022 to 4.5 in 2024, and BBCA rose from 4.1 to 4.6, reflecting strong human, structural, and relational capital management. Similarly, BMRI and BBNI also demonstrated steady growth, from 3.5 to 3.9 and from 3.2 to 3.8, respectively, suggesting significant progress in leveraging knowledge-based assets. In contrast, smaller banks such as BACA, BABP, and BBHI started with relatively low VAIC scores (below 2.5 in 2022), although gradual improvements were observed by 2024. This trend indicates that larger banks generally perform better in managing Intellectual Capital, while smaller banks are still in the process of enhancing their knowledge-based resources.

2. Financial Performance (BOPO)

From the perspective of financial performance measured by the BOPO ratio, the trend reveals gradual improvements across most banks. Leading institutions such as BBCA and BBRI maintained relatively low BOPO ratios at around 70–72%, indicating high efficiency in operational cost management. BMRI and BBNI also showed improvements, with BOPO ratios declining from 75–78% in 2022 to 73–74% in 2024. Meanwhile, smaller banks such as BACA and BABP struggled with higher BOPO ratios, starting from 86–88% in 2022 and only managing slight reductions to 84–85% by 2024. This suggests that while most banks improved efficiency, the gap between large established banks and smaller digital challengers remains significant.

3. Competitive Indicators

In terms of competitiveness, the table highlights clear differences between leading banks and smaller institutions. BBRI and BBCA consistently displayed strong competitive positions: BBRI through market dominance, customer loyalty, and brand strength, and BBCA through superior efficiency, digital service innovation, and strong reputation. BMRI and BBNI also improved competitiveness by expanding digital banking innovation and strengthening international reputation. On the other hand, banks such as BBTN, BACA, and BABP showed weaker competitive indicators, with challenges in efficiency and limited innovation, although gradual improvements in digital services were noted. Some niche players like BTPS managed to enhance competitiveness by leveraging sharia differentiation, while BTP gained advantage through its innovative digital platform, Jenius. Overall, the data demonstrate that competitiveness is closely linked not only to financial efficiency but also to innovation, brand reputation, and customer loyalty.

Overall, these findings suggest that a high VAIC value tends to correlate with a low BOPO ratio, which in turn strengthens the bank's competitive advantage. Thus, Intellectual Capital is an important factor in building banking competitiveness, and cost efficiency reflected by low BOPO is one of the keys to bank success in improving financial performance.

Path Coefficient (Direct Effcect)

Table 2. Hypothesis Test Results (Direct Effect)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X -> Y	0,158	0,157	0,036	4,424	**0,000**
X -> Z	0,757	0,768	0,068	11,127	**0,000**
Z -> Y	0,857	0,857	0,031	27,353	**0,000**

Based on the results of PLS analysis, hypothesis testing is carried out with decision-making criteria, namely the hypothesis is accepted if the t-count value is greater than the t-table (1.96) and the significance value is less than 0.05.

1. The test results show that the relationship between Intellectual Capital and Financial Performance (X → Y) has a t-count value of 4.424 with a p-value of 0.000, which means it is greater than the t-table and significant at $\alpha = 0.05$. Furthermore, the relationship

2. Intellectual Capital to Competitive Advantage (X → Z) produces a t-count value of 11.127 with a p-value of 0.000, so it is also significant. As for the relationship of Competitive Advantage to
3. Financial Performance (Z → Y) shows a t-count value of 27.353 with a p-value of 0.000, so it is significant. Thus, all hypotheses in this study are accepted because they meet the statistical test criteria.

Path Coefficient (Indirect Effect)

Table 3 . Hypothesis Test Results (Indirect Effect)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X -> Y	0,649	0,658	0,056	11,588	**0,000**

The results of indirect effect testing show that Intellectual Capital (X) has a positive and significant effect on Financial Performance (Y) through Competitive Advantage (Z). This is indicated by the original sample value of 0.649 with a T-statistic value of 11.588 which is greater than the t-table (1.96), and a p-value of 0.000 which is smaller than 0.05. This finding indicates that the better the management of Intellectual Capital, the stronger the competitive advantage of banking companies, and ultimately has an impact on improving financial performance. Thus, it can be concluded that Competitive Advantage acts as a mediating variable that strengthens the effect of Intellectual Capital on Financial Performance.

Discussion

The Influence of Intellectual Capital on Financial Performance

The results show that Intellectual Capital has a positive and significant effect on Financial Performance, both directly and indirectly through Competitive Advantage. The direct relationship of Intellectual Capital on Financial Performance produced a coefficient value of 0.158 with a T-statistic of 4.424 ($p < 0.05$), while the indirect effect through Competitive Advantage showed a larger coefficient of 0.649 with a T-statistic of 11.588 ($p < 0.05$). This indicates that the presence of Competitive Advantage strengthens the influence of Intellectual Capital on Financial Performance, confirming the significant role of the mediating variable in this study. These findings are in line with Stewart's perspective [18][19][20], who defines Intellectual Capital as a combination of knowledge, skills, and relationships that can create sustainable added value. The VAIC model [7] also emphasizes that the efficiency of human capital, structural capital, and financial capital utilization contributes to value creation, which ultimately affects financial performance. Porter's theory of competitive advantage [21] highlights cost leadership and differentiation strategies as the key to increasing competitiveness.

Thus, when banks are able to manage Intellectual Capital effectively, competitive advantage can be achieved, which in turn positively impacts financial performance. Based on the descriptive data table, it is evident that banks with high VAIC values such as BBCA (VAIC 4.6; BOPO 68%) and BBRI (VAIC 4.5; BOPO 70%) demonstrate excellent operational efficiency and strong competitive advantage through reputation, digital banking innovation, and customer loyalty. Conversely, smaller banks such as BACA (VAIC 1.9–2.2; BOPO 85–88%) and BABP (VAIC 2.0–2.3; BOPO 84–86%) still exhibit low efficiency with limited digital innovation.This shows that higher Intellectual Capital leads to better cost efficiency, more innovative digital services, and stronger brand image, thereby supporting improved financial performance. The implication of this research is that banks need to position Intellectual Capital as a strategic asset that plays a central role in building competitive advantage. Strengthening human capital through competency development, structural capital through process digitalization, and relational capital through enhanced customer service quality will contribute to cost efficiency as reflected in lower BOPO ratios. Practically, banks that invest in digital banking technology and human resource development will find it easier to increase operational efficiency while also strengthening reputation and customer loyalty. The results of this study are consistent with the findings of [22][11], who also found that Intellectual Capital has a significant effect on the financial performance of Indonesian bank

The Influence of Intellectual Capital on Competitive Advantage

The results showed that Intellectual Capital has a positive and significant effect on Competitive Advantage with a coefficient value of 0.757, T-statistic 11.127 (>1.96), and p-value 0.000 (<0.05). This

indicates that the better the management of Intellectual Capital, the stronger the competitiveness of the bank. This finding is in line with the theory [5] which explains that Intellectual Capital, which includes human capital, structural capital, and relational capital, is able to create sustainable added value that strengthens the company's competitive position. [23] through the VAIC model also emphasizes that intellectual capital efficiency contributes to competitive advantage through increased innovation, efficiency, and market adaptation. In the context of banking, it can be seen in the data that banks with high VAIC such as BBCA (4.6) and BBRI (4.5) are able to strengthen competitive advantage through cost efficiency, digital service innovation, and strong reputation, while banks with low VAIC such as BACA (2.2) and BABP (2.3) show weaker competitiveness. The implication of this study is the importance of bank investment in human resource development, system digitalization, and strengthening customer relationships to build sustainable competitive advantage. These results are in line with research [14][24] which found that Intellectual Capital contributes significantly to competitive advantage through strengthening innovation and corporate reputation.

The Effect of Competitive Advantage on Financial Performance

The results showed that Competitive Advantage has a positive and significant effect on Financial Performance with a coefficient value of 0.857, T-statistic 27.353, and p-value 0.000. This confirms that the stronger the competitiveness of banks, the better their financial performance. Competitive advantage allows banks to reduce operational costs, improve service quality, and expand the customer base, which in turn will be reflected in healthier financial ratios, especially operational efficiency as measured by BOPO.Theoretically, this finding is in line with the view of (Francis Hutabara, 2020) which states that companies will achieve superior performance if they are able to build competitive advantages through differentiation and low cost strategies. This is also in line with the VRIN concept from [22] which emphasizes that resources that are valuable, rare, difficult to imitate, and irreplaceable will result in sustainable competitiveness. Based on the research data, large banks such as BBCA, BBRI, and BMRI have a high competitive advantage because they are able to combine cost efficiency (BOPO 68-73%) with digital banking innovation, strong reputation, and broad customer base.

This condition makes their financial performance more stable and superior compared to smaller banks such as BACA or BABP which still have high BOPO ratios (84-88%) and limited service innovation. High competitive advantage has proven to not only reduce operating costs, but also strengthen brand value and public trust, which in turn contributes to increased profitability.The implication of this study is that banks need to prioritize competitiveness improvement strategies as the key to improving financial performance. Investment in digital service development, improving customer service quality, and strengthening brand image are important steps that must be taken so that banks can compete sustainably. In addition, banks need to maintain cost efficiency through operational control to remain competitive in the face of competition with fintech and new digital banks.This research is consistent with the study [25][5] which found that competitive advantage plays an important role in increasing bank profitability in Indonesia. [15] emphasized that competitive advantage through digital banking innovation can increase efficiency and improve financial performance. Competitive advantage is a mediating factor that strengthens the relationship between intellectual capital and financial performance. Thus, the results of this study not only strengthen previous empirical evidence, but also provide a contextual picture of the importance of competitive advantage in improving financial performance in the banking industry in Indonesia.

IV. CONCLUSION

The conclusion of this study shows that all hypotheses proposed can be accepted. First, Intellectual Capital has a positive and significant effect on Financial Performance. Second, Intellectual Capital also has a positive and significant effect on Competitive Advantage. Third, Competitive Advantage is proven to have a positive and significant effect on Financial Performance. Fourth, Intellectual Capital has an indirect positive effect on Financial Performance through Competitive Advantage as a mediating variable. These results prove that Intellectual Capital plays an important role in improving banking financial performance, both directly and through strengthening the company's competitiveness. The implication of this research is that banks need

to view Intellectual Capital as a strategic asset by strengthening human capital through increasing competence, structural capital through system digitization, and relational capital through improving service quality and customer loyalty. The competitive advantage formed from the optimal management of intellectual capital will encourage operational efficiency as shown by low BOPO and ultimately improve banking financial performance.

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