

Do Human Capital Value Added Impact the Risk-Based Performance of Banks? (A Review Based on the CAMEL Model)

Mohammad. Pourgholamali¹, Mohsen. Hamidian^{2*}, Roya. Darabi³

¹ PhD Student, Department of Economy and Accounting, South Tehran Branch, Islamic Azad University, Tehran, Iran

² Assistant Professor, Department of Economy and Accounting, South Tehran Branch, Islamic Azad University, Tehran, Iran

³ Associated Professor, Department of Economy and Accounting, South Tehran Branch, Islamic Azad University, Tehran, Iran

* Corresponding author email address: hamidian_2002@yahoo.com

Article Info

Article type:

Original Research

How to cite this article:

Pourgholamali, M., Hamidian, M., & Darabi, R. (2024). Do Human Capital Value Added Impact the Risk-Based Performance of Banks? (A Review Based on the CAMEL Model). *International Journal of Innovation Management and Organizational Behavior*, 4(4), 158-165.

<https://doi.org/10.61838/kman.ijimob.4.4.18>



© 2024 the authors. Published by KMAN Publication Inc. (KMANPUB), Ontario, Canada. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

ABSTRACT

Objective: The significance of human capital is well recognized in contemporary times, and the management of firms with a knowledge-centric approach has underscored the importance of intellectual and human capital as key competitive advantages. Among these, the banking industry holds considerable importance, necessitating the industry's focus on leveraging human capital.

Methodology: This study examines the relationship between the human capital value-added coefficient, a component of intellectual capital, and bank performance. The CAMEL model is employed to determine the functional components of bank performance. Financial statement data from 12 banks for the years 2012 to 2022 were utilized.

Findings: The study's findings indicate a significant relationship between the intellectual capital value-added coefficient and variables such as capital adequacy, asset quality, management, and income, with a nonlinear inverted U-shaped function. In contrast, the relationship between the human capital value-added coefficient and liquidity is nonlinear and U-shaped.

Conclusion: The study reveals that human capital value-added significantly impacts bank performance indicators, exhibiting nonlinear, inverted U-shaped relationships with capital adequacy, management, and income, and a U-shaped relationship with liquidity. Strategic investment in human capital is essential for optimizing these performance metrics in the banking sector.

Keywords: Human Capital Value-Added Coefficient, Banking, CAMEL, Nonlinear Function

1 Introduction

The significance of intangible assets and their role in creating competitive advantages for organizations is well recognized today. Given technological changes,

continuous business environment transformations, and the necessity of employing creative approaches, the effective and efficient use of intangible assets is of high importance (Abdel-khalik, 2003; Barak & Sharma, 2024). Based on the

resource-based view, intellectual capital is considered a key element in creating competitive advantages for firms, and knowledge-driven organizations must make every effort to utilize these resources (Wernerfelt, 1984). Given the role and importance of banks in all economies, the use of intellectual capital can significantly impact the successful management of these organizations and enhance their performance (Mention & Bontis, 2013). Studies examining the effects of intellectual capital on the performance of firms, including banks, show that intellectual capital significantly impacts bank performance, affecting performance indicators such as return on assets, return on equity, and others. This has also been observed in Islamic banks, which have attempted to use intellectual capital to improve their performance indicators (Mondal & Ghosh, 2012).

Various researchers have examined models for measuring intellectual capital. Pulic (1998) introduced the Value-Added Intellectual Coefficient (VAIC) model for measuring intellectual capital and its components. He argues that among the components of intangible assets, human capital is a decisive factor, and expenditures on employees are made not only to compensate for their time but also for their knowledge (Pulić, 1998). The impact of human capital calculated based on Pulic's approach on bank performance has been demonstrated in various studies. Sulasmiasi and Adila (2023) believe that human capital plays a crucial role in firms, and this importance develops through factors such as creating valuable knowledge in the organization, accumulating their experiences, motivating the entire organization, fostering competition, and forming teamwork (Sulasmiyati & Adila, 2023).

Bank performance is assessed using various methods, one of the most important and practical being the CAMEL model. Among the "bank rating supervisory systems" and "financial company and industry analysis," the most common system is the CAMELS model, which is now one of the most practical evaluation and rating models used in most developed countries (Babar & Zeb, 2011).

Given the above, the present article examines the impact of the human capital value-added coefficient on bank performance. Given the importance of the CAMEL approach and the explanation of risk-based performance indicators, this model is used to define performance variables.

2 Methods and Materials

The present study is descriptive in terms of data collection and applied in terms of its purpose. Based on the approach

of examining the relationships between variables, the present study can be considered correlational. In terms of time, the present study is a post-event study that evaluates past data of independent and dependent variables.

The necessary information for the present study was collected from the audited financial statements of banks, which are available to the public through bank websites or the Codal site of the Securities and Exchange Organization.

In this study, the systematic elimination method was used to select the sample. Initially, all banks whose financial statements are disclosed on the Codal site were identified. Then, their financial statements for the research period (2012 to 2022) were collected. Subsequently, the auditor's report on the financial statements was examined. If the auditor's report contained an unqualified or qualified opinion, the financial statement was used. If the auditor's report contained an adverse opinion or disclaimer of opinion on even one financial statement, that bank was excluded from the sample. Based on this, data from 12 banks for the period 2012 to 2022 were used in this study.

Given the aforementioned points and the existing theoretical foundations, the present study seeks to examine the relationship between human capital and bank performance. Accordingly, and considering that bank performance is assessed based on CAMEL components (including capital adequacy, asset quality, management, income, and liquidity), the research questions are as follows:

- Does the human capital value-added coefficient significantly impact banks' capital adequacy?
- Does the human capital value-added coefficient significantly impact banks' asset quality?
- Does the human capital value-added coefficient significantly impact banks' management?
- Does the human capital value-added coefficient significantly impact banks' income?
- Does the human capital value-added coefficient significantly impact banks' liquidity?

Some researchers have found that the relationship between intellectual capital and bank performance is nonlinear and can be U-shaped or inverted U-shaped (Nguyen, 2021). Accordingly, the shape of the function relating the variables was examined after each research question.

In this study, the effect of human capital on bank performance indicators based on CAMEL components was examined. To define and measure human capital, the Value-Added Intellectual Coefficient (VAIC) model introduced by Pulic (2000) was used.

Table 1

Description of Dependent Variables Based on CAMEL Model

No.	Variable Name	Abbreviation	Calculation Method
1	Capital Adequacy	C	Capital Adequacy Ratio disclosed in bank performance reports
2	Asset Quality	A	Non-performing Loans to Total Loans Ratio
3	Management	M	Cost to Income Ratio
4	Earnings	E	Return on Assets Ratio
5	Liquidity	L	Loans to Deposits Ratio

3 Findings and Results

Given that data from 12 banks over 11 years were used, 132 data points were utilized in the study, and their descriptive statistics are presented in [Table 2](#).

Table 2

Descriptive Statistics of Research Variables

Variable	Abbreviation	Observations	Minimum	Maximum	Mean	Skewness	Kurtosis	Standard Deviation
Human Capital Value-Added Coefficient	HCE	132	-55.7	28.5	1.9	-3.6	17.2	10.0
Capital Adequacy	C	132	-352.0	77.9	2.2	-7.5	58.5	42.7
Asset Quality	A	132	0.0	1.0	0.2	2.2	4.6	0.2
Management	M	132	0.1	13.8	1.2	5.8	37.0	1.7
Profitability	E	132	-53.9	7.3	-1.1	-4.1	16.3	10.5
Liquidity	L	132	0.2	2.3	0.7	2.1	14.8	0.2
Logarithm of Total Assets	log TA	132	6.7	10.1	8.7	-0.1	-0.1	0.6
Inflation Rate	INF	132	9.0	46.5	27.9	-0.3	-1.5	13.2
GDP Growth	GDPg	132	0.0	4.8	0.4	2.9	6.4	1.4

In this section of the research, the relationship between independent and dependent variables was examined using quantile regression. First, the stationarity test was conducted, and after executing the model, the results were validated with necessary tests (slope equality test, quantile symmetry test).

The Levin, Lin, and Chu approach was used to examine stationarity in this research. The stationarity test results indicate that the variables are stationary at the 99% level. In other words, the null hypothesis of a unit root is rejected.

[Table 3](#) shows the effect of the human capital value-added coefficient on capital adequacy. As observed, a significant relationship between the human capital value-added coefficient and capital adequacy is found in the second to ninth deciles. Examination of the squared human capital value-added coefficient variable shows that this variable is also significant in the second to ninth deciles, indicating a nonlinear relationship. The sign of the coefficients for these two variables suggests an inverted U-shaped relationship.

Table 3

Effect of Human Capital Value-Added Coefficient on Capital Adequacy

Description	Deciles	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth
HCE	Coef	0.815	0.894	1.598	1.446	1.485	1.444	1.508	1.591	1.866
	Prob	0.471	0.018	0.004	0.007	0.000	0.000	0.000	0.000	0.000
HCE ²	Coef	-0.016	-0.018	-0.035	-0.033	-0.032	-0.032	-0.027	-0.029	-0.034
	Prob	0.426	0.042	0.012	0.017	0.000	0.000	0.000	0.000	0.000
HHIa	Coef	-0.001	-0.006	-0.003	-0.003	-0.003	-0.003	-0.004	-0.004	-0.003

INF	Prob	0.963	0.137	0.125	0.042	0.031	0.008	0.002	0.001	0.044
	Coef	-0.190	-0.039	-0.054	-0.027	-0.053	-0.023	-0.017	-0.019	-0.078
GDPg	Prob	0.698	0.568	0.401	0.684	0.416	0.735	0.804	0.783	0.290
	Coef	1.145	1.917	1.060	1.613	1.471	1.768	1.651	1.629	1.455
LogTA	Prob	0.684	0.202	0.166	0.028	0.024	0.005	0.005	0.004	0.007
	Coef	0.991	0.127	-0.965	-1.549	-2.324	-3.046	-3.017	-2.344	-2.428
Intercept	Prob	0.740	0.942	0.528	0.314	0.106	0.028	0.025	0.085	0.048
	Coef	-7.993	4.506	12.491	19.038	26.257	33.452	33.746	29.199	31.527
Observations	Prob	0.752	0.759	0.336	0.144	0.032	0.005	0.004	0.015	0.004
	Coef	132	132	132	132	132	132	132	132	132

Research question 2 examines the relationship between the human capital value-added coefficient and asset quality. The results of the model execution are shown in Table 4. As observed, the human capital value-added coefficient has a significant relationship with asset quality in the first, second,

and ninth deciles. Examination of the squared human capital value-added coefficient variable shows its significance in these deciles, indicating a nonlinear relationship. The sign of the coefficients for these variables suggests an inverted U-shaped function.

Table 4

Effect of Human Capital Value-Added Coefficient on Asset Quality

Description	Deciles	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth
HCE	Coef	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.01	0.02	0.03
	Prob	0.00	0.02	0.07	0.11	0.76	0.85	0.37	0.44	0.00
HCE^2	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.00	0.00	0.00	0.00	0.11	0.07	0.66	0.95	0.04
HH1a	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.15	0.14	0.15	0.04	0.01	0.00	0.00	0.00	0.01
INF	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.54	0.65	0.68	0.64	0.93	0.56	0.84	0.19	0.76
GDPg	Coef	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.05	0.03
	Prob	0.73	0.98	0.99	0.52	0.12	0.11	0.05	0.00	0.40
LogTA	Coef	0.03	0.02	0.02	0.01	0.01	-0.01	0.01	0.02	0.10
	Prob	0.04	0.14	0.31	0.64	0.74	0.74	0.75	0.69	0.26
Intercept	Coef	-0.12	-0.09	-0.03	0.09	0.12	0.23	0.14	0.07	-0.57
	Prob	0.26	0.50	0.82	0.53	0.42	0.17	0.50	0.84	0.42
Observations		132	132	132	132	132	132	132	132	132

Research question 3 examines the relationship between the human capital value-added coefficient and management. As observed in Table 5, the human capital value-added coefficient has a significant relationship with management in the first to seventh and ninth deciles. Examination of the

squared human capital value-added coefficient variable shows its significance in these deciles, indicating a nonlinear relationship. The sign of the coefficients for these variables suggests an inverted U-shaped function.

Table 5

Effect of Human Capital Value-Added Coefficient on Management

Description	Deciles	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth
HCE	Coef	-0.089	-0.098	-0.098	-0.093	-0.114	-0.107	-0.105	-0.106	-0.104
	Prob	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.972	0.000
HCE^2	Coef	0.003	0.003	0.004	0.004	0.006	0.006	0.006	0.008	0.009
	Prob	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.983	0.000
HH1a	Coef	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Prob	0.005	0.000	0.000	0.001	0.006	0.045	0.132	0.226	0.827
INF	Coef	0.000	-0.004	-0.005	-0.003	-0.003	-0.003	-0.002	-0.002	0.001
	Prob	0.961	0.313	0.108	0.197	0.112	0.127	0.312	0.970	0.677
GDPg	Coef	-0.057	-0.055	-0.055	-0.043	-0.038	-0.021	-0.006	0.031	0.285

LogTA	Prob	0.006	0.003	0.007	0.057	0.046	0.292	0.865	0.956	0.023
	Coef	0.043	0.017	-0.042	-0.072	-0.079	-0.032	-0.042	-0.053	-0.021
Intercept	Prob	0.479	0.795	0.434	0.087	0.020	0.352	0.209	0.906	0.689
	Coef	0.460	0.788	1.345	1.640	1.749	1.375	1.465	1.560	1.286
Observations	Prob	0.381	0.198	0.004	0.000	0.000	0.000	0.000	0.247	0.007
	Coef	132	132	132	132	132	132	132	132	132

Research question 4 examines the relationship between the human capital value-added coefficient and income. As observed in Table 6, the human capital value-added coefficient has a significant relationship with bank income in the third to ninth deciles. Examination of the squared human capital value-added coefficient variable shows its

significance in these deciles, indicating a nonlinear relationship. The sign of the coefficients for these variables suggests an inverted U-shaped function. For other variables, only inflation in the ninth decile has a significant relationship with bank income.

Table 6

Effect of Human Capital Value-Added Coefficient on Income

Description	Deciles	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth
HCE	Coef	0.57	0.84	0.64	0.65	0.75	0.75	0.76	0.75	0.79
	Prob	0.09	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HCE^2	Coef	-0.05	-0.05	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	Prob	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HHIa	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.72	0.85	0.88	0.59	0.94	0.54	0.84	0.54	0.87
INF	Coef	0.00	-0.01	0.00	0.00	0.01	0.01	0.01	0.02	0.02
	Prob	0.79	0.83	0.96	0.85	0.33	0.19	0.23	0.06	0.03
GDPg	Coef	-0.01	0.08	0.13	0.13	0.14	0.19	0.18	0.08	0.09
	Prob	0.97	0.61	0.35	0.30	0.22	0.05	0.09	0.44	0.45
LogTA	Coef	-0.21	0.03	0.09	-0.11	0.02	-0.07	-0.08	-0.10	-0.04
	Prob	0.58	0.90	0.67	0.61	0.90	0.73	0.64	0.54	0.82
Intercept	Coef	0.88	-1.09	-1.45	0.27	-1.01	-0.15	-0.07	0.08	-0.43
	Prob	0.79	0.59	0.42	0.89	0.55	0.93	0.97	0.96	0.77
Observations		132	132	132	132	132	132	132	132	132

Research question 5 examines the relationship between the human capital value-added coefficient and liquidity. As observed in Table 7, the human capital value-added coefficient has a significant relationship with bank liquidity in the first, and sixth to ninth deciles. Examination of the squared human capital value-added coefficient variable shows its overlap with the human capital value-added

coefficient in these deciles, indicating a nonlinear relationship. The sign of the coefficients in these deciles suggests a U-shaped function. The Herfindahl-Hirschman Index (HHI) has a significant relationship with liquidity in the first and ninth deciles. The logarithm of total assets also has a significant relationship in the first, second, and seventh to ninth deciles.

Table 7

Effect of Human Capital Value-Added Coefficient on Liquidity

Description	Deciles	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth
HCE	Coef	-0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.04
	Prob	0.01	0.63	0.69	0.10	0.07	0.01	0.02	0.01	0.01
HCE^2	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.06	0.41	0.43	0.04	0.03	0.00	0.00	0.00	0.00
HHIa	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.00	0.09	0.22	0.10	0.14	0.51	0.29	0.07	0.01
INF	Coef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Prob	0.07	0.24	0.23	0.09	0.10	0.11	0.38	0.67	0.70
GDPg	Coef	-0.05	-0.01	0.00	0.00	0.01	0.01	0.03	0.02	0.04

LogTA	Prob	0.02	0.77	0.95	0.81	0.51	0.38	0.10	0.20	0.03
	Coef	-0.12	-0.12	-0.05	0.00	-0.02	0.02	0.09	0.12	0.12
Intercept	Prob	0.04	0.01	0.39	0.94	0.76	0.58	0.02	0.00	0.00
	Coef	1.54	1.62	1.11	0.76	0.87	0.56	0.03	-0.19	-0.13
Observations	Prob	0.00	0.00	0.02	0.05	0.03	0.11	0.92	0.47	0.64
	Coef	132	132	132	132	132	132	132	132	132

Table 8

Slope Equality Test for Quantile Regression

Description/Model	χ^2 Statistic	Degrees of Freedom	p-Value	Test Result
HCE Coefficient on C	31.662	16	0.0111	Null hypothesis rejected
HCE Coefficient on A	33.418	16	0.0065	Null hypothesis rejected
HCE Coefficient on M	13.73	16	0.0000	Null hypothesis rejected
HCE Coefficient on E	84.68	16	0.0000	Null hypothesis rejected
HCE Coefficient on L	25.38	16	0.0434	Null hypothesis rejected

Table 8 shows that the slope coefficients for the median differ from the estimated coefficients in the upper and lower quantiles, as the null hypothesis of coefficient equality is rejected. Additionally, the χ^2 statistic in the implemented models shows that all five models are significant at the usual test level. Therefore, the results indicate differences in coefficients across different quantiles, suggesting varying impacts of independent variables on the dependent variable

across quantiles. The differences in coefficients across different quantiles also validate the methodology used in this research.

Based on the symmetry test results, at the 5% significance level, the null hypothesis of symmetric quantile regression coefficients is rejected, as the p-value is less than 5%.

The results of the model execution are shown in Table 9.

Table 9

Summary of Research Results

Row	Research Question	Significant Quantiles	Function Shape
1	Relationship between Human Capital Value-Added Coefficient and Capital Adequacy	2nd-9th Quantiles	Nonlinear - Inverted U-Shaped
2	Relationship between Human Capital Value-Added Coefficient and Asset Quality	1st, 2nd-9th Quantiles	Nonlinear - Inverted U-Shaped
3	Relationship between Human Capital Value-Added Coefficient and Management	1st-7th and 9th Quantiles	Nonlinear - Inverted U-Shaped
4	Relationship between Human Capital Value-Added Coefficient and Income	3rd-9th Quantiles	Nonlinear - Inverted U-Shaped
5	Relationship between Human Capital Value-Added Coefficient and Liquidity	1st, 6th-9th Quantiles	Nonlinear - Inverted U-Shaped

4 Discussion and Conclusion

Based on the present study, the value-added of human capital has a significant impact on the indicators of capital adequacy, asset quality, management, income, and liquidity of banks. The results indicate that the human capital value-added coefficient is significantly associated with the variables of capital adequacy, management, and income across multiple quantiles. Although significant relationships for other dependent variables are also observed in some quantiles. The examination of the function shape reveals that, except for the liquidity variable, the effect of the

intellectual capital value-added coefficient on other variables follows an inverted U-shape.

Given these findings, the banking industry must exercise special care in utilizing the human capital value-added coefficient to adjust performance variables. For U-shaped relationships (liquidity), an increase in the intellectual capital value-added coefficient initially leads to a decrease in the independent variable, followed by an increase. In contrast, for other independent variables, due to the inverted U-shape, an increase in inputs initially leads to an increase in outputs, followed by a subsequent decrease in outputs.

Comparing the research results with previous studies shows that the findings are consistent with the prior studies

(Haris et al., 2019; Kaupelytė & Kairytė, 2016) which observed an inverted U-shape relationship between intellectual capital and financial variables. Additionally, Suhadi and Kahfi (2024) believe that human capital and structural capital can act as advantages for banks in profitability and have positive effects on bank performance (Suhadi & Kahfi, 2024).

The study's limitations include the exclusive focus on 12 banks over an 11-year period, which may not fully capture the diversity and complexity of the entire banking industry. The use of the CAMEL model, while comprehensive, may not encompass all factors influencing bank performance, and the reliance on audited financial statements may introduce biases due to variations in reporting standards. Additionally, the study's scope was confined to a specific geographical region, potentially limiting the generalizability of the findings to other regions with different economic and regulatory environments.

Future research should expand the sample size to include a more diverse range of banks from different regions and economic conditions to enhance the generalizability of the findings. Incorporating other performance evaluation models and qualitative data could provide a more holistic understanding of the impact of human capital on bank performance. Longitudinal studies examining the long-term effects of human capital investments on bank performance across different economic cycles would also be valuable. Additionally, exploring the role of other forms of intellectual capital, such as customer and relational capital, could provide a more comprehensive view of the factors driving bank performance.

The findings suggest that banking industry practitioners should strategically invest in human capital to enhance key performance indicators such as capital adequacy, management efficiency, and profitability. Policymakers should consider creating frameworks that encourage banks to invest in intellectual capital, recognizing its pivotal role in driving financial performance and competitiveness. Training programs and professional development initiatives should be prioritized to maximize the value-added from human capital. Furthermore, bank managers should employ a nuanced approach to managing human capital investments, understanding the nonlinear impacts on different performance metrics to optimize outcomes.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

- Abdel-khalik, A. R. (2003). Self-sorting, incentive compensation and human-capital assets. *European Accounting Review*, 12(4), 661-697. <https://doi.org/10.1080/09638180310001628428>
- Babar, H. Z., & Zeb, G. (2011). CAMELS rating system for banking industry in Pakistan: Does CAMELS system provide similar rating as PACRA system in assessing the performance of banks in Pakistan? In.
- Barak, M., & Sharma, R. K. (2024). Does intellectual capital impact the financial performance of Indian public sector banks? An empirical analysis using GMM. *Humanities and Social Sciences Communications*, 11(1), 208. <https://doi.org/10.1057/s41599-024-02702-5>
- Haris, M., Yao, H., Tariq, G., Malik, A., & Javaid, H. M. (2019). Intellectual Capital Performance and Profitability of Banks: Evidence from Pakistan. *Journal of Risk and Financial Management*, 12(2).
- Kaupelytė, D., & Kairytė, D. (2016). Intellectual Capital Efficiency Impact on European Small and Large Listed Banks Financial Performance. *International journal of management*,

accounting & economics, 3(6).
<https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jml=23832126&AN=118159009&h=mEySp6v22Uf%2F%2BUtzhIY6l66ZLaPaeLTjX6hnDP8KJFTECU8MAQSPFjusFPVAKBcLoEQWlXguYovOTFc9cPr3Sg%3D%3D&crl=c>

- Mention, A. L., & Bontis, N. (2013). Intellectual capital and performance within the banking sector of Luxembourg and Belgium. *Journal of Intellectual Capital*, 14(2), 286-309. <https://doi.org/10.1108/14691931311323896>
- Mondal, A., & Ghosh, S. K. (2012). Intellectual capital and financial performance of Indian banks. *Journal of Intellectual Capital*, 13(4), 515-530. <https://doi.org/10.1108/14691931211276115>
- Pulić, A. (1998). Measuring the performance of intellectual potential in the onowledge economy. The 2nd" World Congress on the Management of Intellectual Capital",
- Suhadi, I. A., & Kahfi, M. I. (2024). The Influence of Intellectual Capital on Return on Asset on BUMN Bank Listed on BEI 2015-2022. *Indonesian Interdisciplinary Journal of Sharia Economics (Ijse)*, 7(1), 1608-1620. <https://e-journal.uac.ac.id/index.php/ijse/article/view/4528>
- Sulasmiyati, S., & Adila, F. D. (2023, 2023/09/22). The Effect of Human Capital on Profitability with Productivity as Intervening Variable. Proceedings of the Brawijaya International Conference on Business, Administration, Taxation, and Tourism (BICBATT 2022),
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic management journal*, 5(2), 171-180. <https://doi.org/10.1002/smj.4250050207>