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THE ROLE OF THE CEO'S EDUCATIONAL BACKGROUND ON THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND PERFORMANCE AMONG INDONESIAN LISTED BANKS

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Abstract

The transition from a physical resource-based economy to a knowledge-based economy has encouraged researchers to look for new ways to measure intangible assets such as intellectual capital. This study tests and analyzes the effect of intellectual capital on company performance and the role of educational background in the influence of intellectual capital on the performance of banking companies listed on the Indonesian stock exchange for the period 2018-2022. This study uses secondary data obtained from the official website of the sample company. The number of samples in this study was 47 banks listed on the Indonesian Stock Exchange (IDX). The value-added intellectual coefficient (VAIC) method was used to measure the added value of intellectual capital. This study uses quantitative methods with panel data regression to analyze the effect of intellectual capital on company performance and the effect of managing directors' educational background on the relationship between intellectual capital and company performance. These findings show how IC elements of intellectual capital affect financial performance. We discover that IC improves the ROA and ROE of Banking Companies Listed in Indonesia, data analysis results indicate that the educational background of the managing director has a varying impact on the relationship between intellectual capital (IC) and company performance, as measured by return on assets (ROA) but not to return on equity (ROE). To the best of the author's knowledge. This is the first empirical study to evaluate the Role of a CEO's educational background in affecting Intellectual Capital in the performance of banking companies listed in Indonesia.

Keywords: Firm Performance, Intellectual Capital, VAIC, Educational Background of CEO

Introduction

Intellectual Capital is a predictor of firm performance and a source of competitive advantage (Faruq et al. 2023). IC creates value in this global era to achieve efficiency,

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increase financial performance, and maintain financial stability. They argue that in the global economy, largely and increasingly, the ability to compete depends on value creation through investments in IC (Ullah et al. 2021). The focus on IC and intangible assets that have arisen in the last few years is opening up a series of questions that may reform business and economics in an environment of global interdependency, environmental concerns, and a larger responsibility. In this study, intellectual capital is linked to expenses related to the company's operations and management. Intellectual capital encompasses intangible assets that augment the company's value.

IC and intangible assets offer a possible pathway for reconciling business and economic models with a better understanding of the interrelationships between the impact of economic activity and the potential health and well-being of society and the environment (Jardon & Dasilva, 2017). According to a study conducted by Ulum et al. (2014), the performance of intellectual capital in the banking industry in Indonesia is observed. The research findings indicate that the average VAIC score in the sample used for this study is 2.07, which falls within the group of good performers.

The VAIC model calculation yields results that can be categorized into four groups based on the VAIC score of each bank. These groups include: (1) top performers, which are banks with a VAIC score above 3, (2) good performers, which are banks with a VAIC score between 2.0 and 2.99, (3) common performers, which are banks with a VAIC score between 1.5 and 1.99, and (4) bad performers, which are banks with a VAIC score below 1.5.

Indonesia has a bank-centric economy, with banks controlling 80% of the country's total financial industry assets (Hadad et al., 2021). Global Industry Classification Standard (GICS) states that the banking sector is categorized as a high-intensity intellectual capital (IC) industry because of its employees' more uniform educational background compared to other sectors of the economy (Ulum, 2008). According to Erlim & Juliana (2017), there exists a favorable correlation between the educational attainment of a CEO and the performance of the company. This study posits that the educational background of a director holds significant influence over decision-making processes and impacts the overall success of the company.

The decision-making process of directors significantly impacts the determination of whether or not to invest in intellectual capital within a corporation. Many scholarly investigations tend to focus on specific dimensions of intellectual capital (IC) and primarily examine its operational dynamics within the realm of business. Limited research has been conducted into the distinct characteristics exhibited by senior management, particularly directors, who hold significant influence in determining the allocation of an organization's resources.

The competencies and expertise possessed by an organization's leaders can serve as an indicator of the company's performance and quality. When selecting their CEOs, firms consider this factor to maintain a competitive edge (Yuan et al. 2019). The present study aims to address a research gap identified in prior studies conducted by Mondal & Ghosh (2012), Bontis et al. (2018), Chowdhury et al. (2018) and These studies have

reported a favorable relationship between the Value-Added Intellectual Coefficient (VAIC) and financial performance indicators such as Return on Equity (ROE), Return on Assets (ROA), and Asset Turnover (ATO).

However, further investigation is needed to explore this relationship in greater depth. This study examines the impact of intellectual capital on firm performance (ROA, ROE) and how the CEO's educational background affects the relationship between intellectual capital and firm performance. The study conducted by Vo & Tran (2021) demonstrates a substantial and favorable relationship between intellectual capital and the performance of banks in Vietnam. Similarly, a study conducted by Ur Rehman et al. (2022) posits that there exists a noteworthy and constructive correlation between intellectual capital and financial success inside banking organizations. Contrarily, Nimtrakoon (2015) research reveals a lack of impact of intellectual capital on the financial performance of companies in the ASEAN region.

This can be attributed to the underdeveloped financial structures prevalent in developing countries, resulting in limited emphasis on the intangible assets or intellectual capital of companies. The assertion made by Subaida & Mardiati (2018) finds further corroboration in the findings of García Castro et al. (2021) who conclude that the Variable Added Intellectual Coefficient (VAIC) does not have a significant impact on a company's Return on Equity (ROE).

Research Methods

This study utilizes data from financial companies that have been selected based on specific criteria. Utilize the dataset to acquire comprehensive knowledge regarding the research variables. The IDX website offers audited financial and annual reports of banking firms for this inquiry. The data spans the years 2018 to 2022. The final sample consists of 235 bank-year observations.

This research centers around the dependent variable. This study primarily assesses the financial performance of a corporation. The Return on Assets (ROA) and Return on Equity (ROE) indices serve as measures of a company's total performance in Faruq et al. (2023). ROA = [Profit after tax/Total Assets], ROE = [Profit after tax/Total Equity]. This study employs Pulic's (2000) Value Added Intellectual Coefficient (VAIC) as a metric for quantifying intellectual capital. VAIC is determined by summing together the efficiencies of human capital (HCE), structural capital (SCE), and capital employed (CEE). VAIC is calculated using a methodology:

VAIC = Human Capital Efficiency + Structural Capital Efficiency + Capital Employed Efficiency

Human capital efficiency (HCE) is one of the computations included in the computation of VAIC. Human Capital Efficiency (HCE) is determined by assessing the ratio of added value to human capital. The key factors included in the computation of HCE include total employee expenditures and salary expenses (Mondal & Ghosh, 2012). The formulation of HCE can be expressed using the following equation:

$$HCE = VA/HC$$

Value Added (VA) refers to the additional value that is generated within a company to enhance its overall performance. The calculation of value added is based on the research conducted by Faruq et al. (2023) and is determined using the following formula:

VA = TS (Total Sales) - COMSC (Cost of Materials, Services, and Components) = OP (Operating Profit) + EC (Employment Cost) + (Total Depreciation and Amortization)

Structural Capital Efficiency (SCE) is a quantitative measure used to assess the effectiveness of the value generated by the structural capital. It is determined by comparing the value of the Structural Capital (SC) to the Value Added (VA). The success of value-added creation by structural capital can be attributed to the efficiency of its structural capital. Faruq et al. (2023). The formula for SCE is as follows:

$$SCE = SC/VA$$

Capital employed efficiency (CEE) represents the final component of the Value Added Intellectual Coefficient (VAIC). This mathematical analysis quantifies the amount of value added (VA) that is produced from the capital employed, encompassing both monetary capital and tangible assets. Faruq et al. (2023) stated that CEE can be determined by comparing the new value with the capital employed. The subsequent procedure is employed to determine the CEE:

$$CEE = VA/CE$$

This variable can be utilized to mitigate the potential for computation bias when determining the correlation between the independent variable and the dependent variable (Nimtrakoon, 2015)—firm Size. The size of a firm is determined by taking the natural logarithm of its total assets. DER. The debt-to-equity ratio is calculated by dividing the total leverage by the total equity.

NPL. The formula for calculating the Non-Performing Loan ratio is as follows: NPL = Total NPL divided by Total Credit. Covid-19. The COVID-19 variable is derived using a binary variable. Faruq et al. (2023) assign a value of 1 to the epidemic period (2020-2022) and a value of 0 to the period preceding the pandemic (2018-2019).

Apriadi et al. (2017) found that directors with formal education in economics and business possess a more profound comprehension of the complexities of the banking sector, along with an enhanced awareness of company financial reporting. Measurement is conducted using dummy variables. The assigned value is 1 for individuals with a Master of Business Administration (MBA) educational background and 0 for individuals with any qualification other than an MBA.

Table 1
Variable description

Variable Name	Label	Description	Source of Data	Source
Dependent Variables				
Return On Asset	ROA	The ratio of profit after tax/Total Asset	Annual reports	(Faruq et al., 2023)
Return On Equity	ROE	The ratio of profit after tax/Total Equity	Annual Reports	(Faruq et al., 2023)
Independent Variable				
Intellectual Capital	VAIC	HCE + SCE + CEE	Author's Calculation	(Mondal & Ghosh, 2012)
Human Capital Efficiency	HCE	VA / HC	Author's Calculation	(Tran & Vo, 2018)
Structural Capital Efficiency	SCE	SC / VA	Author's Calculation	(Tran & Vo, 2018)
Capital Employed Efficiency	CEE	VA / CE	Author's Calculation	(Tran & Vo, 2018)
Moderating Variable				
Director's Educational Background	CEO EDU	Directors with formal education in Master of Business Administration (MBA)	Annual report	Author's idea
Control Variables				
Firm Size	SIZE	Natural logarithm of total assets	Author's Calculation	(Nimtrakoon, 2015)
Debt to Equity Ratio	DER	Total Leverage / Total Equity	Author's Calculation	(García Castro et al., 2021)
Non-Performing Loan	NPL	Total NPL / Total Credit	Author's Calculation	(García Castro et al., 2021)
Covid-19	COV-19	The period the company began to be affected by the covid-19	Annual Report	(Adawiyah & Lisiantara, 2022)

Empirical model

Intellectual capital is determined by aggregating the financial and physical capital of a corporation (Pulic, 2000). Companies employ their tangible and monetary resources, whereas the company's intangible assets affect the efficiency of utilizing these tangible and monetary resources. The regression equation used to assess the impact of intellectual capital (IC) on corporate performance, as referenced in the study by Nadeem et al. (2019), is as follows:

Regression model 1 examines the impact of intellectual capital on the success of a corporation:

1a. $ROA_{i,t} = \alpha + \beta_1 IC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DER_{i,t} + \beta_4 NPL_{i,t} + \beta_6 COV19_{i,t} + e$

1b. $ROE_{i,t} = \alpha + \beta_1 IC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DER_{i,t} + \beta_4 NPL_{i,t} + \beta_6 COV19_{i,t} + e$

Regression model 2 examines the impact of the CEO's educational background on the correlation between intellectual capital

2a. $ROA_{i,t} = \alpha + \beta_1 IC_{i,t} + \beta_2 EDU_{i,t} + \beta_2 IC*EDU_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 DER_{i,t} + \beta_5 NPL_{i,t} + \beta_7 COV19_{i,t} + e$

2b. $ROE_{i,t} = \alpha + \beta_1 IC_{i,t} + \beta_2 EDU_{i,t} + \beta_2 IC*EDU_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 DER_{i,t} + \beta_5 NPL_{i,t} + \beta_7 COV19_{i,t} + e$

In the above models, IC is an independent variable; ROA and ROE are the dependent variables of financial performance; IC*EDU is the interaction variable between IC and the director's educational background; SIZE, DER, NPL, and COV19 are the control variables; α and β are the coefficients of each variable and e represents the random error.

Results and Discussion

Descriptive statistics

Table 2 presents the findings of a descriptive statistical analysis on many factors related to business performance, including return on assets (ROA) and return on equity (ROE), intellectual capital, CEO education, firm size, non-performing loan, debt to equity ratio, and the impact of the Covid-19 pandemic.

Table 2
Descriptive statistics

Variable	Mean	Std. Dev	Min	Max
ROA	0.0041	0.01993	-0.0544	0.0311
ROE	0.0312	0.9643	-0.2262	0.1667
IC	3.1989	1.8002	-0.6529	7.1341
CEO EDU	0.4468	0.4982	0.0000	1.0000
FIRM SIZE	31.1896	1.8284	27.2184	35.2282
NPL	0.0384	0.0542	0.0000	0.7740
DEBT TO EQUITY	5.3586	3.0009	0.0809	17.0714
COVID19	0.6000	0.4909	0.0000	1.0000

The findings of the descriptive statistical analysis indicate that the IC (VAIC) variable has a minimum value of -0.6529 and a maximum value of 7.1341. The mean value of IC is 3.1989, with a standard deviation of 1.8002. Ulum (2008) categorizes the calculation results of the VAIC model for each bank into four groups depending on the VAIC score of each bank. With an average value of 3.1989, it is evident that banking companies in Indonesia are highly successful.

Correlation analysis

Table 3 presents the results of the correlation test, indicating that the regression model employed does not exhibit multicollinearity among the independent variables. Specifically, each independent variable used demonstrates a correlation coefficient value

below |0.8|. Basuki & Prawoto (2015) state that a correlation coefficient over |0.8| between independent variables signifies the presence of multicollinearity.

Table 3
Correlation Test Results

	IC	CEOEDU	IC_EDU	SIZE	NPL	DER	COV-19
IC	1.0000						
CEOEDU	0.0689	1.0000					
IC_EDU	0.4127	0.8257	1.0000				
SIZE	0.2750	-0.0229	0.0396	1.0000			
NPL	-0.2100	0.0887	-0.0503	-0.1215	1.0000		
DER	0.0296	-0.0108	0.0315	0.4237	-0.0009	1.0000	
COV-19	0.0274	-0.0175	-0.0205	0.1025	-0.0912	-0.0487	1.0000

Regression results

After conducting several tests, such as the Chow test and Hausman test, to analyze panel data, Models 1a, 1b, 2a, and 2b are estimated using a one-way individual-specific fixed effect model. This study uses a one-tailed hypothesis test.

Table 4
Regression results

Variables	Model 1a	Model 1b	Model 2a	Model 2b
C	0.057*	0.0980*	0.0270**	0.1020
IC	0.0145**	0.0100**	0.000***	0.0540*
IC_EDU			0.0210**	0.0315**
SIZE	0.2200	0.0525*	0.0150**	0.0505*
NPL	0.475	0.3255	0.4395	0.3535
DER	0.4830*	0.1345	0.4950	0.1020
COV-19	0.0275**	0.0120**	0.0025***	0.0135**
R-Squared	0.4059	0.4985	0.3939	0.4761
Adj R-Squared	0.3093	0.4120	0.3085	0.4079
F-stat	9.96	12.67	7.12	22.69
Prob > F	0.000	0.000	0.000	0.000

Note: *,**,*** denote statistical sig at the 0.1, 0.05, 0.01
The Figure in the parentheses are the t-statistics

Model 1a. The IC variable has a probability value of 0.000, indicating that this value is statistically significant at the 1%, 5%, and 10% confidence levels. Therefore, the null hypothesis (Ho) is rejected. Given that the estimated F value of 9.03 exceeds the F table value of 2.137, with a probability value of 0.000 <0.05, we can accept the alternative hypothesis (Ha) which states that the independent variable (IC) has a significant effect on firm performance (ROA). Therefore, it may be inferred that there is a notable and favorable impact exerted by IC on ROA.

Model 1b. The IC variable has a probability value of 0.0100, indicating that this value is statistically significant at the 5% and 10% confidence levels, leading to the rejection of Ho. Upon comparing the estimated F value of 12.67 to the F table value of 2.137, with a probability value of 0.000 <0.05, it can be concluded that Ha is accepted. This indicates that the independent variable (IC) has a significant effect on the company's

performance (ROE). Therefore, it may be inferred that there is a notable and favorable impact exerted by IC on ROE.

The results of this study are in line with the results of research from Ur Rehman et al. (2022) state that there is a positive and significant effect of IC on ROA, ROE, and TQ in banking companies. This is also in line with research conducted by Ullah et al. (2021), Soewarno & Tjahjadi (2020), Ghozali et al. (2020), Bontis et al. (2018), Chowdhury et al. (2018) [Model 1 and 2]. The study's findings suggest that the company's intellectual capital (IC) can create extra value for the company. The inclusion of this extra value will be advantageous in the establishment and improvement of the company's competitive edge, as per the resource-based theory (1984).

Model 2a. The probability value of the interaction variable between IC and the educational background of the managing director is 0.0210. This indicates that the variable is statistically significant at the 5%, and 10% confidence levels. Therefore, the null hypothesis (Ho) is rejected. Additionally, the F-count in this regression result is 7.12, which is greater than the F-table value of 2.137 with a probability value of 0.000, which is less than 0.05. Consequently, the alternative hypothesis (Ha) is accepted. The positive coefficient indicates that the educational background of the managing director enhances the impact of IC on ROA.

Model 2b. The probability value of the interaction variable between IC and the educational background of the CEO is 0.0315. This indicates that the variable is statistically significant at the 5%, and 10% confidence levels. Therefore, the null hypothesis (Ho) is rejected. Additionally, the F-count in this regression result is 22.69, which is greater than the F-table value of 2.137 with a probability value of 0.000, which is less than 0.05. Consequently, the alternative hypothesis (Ha) is accepted. The positive coefficient indicates that the educational background of the managing director enhances the impact of IC on ROE.

Conclusion

The data analysis results indicate that the impact of Intellectual Capital (IC), as assessed by Value Added Intellectual Coefficient (VAIC), on corporate performance, as represented by Return on Assets (ROA) and Return on Equity (ROE), are both statistically significant. The positive sign of the IC variable regression coefficient suggests a positive influence exerted by IC. The company's performance is directly proportional to the value of the IC it owns. Therefore, the conclusion that can be inferred is that Ha is corroborated, which asserts that IC has a favorable impact on both ROA and ROE.

The data analysis results indicate that the educational background of the managing director has a varying impact on the relationship between intellectual capital (IC) and company performance, as measured by return on assets (ROA) and return on equity (ROE). The data analysis results demonstrate the impact of moderating variables, specifically the educational background of the managing director, on the correlation between intellectual capital (IC) and company profitability (ROA, ROE). The p-value of

the interaction term between IC and the educational background of the managing director on ROA and ROE is less than 0.05. These findings indicate that the educational qualifications of the managing director have a substantial impact on the profitability of the company. The regression coefficient in this model is positive, indicating that the educational background of the managing director enhances the correlation between intellectual capital (IC) and company profitability. Therefore, it can be inferred that there is evidence to support the hypothesis H2.

This study focuses exclusively on the analysis of the banking industry and does not encompass other financial organizations, such as insurance firms and investment trusts. Hence, forthcoming research endeavors could encompass all enterprises functioning within the finance industry and employ other methodologies to assess the intellectual capital performance of financial institutions.

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