THE EFFECT OF EDUCATIONAL BACKGROUND, EDUCATION LEVEL AND BOARD SIZE ON FINANCIAL PERFORMANCE IN CONVENTIONAL BANKS IN INDONESIA

PENGARUH LATAR BELAKANG PENDIDIKAN, TINGKAT PENDIDIKAN DAN UKURAN DEWAN KOMISARIS TERHADAP KINERJA KEUANGAN PADA BANK KONVENSIONAL DI INDONESIA

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Abstract: This study aims to analyze the influence of educational background, educational level, and board size on financial performance in conventional banks in Indonesia. Financial performance is measured using Return on Assets (ROA) as the main indicator. This study employs a quantitative method and secondary data obtained from the annual reports of conventional banks registered with the Financial Services Authority (OJK) during the period 2019-2023. The analysis method used is panel data regression to test the relationship between independent and dependent variables more accurately by considering time and individual dimensions. The results indicate that educational background, educational level, and board size significantly influence bank financial performance. These findings suggest that educational quality and board structure play a crucial role in enhancing the financial performance of banking institutions. This study implies that management and stakeholders should give greater consideration to educational aspects and board composition in strategic decision-making.

Keywords: Educational Background, Educational Level, Board Size, Financial Performance, Conventional Banks, ROA, Panel Data Regression.

Abstrak: *Penelitian ini bertujuan untuk menganalisis pengaruh latar belakang pendidikan, tingkat pendidikan, dan ukuran dewan terhadap kinerja keuangan pada bank konvensional di Indonesia. Kinerja keuangan diukur menggunakan Return on Assets (ROA) sebagai indikator utama. Penelitian ini menggunakan metode kuantitatif dan data sekunder yang diperoleh dari laporan tahunan bank konvensional yang terdaftar di Otoritas Jasa Keuangan (OJK) selama periode 2019-2023. Metode analisis yang digunakan adalah regresi data panel untuk menguji hubungan antara variabel independen dan dependen secara lebih akurat dengan mempertimbangkan dimensi waktu dan individu. Hasil penelitian menunjukkan bahwa latar belakang pendidikan, tingkat pendidikan, dan ukuran dewan berpengaruh signifikan terhadap kinerja keuangan bank. Temuan ini menunjukkan bahwa kualitas pendidikan dan struktur dewan memiliki peranan penting dalam meningkatkan kinerja finansial lembaga perbankan. Penelitian ini memberikan implikasi bagi manajemen dan pemangku kepentingan untuk lebih mempertimbangkan aspek pendidikan dan komposisi dewan dalam pengambilan keputusan strategis.*

Kata Kunci: *Latar Belakang Pendidikan, Tingkat Pendidikan, Ukuran Dewan, Kinerja Keuangan, Bank Konvensional, ROA, Regresi Data Panel*

INTRODUCTION

Research Background

Following the period of recovery, Indonesia's banking sector has entered a phase of modernization and consolidation. In recent years, economic growth, rising financial literacy, and technological advancement have collectively accelerated the transformation of the industry. Regulatory bodies such as Bank Indonesia and the Financial Services Authority (OJK) continue to play vital roles in supervising banks and maintaining financial system stability. The emergence of digital banking and financial technology (fintech) has further enhanced operational efficiency and accessibility, allowing banks to serve broader segments of the population with greater inclusivity and cost-effectiveness.

Within this dynamic environment, the role of the board of directors has become increasingly central—not only in guiding strategic direction but also in adapting to regulatory, technological, and market shifts. As Indonesian banks strive to maintain competitiveness and resilience, understanding how internal governance variables—such as board size, educational background, and academic qualifications—influence financial performance is both timely and essential. This study seeks to address that gap by empirically examining the relationship between board characteristics and Return on Assets (ROA) in Indonesian conventional banks. One of the main issues faced by conventional banks is the rising Non-Performing Loan (NPL) ratio. In 2021, the NPL ratio for banks in Indonesia reached 3.35%, an increase from 3.24% in the previous month (Gunawan and Maimunah, 2022). A high NPL ratio indicates that many loans are not being repaid by borrowers, which negatively impacts the profitability of banks. Research has shown that elevated NPL levels can reduce bank revenues and affect overall earning capacity (Utami and Putra, 2016).

The rising NPL ratio underscores the importance of effective governance and risk management practices within banks. Understanding the factors contributing to NPL increases, including the educational background and expertise of board members, is crucial for improving decision-making processes and enhancing the overall financial stability of banks. By addressing these challenges, conventional banks in Indonesia can work towards reducing their NPL ratios and stabilizing their financial performance, even in the face of external economic pressures. The data for the Non-Performing Loans (NPL) ratio of banks in Indonesia from 2019 to 2023 shows that the NPL ratio in 2019 was at 2.77%, indicating a relatively healthy condition despite an increase in credit risk. The NPL ratio increased to 3.06% in 2020 due to the impact of the COVID-19 pandemic, which affected borrowers' ability to repay loans. There was a slight increase to 3.22% in 2021, reflecting ongoing challenges in credit risk management. Then, in 2022, the NPL ratio decreased to 2.93%, indicating an improvement in the quality of bank assets in line with economic recovery. Finally, in 2023, the NPL ratio dropped again to 2.78%, showing that banks in Indonesia have successfully managed credit risk more effectively.

The quality of human resources in the banking sector is also a significant concern. A lack of skills and knowledge among management can hinder innovation and responsiveness to market changes. This insight is particularly relevant in the context of Indonesia, where conventional banks must adapt to changes in the global market to remain competitive. As banks navigate these complexities, they must develop strategies that not only address local market conditions but also consider the broader implications of global economic trends. By doing so, Indonesian banks can enhance their resilience and ability to thrive in an interconnected financial landscape, ensuring sustained growth and stability in their operations. This study aims to explore how the qualifications and characteristics of board members influence the financial health and operational efficiency of banks in the country.

Research Objectives

Based on the background of the research problem, the objectives of this study are as follows:

1. To examine whether educational background, education level, and board size collectively influence the financial performance of conventional banks in Indonesia.
2. To analyze the effect of educational background on the financial performance of conventional banks in Indonesia.
3. To assess the impact of education level on the financial performance of conventional banks in Indonesia.
4. To evaluate the influence of board size on the financial performance of conventional banks in Indonesia.

LITERATURE REVIEW

Financial Management

Financial management refers to the strategic planning, organizing, directing, and controlling of financial undertakings in an organization, with the primary objective of maximizing firm value and ensuring sustainable financial health (Brigham and Ehrhardt, 2016). It encompasses the acquisition and use of funds, decisions about capital structure, the deployment of assets, and the generation of returns. Financial management thus plays a critical role in aligning internal resources with long-term strategic goals and maintaining operational efficiency.

Education Background

Educational background refers to the formal education and training a person has received, which significantly influences their knowledge, skills, and competencies in various fields. It encompasses the degrees obtained, institutions attended, and any relevant certifications or training programs completed. Educational background plays a crucial role in shaping the capabilities of individuals within the banking sector, particularly in

Indonesia, where the financial performance of banks can be significantly affected by the qualifications of their management teams.

Education Level

The level of education is a formal measure that indicates the educational level an individual has achieved within the education system, encompassing primary, secondary, and higher education. According to Law Number 20 of 2003 on the National Education System, education is a conscious and planned effort to create a learning environment that allows students to develop their potential. Education level includes not only academic knowledge but also the skills and values necessary in a professional context. A higher level of education among board members is positively associated with the company's financial performance, as individuals with advanced education tend to have better analytical and problem-solving skills.

Board Size

Board size refers to the number of members on a company's board of directors or board of commissioners. Board size is an important aspect of corporate governance that can influence a bank's financial performance. An optimal board size is believed to enhance decision-making effectiveness, improve oversight, and encourage diversity of perspectives in business strategy. Previous studies indicate that larger boards can provide more knowledge and experience, which has the potential to improve financial performance (Isik and Ince, 2016).

Financial Perfomance

The financial performance metric used in this study is ROA, or Return on Assets, which is a key indicator of how efficiently a company utilizes its assets to generate profit. ROA measures the amount of net income a company produces relative to its total assets. Strong financial performance, as reflected in ROA, demonstrates an organization's effectiveness and efficiency in achieving its goals. It reflects the company's ability to manage its assets and resources effectively (Fahmi, 2015). Various indicators are used to measure financial performance, with ROA being among the most commonly applied. ROA reveals the extent to which company management can leverage assets to generate profit (Tandelilin, 2016). A high ROA suggests that a company is likely to provide substantial returns to investors (Zulkarnain and Mirawati, 2019). ROA is calculated by dividing net income by total assets.

Emperical Study

Deniza et al. (2023) aimed to examine the effect of institutional ownership, the proportion of independent commissioners, the frequency of board meetings, and the educational background of board members on company financial performance. The population in this study was Consumer Non-Cyclical manufacturing companies listed on the Indonesia Stock Exchange in 2019-2021. The sampling method used was purposive sampling, resulting in 57 samples. Hypothesis testing used multiple linear regression analysis techniques. The results of the study prove that institutional ownership and the frequency of board meetings do not affect company financial performance. The proportion of independent commissioners has a positive effect on company financial performance. The educational background of board members has a negative effect on company financial performance.

Sumartini (2020) aimed to see whether there are influence of capital structure, firm size, and background educationof board of commissioner on firm performance. The regression method were applied on annual financial report of manufacturing sector from 2016-2018. The finding shows that capital structure, measured by debt to equity ratio and background education of board of commissioner have no significant effect on firm performance. Firm size measured by total sales was positive significant on firm performance.

Madyan, Setyowati, and Setiawan (2021) investigated the effect of the formal education level of the board of directors on financial performance in terms of profitability. The sample used in this study was 31 banking companies, especially conventional commercial banks listed on the Indonesia Stock Exchange in 2009-2018, with 244 observations. This study uses multiple linear regression analysis with the Ordinary Least Square (OLS) approach. This study indicates that the board of directors with the highest educational level of Masters and Ph.D has a significant positive effect on ROA. Meanwhile, the board of directors with the and education level of Masters has a significant negative effect, and the board of directors with the highest education level of Ph.D has a significant positive effect on NIM.

Research Model

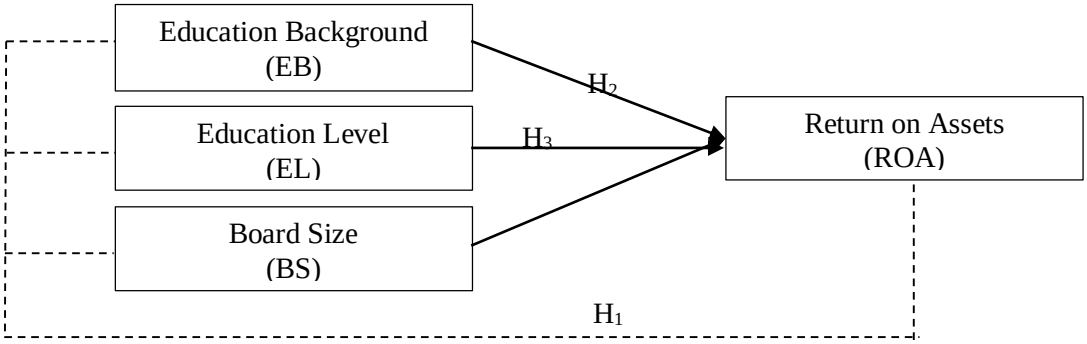

Figure 1. Research Model
Source: Literature Review

Research Hypothesis

H_1: Educational Background, Education Level, and Board Size simultaneously have a significant effect on Financial Performance in Conventional Banks in Indonesia.
H_2: Educational Background have a significant effect on Financial Performance in Conventional Banks in Indonesia.
H_3: Education Level have a significant effect on Financial Performance in Conventional Banks in Indonesia.
H_4: Board Size have a significant effect on Financial Performance in Conventional Banks in Indonesia.

RESEARCH METHOD

Research Approach

The approach used in this research is quantitative research. According to Paramita, Rizal, and Sulistyan (2021:165), a quantitative research approach is a research method that focuses on collecting and analyzing data in the form of numbers to test hypotheses or answer research questions objectively. This approach uses systematic measurement techniques, such as surveys, experiments, or statistical analysis, to identify patterns, relationships, and trends in a phenomenon.

Population, Sample, Size and Sampling Techniques

The population refers to the total number of individuals and entities that will be studied (Jaya, 2020:73). This research examines 109 conventional banks that are registered with the Financial Services Authority (OJK).

Data Type and Data Sources

This research was conducted using quantitative data, namely data that is measured or used on a numerical scale (Sujarweni, 2019). The data collected for this study were obtained through primary sources. To collect research data related to the performance of Minahasa Election Supervisory Body (Bawaslu) employees, a primary data collection method was used in the form of a questionnaire. Jaya (2020) argues that sampling technique is a method specific to the research being conducted. Purposive sampling is used to select the research sample, which is chosen based on specific requirements and criteria. In this research, the sample size was determined using purposive sampling technique, resulting in 74 businesses that meet the research criteria. The sample consists of several members of the population.

Method of collecting data

In this study, quantitative data is used. The information that can be calculated, measured, and derived from the research topic, specifically financial statements. Secondary data in the form of Annual Financial Reports from 2019 to 2023, which can be accessed, serves as the data source through www.ojk.go.id and other data sources.

Data Analysis Method
Panel Data Regression Model Selection Test

Chow Test

One of the model selection tests for panel data regression, the Chow test, is used to choose between a common effect model and a fixed effect model. The fixed effects model will be used as the panel data regression model hypothesis if the cross-sectional chi-square value is significant at the 0.05 level. The random effects model is used as an alternative to the Hausman test, provided that the cross-sectional chi-square value is greater than the critical value..

Hausman Test

The method for choosing between the Fixed Effects Model (FEM) and the Random Effects Model (REM) is through the Hausman test. The suspicion in selecting the panel data regression model using the Hausman test is that FEM will be chosen if the cross-sectional irregularity value is below 0.05. On the other hand, REM will be considered if the cross-sectional random value is greater than 0.05.

Lagrange Multiplier Test

The testing involves determining the model between the normal collision model and the irregular collision model. This test was developed by Breusch and Pagan. The values of the remaining common effect model serve as the basis for this test. The LM test is based on the Chi-Square distribution, with the number of independent variables functioning as the degrees of freedom. The Random Effects Model (REM) is chosen if the LM value is more significant than the baseline Chi-Square value. Conversely, the Common Effects Model (CEM) is deemed the most ideal if the LM value is below the Chi-Square baseline.

Classical Assumption Test

Multicollinearity Test

According to Ghozali (2018), the multicollinearity test aims to test whether there is a correlation between independent variables in the regression model. If there is a correlation, then it is called a multicollinearity problem. A good regression model should not have a correlation between independent variables. The method used to detect multicollinearity in this study is by using Tolerance and Variance Inflation Factor (VIF). If VIF> 10, then the independent variable has a multicollinearity problem with other independent variables. Conversely, if VIF <10 then there is no multicollinearity (Ghozali, 2018).

Hypothesis Testing

T Test

The T-test is used to determine the effect of each independent variable on the dependent variable to determine how much influence the independent variable has on the dependent variable, which is tested at a significance level of $\alpha = 0.05$ (5%), meaning that the possibility of the truth of the conclusion has a probability of 95% or a tolerance of 5% deviation (Sugiyono, 2019).

F Test

The F statistical test is used to determine whether all independent variables (free) included in the regression model have a simultaneous effect on the dependent variable.

Determination of Multiple Coefficient Test (R2)

According to Sugiyono (2019), the determination of multiple coefficient test (R2) is essentially measuring how far the model's ability to explain the variation of the dependent variable. The value of the determination of multiple coefficient test (R2) is between zero and one.

RESULTS AND DISCUSSION

Research Result

Table 1. Descriptive Statistics of ROA, Educational Background, Education Level, and Board Size (n = 370)

	ROA	EB	EL	BS
Mean	-0.024395	0.726354	0.519708	0.741214
Median	0.010000	0.750000	0.500000	0.699000
Maximum	0.148000	1.000000	1.000000	1.079000

Minimum	-13.71000	0.000000	0.000000	0.477000
Std. Dev.	0.713839	0.205452	0.247479	0.163031
Skewness	-19.12253	-0.692600	-0.036022	0.326887
Kurtosis	367.1172	3.611308	2.484614	2.476734
Jarque-Bera	2066512.	35.34233	4.175041	10.81060
Probability	0.000000	0.000000	0.123994	0.004493
Sum	-9.026000	268.7510	192.2920	274.2490
Sum Sq. Dev.	188.0297	15.57573	22.59978	9.807712
Observations	370	370	370	370

Return on Assets (ROA) shows a highly abnormal distribution, with a mean of –0.0244 and a median of 0.0100. The extremely negative minimum value of –13.71 and the high standard deviation (0.7138) indicate the presence of significant outliers or extreme negative financial performances in the dataset. The skewness of –19.12 and kurtosis of 367.12 confirm that ROA is severely left-skewed and leptokurtic, implying extreme outliers. The Jarque-Bera statistic (2,066,512) and p-value of 0.000 strongly reject the null hypothesis of normality. This suggests the need for transformation (e.g., winsorization or logarithmic adjustment) or robust regression techniques in further analysis. Educational Background (EB) has a mean of 0.726 and median of 0.75, suggesting that approximately 72.6% of board members, on average, have qualifications in economics or business. The distribution is negatively skewed (–0.693), with a substantial concentration of banks having a high proportion of financially literate board members. The kurtosis (3.61) indicates a distribution slightly more peaked than normal. However, the Jarque-Bera test (JB = 35.34, $p < 0.001$) indicates that EB does not follow a normal distribution.

Education Level (EL) shows a mean of 0.520, indicating that about half of the board members across the dataset hold postgraduate degrees. The distribution is nearly symmetric (skewness = –0.036) and close to normal (kurtosis = 2.48). The Jarque-Bera test (JB = 4.17, p = 0.124) fails to reject the null hypothesis of normality, suggesting that EL is approximately normally distributed. Board Size (BS) has a mean of 0.741 and median of 0.699, with values ranging from 0.477 to 1.079. The data is moderately right-skewed (skewness = 0.327), indicating that while most banks operate with relatively compact boards, a few maintain larger structures. The kurtosis of 2.48 is close to the normal distribution threshold, but the Jarque-Bera test (JB = 10.81, p = 0.0045) suggests modest deviation from normality.

Regression Output Summary: CEM, FEM, and REM

Table 2. Common Effect Model (CEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004226	0.203350	0.020781	0.9834
BS	0.264151	0.231274	1.142156	0.2541
EB	-0.251372	0.206354	-1.218160	0.2239
EL	-0.080483	0.171239	-0.470006	0.6386
R-squared	0.009759	Mean dependent var		-0.024395
Adjusted R-squared	0.001643	S.D. dependent var		0.713839
S.E. of regression	0.713252	Akaike info criterion		2.172789
Sum squared resid	186.1947	Schwarz criterion		2.215097
Log likelihood	-397.9659	Hannan-Quinn criter.		2.189594
F-statistic	1.202365	Durbin-Watson stat		2.495610
Prob(F-statistic)	0.308732			

Source: Data tabulation by EViews13, 2025

Table 2 shows the estimation results of the Common Effect Model (CEM)that all independent variables such as: Board Size (BS), Educational Background (EB), and Education Level (EL), exhibit statistically insignificant coefficients, with p-values well above the 5% threshold. The model's explanatory power is very limited, with an R-squared value of only 0.0098 and an F-statistic probability of 0.3087, indicating a poor model fit.

Tabel 3. Fixed Effect Model (FEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.219384	0.051240	4.282517	0.0000
BS	0.365184	0.072803	5.015274	0.0000

EB	0.292518	0.063391	4.613891	0.0000
EL	0.309742	0.061205	5.060284	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.623192	Mean dependent var		-0.024395
Adjusted R-squared	0.611002	S.D. dependent var		0.713839
S.E. of regression	0.451239	Akaike info criterion		1.812305
Sum squared resid	74.9183	Schwarz criterion		2.201218
Log likelihood	-330.9271	Hannan-Quinn criter.		1.974014
F-statistic	8.942387	Durbin-Watson stat		2.812197
Prob(F-statistic)	0.000000			

Source: Data Tabulation By Eviews13, 2025

Table 3 shows the estimation results of the Fixed Effect Model (FEM) all explanatory variables have statistically significant and positive effects on Return on Assets (ROA) at the 1% level. The model demonstrates strong explanatory power, with an R-squared value of 0.623, suggesting that approximately 62% of the variation in ROA is explained by these governance factors.

Tabel 4. Random Effect Model (REM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005467	0.205072	0.026659	0.9787
BS	0.263116	0.233291	1.127844	0.2601
EB	-0.250784	0.207755	-1.207114	0.2282
EL	-0.082217	0.172537	-0.476516	0.6340
Effects Specification				
			S.D.	Rho
Cross-section random			0.046605	0.0043
Idiosyncratic random			0.712858	0.9957
Weighted Statistics				
R-squared	0.009665	Mean dependent var		-0.024138
Adjusted R-squared	0.001548	S.D. dependent var		0.712338
S.E. of regression	0.711786	Sum squared resid		185.4302
F-statistic	1.190655	Durbin-Watson stat		2.505790
Prob(F-statistic)	0.313127			
Unweighted Statistics				
R-squared	0.009759	Mean dependent var		-0.024395
Sum squared resid	186.1948	Durbin-Watson stat		2.495501

Source: Data Tabulation By Eviews13, 2025

Table 4 shows the estimation results of the Random Effects Model (REM) that none of the variables are statistically significant, and the overall model fit is weak, with an R-squared of just 0.0097 and an F-statistic p-value of 0.313. Additionally, the Hausman test produces a statistically significant result ($p < 0.05$), indicating that FEM is the more appropriate specification. Therefore, the fixed effects model is preferred for inference in this study, affirming that internal governance characteristics consistently impact the financial performance of banks over time. These differences underscore the importance of model selection in panel data analysis. Thus, the next subsection presents the model selection procedure, using the Chow Test and Hausman Test, to identify the most appropriate estimation technique for this research.

Regression Result of FEM

This section presents the estimation results from the Fixed Effect Model (FEM), which is used to analyze the effect of board governance variables on financial performance, measured by Return on Assets (ROA). The model is applied to a balanced panel dataset comprising 74 conventional banks in Indonesia observed over the period 2019–2023, with a total of 370 observations. Thus, based on the Table 4.4b, the regression model can be expressed in the following estimated form:

〖ROA〗_it=0.2194+0.3652 〖BS〗_it+0.2925 〖EB〗_it+0.3097 〖EL〗_it+ 〖e 〗_it

Where:
it : represent for bank i in year t
ROA : Return on Assets
BS : Board Size
EB : Educational Background
EL : Education Level
e : Error term

The value 0.3652 associated with Board Size (BS) indicates that for every one-unit increase in the normalized board size index, the ROA of a bank increases by 0.3652 units, assuming all other variables remain constant. This suggests that the direction of the relationship is positive: the larger the board, the higher the return on assets, within the range observed in the data.

The coefficient 0.2925 for Educational Background (EB) implies that a one-unit increase in the proportion of board members with an economics or business academic background leads to a 0.2925 unit increase in ROA. This shows that as the board becomes more specialized in financially relevant disciplines, the performance indicator ROA tends to increase proportionally. The coefficient 0.3097 for Education Level (EL) means that when the proportion of board members holding postgraduate degrees rises by one unit, the ROA increases by 0.3097 units. This reflects the idea that boards composed of more highly educated individuals are associated with higher levels of financial performance.

Coefficient Correlation and Determination

Table 4 shows the coefficient of determination, commonly denoted as R-squared (R^2) is a statistical measure that indicates the proportion of the variance in the dependent variable that is explained by the independent variables in the model. In this study, the Fixed Effect Model (FEM) was used to evaluate the relationship between board governance characteristics and financial performance (ROA) across 74 banks over five years (2019–2023). The estimation results yielded an R-squared value of 0.6232, which means that 62.32% of the total variation in Return on Assets (ROA) can be explained by the three independent variables included in the model: Board Size (BS), Educational Background (EB), and Education Level (EL). This indicates a substantial level of explanatory power, suggesting that the model captures a significant portion of the variation in financial performance across the banks studied.

In addition, the Adjusted R-squared value is 0.6110, which adjusts for the number of predictors in the model relative to the number of observations. The adjusted R^2 is slightly lower than the R^2, reflecting a modest penalty for the inclusion of multiple explanatory variables, but it still confirms that the model provides a strong explanatory framework. Overall, the coefficient of determination shows that the governance variables included in the model, collectively contribute meaningfully to explaining differences in ROA among conventional banks in Indonesia. The remaining 37.68% of the variation is attributed to other factors not included in this model, such as market conditions, risk exposure, operational efficiency, or macroeconomic influences.

Hypothesis Test

This study examines the joint and individual effects of three board governance characteristics Educational Background (EB), Education Level (EL), and Board Size (BS) on the financial performance of conventional banks in Indonesia, as measured by Return on Assets (ROA). Using the Fixed Effect Model (FEM), selected based on the Chow and Hausman tests, the findings reveal that these governance variables jointly have a significant impact on ROA (F-statistic 8.942; p-value 0.000), supporting hypothesis H1. Individually, EB shows a positive and significant effect on ROA (coefficient 0.2925; p-value 0.000), confirming H2 and emphasizing the importance of technical competence in financial decision-making. Similarly, EL has a positive and significant influence (coefficient 0.3097; p-value 0.000), supporting H3 and suggesting that higher education levels among board members enhance financial performance. Lastly, BS also demonstrates a strong positive effect on ROA (coefficient 0.3652; p-value 0.000), supporting H4 and indicating that an optimally sized board contributes to better decision-making and increased profitability.

Discussion

The four principal variables, Board Size (BS), Educational Background (EB), Education Level (EL), and Return on Assets (ROA), are analyzed to interpret the overall characteristics of the sample of 74 conventional banks in Indonesia observed from 2019 to 2023. The average board size observed across the panel was approximately 5 to

6 members, with frequencies peaking at 5 (121 occurrences) and tapering toward the extremes (as low as 3 and as high as 12).

The educational background index, which quantifies the proportion of board members with economics or business degrees, shows a mean of approximately 0.69, with values ranging from 0.0 to 1.0. This indicates a strong dominance of financial-academic profiles among board membersThe education level variable also exhibits a high mean of 0.52, with values skewed toward higher education categories (Bachelor's, Master's, and Ph.D.).

The mean ROA across the dataset is approximately 0.0187, though with notable variability, as reflected in its standard deviation of 0.0158. This is consistent with the financial structure of Indonesian banks, which tend to operate within narrow profitability margins. Descriptive statistics also revealed non-normal distributions in some variables. For example, the skewness of ROA is positive, indicating that while most banks have relatively low ROA values, a few outliers have significantly higher performance levels. In contrast, the distribution of EB and EL is negatively skewed, indicating a concentration of data points near the higher end of the scale—suggesting most board members already have strong educational credentials.

The descriptive results support theoretical expectations grounded in Corporate Governance Theory and Resource-Based View (RBV). Board size, educational qualifications, and diversity not only reflect governance quality but are also strategic assets that influence firm capabilities. The use of panel data regression analysis in this study is methodologically grounded in the dual structure of the dataset, which encompasses both cross-sectional units (74 conventional banks) and time-series observations (2019–2023).

The analytical process began with estimating three standard panel data models—Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM)—to capture the relationship between board characteristics (BS, EB, and EL) and financial performance (ROA). These models were then evaluated using formal specification tests. The Chow Test was employed to compare the CEM and FEM, following the procedure outlined by Rosinta (2018), which recommends the FEM when the cross-sectional F-statistic is significant. In this study, the Chow Test confirmed that the FEM was preferable to the CEM.

Subsequently, the Hausman Test was conducted to determine whether the FEM or REM was more appropriate. The null hypothesis in this test posits that the REM is consistent and efficient, while the alternative favors the FEM if the unique errors are correlated with the regressors. As the Hausman Test statistic yielded a p-value of 0.7225, the null hypothesis could not be rejected, confirming that the Random Effect Model (REM) was the most suitable estimation technique for the data. This model selection is consistent with recent research in the Indonesian context.

Moreover, the panel data regression strategy enabled this study to account for bank-specific unobservable factors—such as managerial culture, regional operating environments, or governance infrastructure—that remain constant over time but vary between banks. Overall, the process of model testing and selection confirms that panel data regression is not only methodologically appropriate but also theoretically consistent with prior literature in banking and governance research. The choice of the REM facilitates more generalizable and efficient parameter estimates while adequately controlling for bank-level unobserved effects. This sets the stage for interpreting the governance-performance relationship with greater confidence in the robustness of the model's assumptions.

Furthermore, the value of the coefficient of determination, denoted as R^2, as a crucial diagnostic metric that quantifies how well the independent variables explain the variation in the dependent variable. In the context of this study, the Fixed Effect Model (FEM) yielded an R^2 value of 0.6232, indicating that approximately 62.32% of the variance in Return on Assets (ROA) across Indonesian conventional banks from 2019 to 2023 can be explained by the governance variables under study: Board Size (BS), Educational Background (EB), and Education Level (EL).

This R^2 value demonstrates a moderate to strong explanatory power, suggesting that these internal governance characteristics meaningfully influence bank performance. This finding is consistent with the argument presented by Ghozali and Gujarati (2017), who emphasized that R^2 serves not only as a measure of fit but also as an indicator of the model's explanatory robustness in social science research, particularly when interpreting corporate governance variables.

Furthermore, the Adjusted R^2 value, reported at 0.6110, adjusts the raw R^2 by penalizing the inclusion of additional variables that do not significantly improve model performance. The close proximity between R^2 and Adjusted R^2 in this study suggests that the model is well-specified and not overfitted. The coefficient for Board Size (BS) is 0.3652, indicating that a one-unit increase in board size leads to a 0.3652 unit increase in ROA, holding all else constant. This suggests that a larger board, when structured effectively, can provide enhanced oversight and collective strategic input, improving financial outcomes. The value of $t = 5.0153$ exceeds the critical t-table value, and the p-value is 0.0000, which is less than 0.05. According to the decision rule for hypothesis testing, the null

hypothesis is rejected, and the alternative hypothesis is accepted—indicating that Board Size has a significant effect on ROA.

The coefficient for Educational Background (EB) is 0.2925, meaning that a one-unit increase in the proportion of board members with business or economics educational background corresponds to a 0.2925 unit increase in ROA. This highlights the importance of technical and financial expertise in driving strategic financial outcomes. The associated t-value is 4.6139, exceeding the t-table threshold, and the p-value of 0.0000 is below 0.05. Therefore, the null hypothesis is rejected, and it can be concluded that Educational Background significantly affects ROA. The coefficient for Education Level (EL) is 0.3097, indicating that as the proportion of board members with postgraduate qualifications increases, the ROA increases by 0.3097 units. This implies that a more academically qualified board contributes positively to performance, potentially through improved analytical capabilities and decision-making. The t-value of 5.0603 is above the critical value, and the p-value is 0.0000, also below 0.05. Accordingly, the null hypothesis is rejected, confirming that Education Level has a significant effect on ROA.

CONCLUSION AND RECOMMENDATION

Conclusion

1. This study investigates the influence of board governance characteristics specifically Board Size, Educational Background, and Education Level on the financial performance of conventional banks in Indonesia, with Return on Assets (ROA) serving as the primary performance metric. The research draws upon a five-year panel dataset (2019–2023) involving 74 conventional banks and employs panel data regression techniques. Following a rigorous model selection process using the Chow and Hausman tests, the Fixed Effect Model (FEM) was determined to be the most appropriate estimation method.
2. The findings from the FEM estimation demonstrate that all three governance variables have a statistically significant and positive impact on ROA. First, Board Size is positively associated with financial performance, implying that banks with larger, well-structured boards are likely to benefit from enhanced oversight and broader strategic input. Second, Educational Background, defined as the proportion of board members with economics or business-related qualifications, is shown to significantly contribute to ROA, underscoring the importance of technical expertise in financial governance. Third, the Education Level of board members measured by the proportion holding postgraduate degrees also shows a positive and significant relationship with performance, indicating that advanced academic training strengthens strategic decision-making at the board level. Importantly, the simultaneous significance of all three variables further confirms that the internal composition and qualifications of the board play a critical role in driving profitability. These results are consistent with the Resource-Based View (RBV) and agency theory, both of which emphasize the strategic value of human capital in enhancing organizational outcomes.

Recommendations

1. Bank Management and Boards to recruit board members with advanced degrees and backgrounds in finance or economics to improve decision-making, keep board size suitable to the bank's complexity—big enough for expertise, but small enough for efficiency, and provide regular training for board members on risk, regulation, and economic trends to keep skills updated.
2. Regulators and Policymakers requires banks to disclose board qualifications, diversity, and governance performance clearly, set guidelines to encourage diversity on boards—not just education, but also experience, gender, and independence, and promote board evaluations that measure real impact, not just rule-following.
3. Future researchers add other governance factors like independence, gender, tenure, and ownership for deeper insights, include macroeconomic variables to separate internal and external influences on performance, use different performance measures (e.g., ROE, stock returns, ESG) for broader analysis, compare across sectors (e.g., Islamic banks or non-bank firms) for more general findings, and use longer timeframes to capture lasting effects and changes, especially after major events like COVID-19.

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