

ANALYSIS OF PROFITABILITY, ESG IMPLEMENTATION, CREDIT RISK AND FIRM VALUE (STUDY OF LISTED BANKS ON THE INDONESIA STOCK EXCHANGE 2019-2023)

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Abstract

This research is a type of quantitative research that uses secondary data from banking firms listed on the Indonesia Stock Exchange in 2019-2023. The title of this research is "Analysis of Profitability, ESG Implementation, Credit Risk and Firm Value (Study of Listed Banks on the Indonesia Stock Exchange 2019-2023)".

This study aims to analyze the influence of Profitability, Implementation of Environmental, Social, Governance on Firm Value and test the moderating role of Credit Risk on the influence of the relationship of Social and Governance aspects on Firm Value.

Banking firms listed on the Indonesia Stock Exchange are the population in this study. The sample selection was carried out using purposive sampling method by setting several criteria. The number obtained based on these criteria is 65 samples.

Based on the model selection test, the Fixed Effect Model (FEM) is the most appropriate panel regression model. Based on the FEM test, results obtained that: 1) Profitability has a positive influence on the value of banking firms, 2) Environmental aspects have no influence on the value of banking firms, 3) Social aspects have positive influence on the value of banking firms, 4) Governance aspects have no influence on the value of banking firms 5) Credit risk has no influence on the value of banking firms 6) Credit risk has a positive influence on the value of banking firms.

These results suggest that banks should enhance profitability through efficient asset management. Regarding ESG, banks must ensure genuine implementation beyond mere disclosure to build investor trust. The findings also indicate that good credit risk management can reduce its negative impact, maintaining firm value despite potential risks. This research contributes to the literature on financial performance, ESG, and risk management in the banking sector.

Keywords: *Profitability, Environmental, Social, Governance, Credit risk, Firm Value*

INTRODUCTION

The financial sector is one of the most important sectors in the national economy. All levels of society depend on the financial sector, especially banking, to carry out financial transaction activities (Chandra, 2016). The main role of banks is to collect and distribute public funds with the aim of assisting the implementation of development to increase economic growth, national stability, and equitable development to improve people's living standards. In this regard, one of the main concerns in the survival of firms, including banking, is financial difficulties. Inadequate financial management, such as having too much or too little money, can affect a firm's profitability, liquidity, and stability, which can affect its value.

Firm value is a concept that has many dimensions, covering various aspects of the firm's operational efficiency, stakeholder perception, and capital management. The value of a firm, especially in the banking sector, is influenced by a variety of factors, ranging from internal

governance mechanisms to external economic conditions. Conventionally, a firm's value is measured through metrics such as market capitalization, stock price ratio in the form of price-to-earnings ratio, and Tobin's Q, which as a whole reflects the firm's economic health and future growth potential.

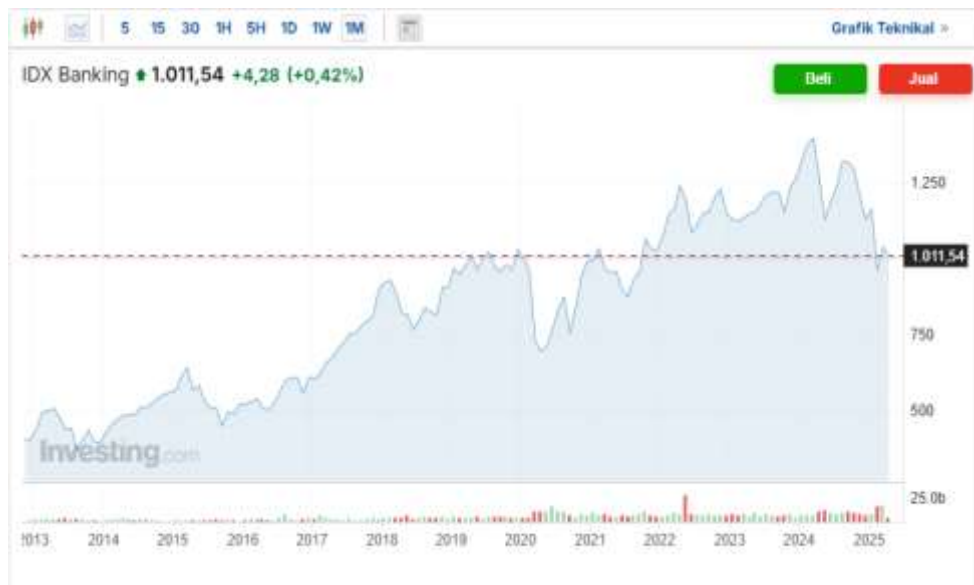


Figure 1. Banking Stock Index Prices in Indonesia
Source: <https://id.investing.com/indices/idx-banking>

The graph of IDX Banking's index over the past decade, from 2013 to 2025, shows the fluctuating dynamics of firm value. At the end of 2013, the chart showed a downward trend until the beginning of 2014, but the index saw an increase in 2015. The increase only lasted a short time, as the index briefly declined again in 2014 before returning to stable recovery until early 2018. The index was observed to decline at the end of 2018 and increase again in 2019. The banking index is starting to look to improve towards 2023 to 2024, but it still shows fluctuating values. The latest condition of the index experienced a sharp decline in early 2025, but in a short time the index improved again.

This phenomenon raises the question of why the banking sector index is experiencing unstable growth. Internal and external factors of banking firms are likely to be the cause of this volatility. The movement of the index also illustrates how investors' views are in assessing the performance and prospects of the banking sector. If the index rises, investors will be more confident that banks can get good profits and financial sector stability. On the other hand, a decline in the index is likely to indicate pressure due to increased interest rate changes, increased credit risk or regulatory changes affecting banking.

In the context of the green economy, there are green investment or green investments (Rezkyana, 2024). These investments fall under the category of sustainable investments that consider environmental, social, and governance, or ESG factors when deciding which investments to make or when lending money to a business as a consideration in making investment decisions or providing funding to a firm (Stobierski, 2021). With this aspects, it is hoped that it can provide positive feedback for the firm both in terms of sustainability and increasing firm value.

The term "Environmental, Social, Governance" triggered for the first time in United Nations Principles of Responsible Investment and later in a number of reports Corporate Social Responsibility (CSR) firm (Nugroho & Hersugondo, 2022). The United Nations Environment Programme and the Coalition for Environmentally Responsible Economies collaborated to promote this idea, which later led to the creation of the Global Reporting Initiative in 2001 (Galbreath, 2013). ESG is a measure of non-financial performance that includes three main factors that drive openness and desire, according to the Indonesia Stock Exchange 2020. These elements include environmental, social and governance.

The Environmental aspects takes into account how business activities affect the environment, including how natural resources are used, how waste is generated, and how humans treat plants and animals. The firm's reputation and relationships with suppliers, consumers and society are taken into account in the Social aspects. To achieve sustainability, the Governance aspects takes into account the formation of a management structure that places high value on moral behavior and honesty.

Return on Asset (ROA) is one of the elements that affect firm value other than ESG. The so-called financial measure Return on Asset (ROA) shows how well a business uses its asset resources to generate profits (Hery, 2017). Investors or shareholders usually concentrate on the amount of profit the firm makes. A high profit rate is often used as a reference for comparing performance between firms (Sofiani & Siregar, 2022).

Stable and favorable financial conditions usually attract investors, as they demonstrate the firm's potential to grow, avoid the risk of bankruptcy, and be consistent in distributing dividends to shareholders. To evaluate the extent to which the firm is able to print profits at a reasonable level, investors use the Return on Assets (ROA) indicator. The increase in corporate profits in general will have a positive impact on increasing the firm's value (Sofiani & Siregar, 2022).

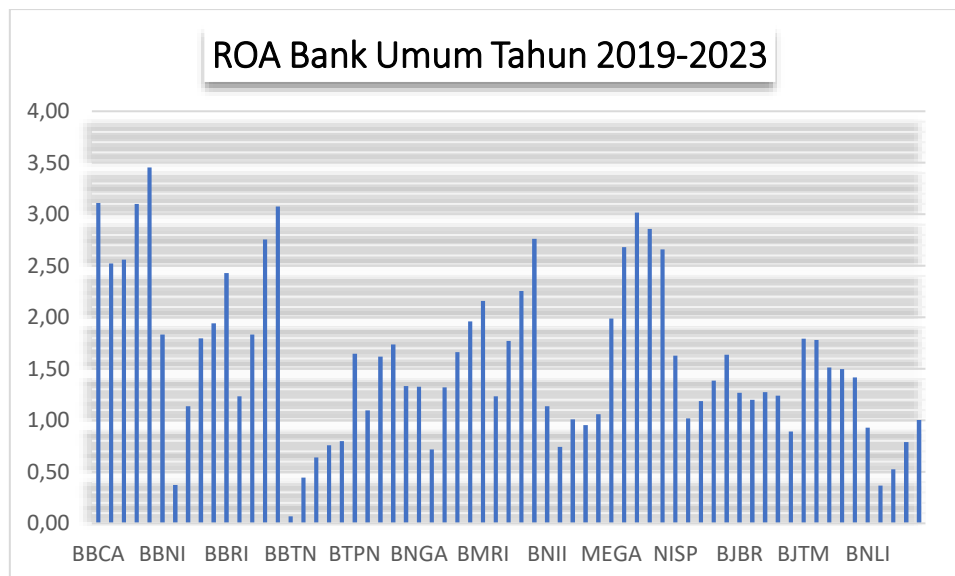


Figure 2. Commercial Bank ROA Chart for 2019-2023
 Source: Bank Annual Report

Based on the ROA data of commercial banks in Indonesia during the 2019–2023 period, it can be seen that there are variations in the financial performance of each bank from time to time. Each bank shows different trends and dynamics in achieving the return on assets rate (ROA), which reflects the influenceiveness of each in managing resources to generate profits. Most banks experience fluctuations in ROA from year to year, with an upward trend in some periods followed by a decline in others.

Credit risk cannot be separated from banking activities, namely risks caused because debtors do not carry out their obligations. Bad debt, which is also referred to as Non Performing Loan (NPL), is a measure of credit risk. NPLs are unavoidable, although banks use a number of risk management techniques to lower them (Maryadi & Susilowati, 2020). Banks should increase their Impairment Loss Reserves (CKPN) in response to an increase in non-performing loans (NPLs). The increase in CKPN has the potential to reduce profitability and if it continues can result in losses. Investors often react negatively to increased non-performing loans (NPLs), which prompts them to liquidate their shares (Maryadi & Susilowati, 2020). This causes the stock price to decrease, which can be followed by a decrease in the value of the firm.

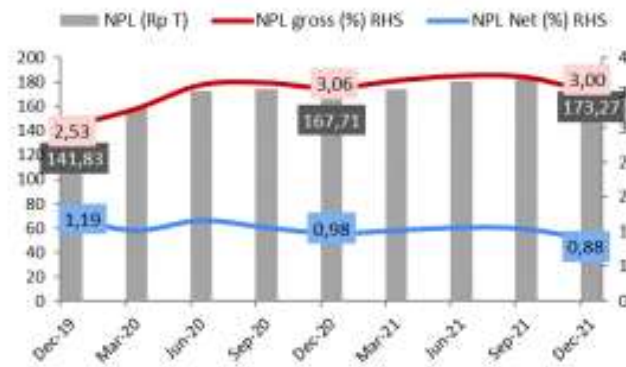


Figure 3. Trend Chart of Gross NPL and Net NPL Ratio December 2019-2021
 Source: Banking Industry Profile Report December 2021

The graph shows the trend of the gross NPL and net NPL ratios from December 2019 to December 2021. Based on the chart, nominal NPLs showed an increase from around IDR 141.8 trillion to IDR 167.71 in December 2020 and to IDR 173.27 trillion at the end of December 2021. The nominal increase is also shown by the gross NPL ratio which is quite high from 2.53% to 3.06% in December 2020. The gross NPL ratio then increased in the first and second to third quarters to 3.24%. However, in the fourth quarter of 2021, gross NPL decreased slightly at the end of 2021 to 3.00%. On the other hand, the net NPL ratio decreased from 1.19% to 0.98%, indicating that banks have increased their loss reserves (CKPN) to cover potential credit losses.



Figure 4. Trend Chart of Gross NPL and NPL Net Ratio December 2021-2023
 Source: Banking Industry Profile Report December 2023

From December 2021 to December 2023, there was an improvement in gross NPLs which decreased from 3.00% to 2.19%. This means that there are banking efforts to improve the quality of the loans disbursed. The net NPL ratio in the period remained stable at 0.71%-0.88%. A stable net NPL ratio indicates that banks continue to implement conservative policies. Although the NPL ratio tends to decline, the nominal NPL is still above Rp156-Rp170 trillion, meaning that credit risk in nominal terms has not decreased significantly.



Figure 5. Trend Chart of Gross NPL and NPL Net Ratio September 2022-2024

Source: Banking Industry Profile Report September 2024

The graph shows the latest data sourced from the third quarter SPI. From December 2023 to September 2024, it can be seen that gross NPLs showed an increase. In addition, the net NPL ratio still shows that it is in the same range, which is at 0.78%. In terms of nominal, NPLs remain high, which is above Rp160 trillion. This condition indicates that although banks are trying to maintain credit quality, in general credit risk is still an unresolved problem until the third quarter of 2024.

Research on the influence of profitability (ROA), ESG implementation, and credit risk on firm value shows inconsistent results. Handayani et al., (2023) and Risqi & Suyanto (2022) found that ROA has a negative influence on firm value, while different results are shown by Halimah & Komariah (2017) and Mumtazah & Purwanto (2020) who stated that ROA actually has a positive impact. Research related to ESG also varies. Research by Buallay (2019) and Mauliddin & Subardjo (2023) found that ESG has a positive influence on firm value, especially environmental aspects. Azmi et al., (2021) stated that there is a non-linear relationship between ESG and bank performance, with the greatest influence coming from the Environmental aspects. However, Xaviera & Rahman (2023) state that ESG does not have a positive impact overall, with only the Governance aspects having an influence, while the Environmental has a negative impact and Social is insignificant. Jeanice & Kim (2023) even found that ESG had no influence on simplified Tobin's Q and negatively impacted ROE.

Meanwhile, the influence of credit risk (NPL) on the firm's value is also not uniform. Handayani et al., (2023) show that NPLs actually have a positive influence on firm value, in contrast to the findings of Haryanto & Susanto (2023) and Maryadi & Susilowati (2020) which stated that there was no significant influence. Pracoyo & Ladjadjawa (2022) found that NPLs have a significant influence on firm value as measured by Tobin's Q. Several other studies have also shown that high NPL ratios can hinder the implementation of ESG programs as banks' focus shifts to risk management, thereby reducing their contribution to sustainability (Alyssa & Lestari, 2022; Astuti & Badjuri, 2023; Indira Pramesti & Wirajaya, 2019). Therefore, further research is needed that not only tests ESG and ROA directly against the firm's value, but also considers NPLs as a moderation variable in the relationship (El Khoury et al., 2023; Xaviera & Rahman, 2023).

This study aims to analyze the influence of profitability, implementation of Environmental, Social, Governance (ESG), and credit risk on the value of banking firms in Indonesia, with credit risk also tested as a moderation variable in the relationship between Environmental and Social aspects to firm value. The research objects include commercial banks listed on the Indonesia Stock Exchange during the 2019–2023 period, using ROA proxies for profitability, NPLs for credit risk, and Tobin's Q as a measure of firm value. The study is expected to make a theoretical contribution to the ESG and credit risk literature, as well as practical benefits for academics, bankers, and regulators in the formulation of sustainability-based policies and risk management to enhance corporate value.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Financial Intermediation Theory

This theory studies how financial institutions bridge surplus and fund deficit parties. Financial intermediation theory uses the perspectives of liquidity provision, risk transformation, and the reduction of information asymmetry to explain why banks and related financial institutions exist. Within this framework, the main idea is that intermediation helps in influenceive capital allocation by reducing transaction costs and increasing the credibility of borrower information. By accepting deposits and providing loans, banks function as intermediaries that select potential borrowers and conduct tasked monitoring to reduce agency conflicts, which if they occur directly can result in costly consequences (Hakimi et al., 2020)

Signaling Theory

Spence first proposed the idea of signal theory in an educational setting, but today it is widely used in fields such as social exchange, corporate finance, and human resource management. (Connelly et al., 2024). Signal theory is a key framework in economics modern and corporate finances that explain how entities communicate intrinsic qualities that cannot be observed to external stakeholders in an environment characterized by information asymmetry (Lee, 2022; Swain, 2022). Through observable actions and strategic decisions, firms send signals intended to reduce uncertainty about the quality, prospects, and impact of such decision-making.

Stakeholder Theory

This theory was developed in 1984 by Freeman as a managerial instrument (Xaviera & Rahman, 2023). Stakeholder theory is a theory that emphasizes the importance of a firm's relationship with all stakeholders, not just its shareholders. Freeman argues that the long-term performance and legitimacy of a business depend on a firm's ability to meet the interests and needs of various groups, such as employees, customers, suppliers, communities, regulators, and the natural environment (Bansal et al., 2023; Wang, 2024).

The Influence of Profitability on the Value of Banking Firms

One of the metrics used to assess a firm's capacity to generate profits based on asset management is the return on assets ratio or ROA (Hawalдар et al., 2022) . A high ratio indicates that the assets owned can be used to generate large profits. Halimah & Komariah (2017) in their research showed that ROA affects the value of the firm. These results are similar to the research of Mumtazah & Purwanto (2020). The discovery strengthens the hypothesis that the level of ROA can influence investor perceptions which can increase the value of the firm.

H1: Profitability has a positive influence on the value of banking firms

The Influence of Environmental Aspects on the Value of Banking Firms

Environmental problems may arise from operational activities that continue to evolve over time. The use of natural resources without considering environmental sustainability, pollution, and carbon emissions resulting from business operations are some aspects of environmental problems. Influenceive management of environmental practices can attract money from stakeholders and increase the value of research. Environmental factors have a positive influence on Tobin's Q, which shows a positive impact on the firm's value, according to the study (Buallay, 2019). The value of banking firms on the IDX is greatly influenced by environmental conditions, according to similar findings by (Nasution et al., 2024).

H2: Environmental Aspects have a positive influence on the value of banking firms

The Influence of Social Aspects on the Value Of Banking Firms

According to stakeholder theory, firms do not only focus on efforts to make profits, but must provide benefits to stakeholders by carrying out social responsibility efforts (Aboud & Diab, 2018). Social responsibility carried out by the firm is the basis that affirms that the firm has a responsibility to all stakeholders (stakeholders). Firms must be sensitive to social problems both in the community and within the firm. This social aspects is based on the relationships built by the firm with employees, customers, and society. By disclosing social factors in ESG, businesses can build positive relationships

with stakeholders and improve their reputations (Aboud & Diab, 2018). According to the findings of the study by Aboud & Diab (2018), Fatemi et al., (2018), Melinda & Wardhani (2020), social factors and business values are positively and significantly correlated.

H3: Social Aspects have a positive influence on the value of banking firms

The Influence of the Governance Aspects on the Value of Banking Firms

According to Almeyda & Darmansya (2019), the governance aspects refers to an ethics and integrity-based management system that includes board independence, information disclosure, and shareholder rights. Governance disclosure is critical to defusing agency conflicts, as *principal* Requires transparency to ensure firms do not act opportunist By increasing monitoring and transparency, the use of good governance can save the institution expenses. Corporate value creation and transparency driven by high ESG performance in the area of governance (Giannarakis et al., 2020). According to research Buallay (2019), governance improves Tobin's Q. Nasution et al., (2024) It also found that governance significantly affects a firm's value, which confirms the importance of this factor in increasing the organization's attractiveness to investors.

H4: Governance Aspects have a positive influence on the value of banking firms

The Influence of Credit Risk on the Value of Banking Firms

Ratio non-performing loans to the total amount of credit provided are known as the non-performing loan ratio. Customers with high NPLs will perform poorly. This is because high NPLs will make the cost of reserve for productive activities or other operational costs more expensive. (Srihayati et al., 2015) supports the statement, where high NPLs reflect the size of non-performing loans which will negatively impact the bank's performance which in turn negatively impacts the firm's value. Research conducted by Pracoyo & Ladjadjawa (2022) stated that NPLs had a significant influence on Tobin's Q.

H5: Credit risk negatively affects the value of banking firms

The Influence of Credit Risk as a Moderate Relationship between Environmental, Social Governance on the Value of Banking Firms

High NPL ratios can hinder the influenceiveness of ESG implementation on a firm's value, as banks must divert resources to address credit risk. This can lower operational efficiency and reduce the amount of money allocated to social and environmental programs. (Alyssa & Lestari, 2022; Indira Pramesti & Wirajaya, 2019). As a result, funding priorities for sustainability initiatives have decreased, so the bank's contribution to sustainable growth has also decreased (Alyssa & Lestari, 2022; Astuti & Badjuri, 2023). The positive influence of ESG implementation on a firm's value can weaken if credit risk is not managed properly (Xaviera & Rahman, 2023). Fachrezi et al., (2024) in its research confirms that influenceively managed credit risk can increase profitability, which plays an important role in creating value amid a trend of investors paying attention to ESG practices. Failure in credit risk management can result in uncertainty for investors. This will affect investor confidence in the firm so that the firm's value is reduced. Thus, credit risk can be a factor that weakens the relationship between ESG and corporate value

H6: Credit Risk plays a role in weakening the relationship between environmental Aspects and the value of banking firms

H7: Credit Risk plays a role in weakening the relationship between social Aspects and the value of banking firms

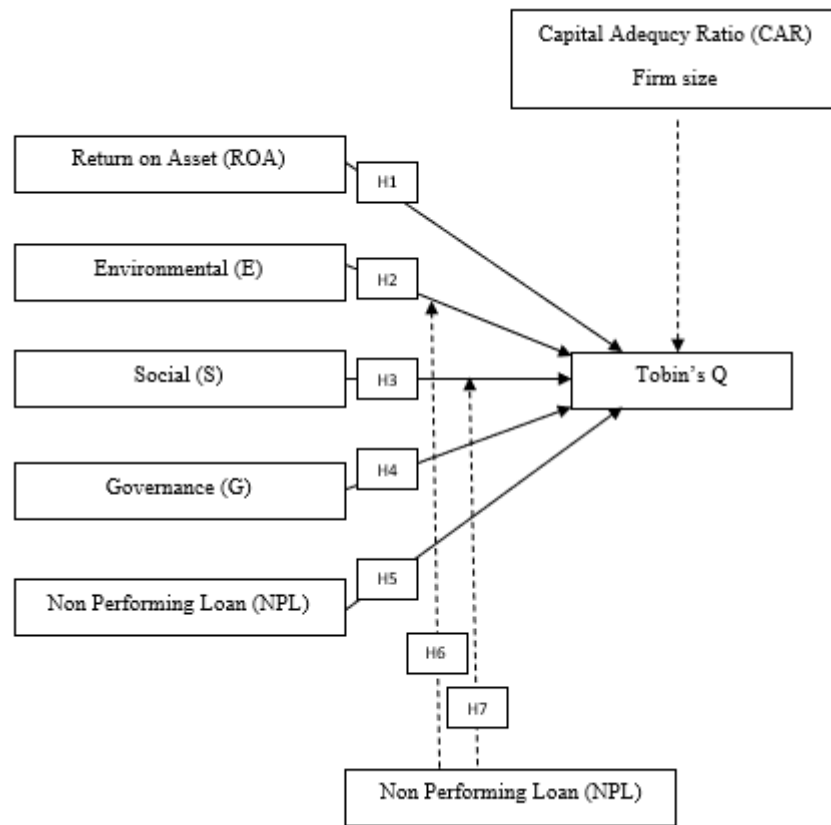


Figure 6. Research Model

RESEARCH METHODS

This study uses a quantitative approach with numerical data in the form of financial ratios from the research variables, which covers the period 2019–2023 and focuses on commercial banks listed on the Indonesia Stock Exchange (IDX). The research object consisted of dependent variables in the form of firm value (Tobin's Q), independent variables including profitability (ROA), Environmental, Social, Governance (ESG), and credit risk (NPL), and NPL was also tested as a moderator variable. The subjects of the study were all commercial banks listed on the IDX during the period.

The study population included banks that actively published financial statements and sustainability reports during 2019–2023, and the sample was selected by purposive sampling with specific criteria such as the availability of complete and consistent data. The data sources used are secondary data obtained from annual reports, sustainability reports accessed through the IDX's official website, the websites of each bank and ESGI. Data collection was carried out by documentation methods and literature studies.

The sampling criteria, as follows:

- 1) Commercial banks listed on the IDX during the 2019–2023 research period.
- 2) Commercial banks that have annual reports during the study period.
- 3) Commercial banks have ongoing reports during the study period.
- 4) Banks that have complete data on research during the research period.

Conceptual and Operational Definitions of Variables

Firm Values

Tobin's Q is a ratio calculated by dividing the market value of a firm's outstanding debt and shares by the cost of replacing its assets. If Tobin's Q value is greater than 1, it means that the market values the firm higher than the cost of replacing assets, this indicates high return on investment expectations and operational efficiency (Zaleski, 2024). On the other hand, if the value is below 1, it shows that investments to replace the firm's assets are likely to not produce adequate value in accordance with the costs incurred (Zaleski, 2024).

$$Tobin's\ Q = \frac{MVE + Debt}{Total\ Asset}$$

Profitability

A ratio called return on assets (ROA) is used to assess how well a business can make money from its assets Nafisah et.al, (2018). A higher ROA value indicates more influenceive asset management, which is an indication of the firm's success in using the asset.

$$ROA = \frac{Earning\ After\ Tax}{Total\ Asset}$$

Environmental Aspects

The firm strives to provide accurate and thorough information on how environmental factors are incorporated into its operations. Number of aspects indicators Environmental compared to the number of indicators that exist in the GRI aspects module Environmental. Use of GRI 300 for disclosure environmental (Ghazali & Zulmaita, 2022).

$$Env = \frac{Sum\ of\ Company's\ Disclosure\ Item}{Total\ of\ GRI's\ Disclosure\ Standard\ Item}$$

Social Aspects

Corporate social responsibility is the foundation that emphasizes the firm's obligations to all stakeholders. Number of aspects indicators Social compared to the number of indicators that exist in the GRI aspects module Social. Use of GRI 400 for disclosure Social (Ghazali & Zulmaita, 2022).

$$Soc = \frac{Sum\ of\ Company's\ Disclosure\ Item}{Total\ of\ GRI's\ Disclosure\ Standard\ Item}$$

Governance Aspects

Governance is a procedure applied to coordinate the firm's activities to achieve business improvement (Nugroho & Hersugondo Hersugondo, 2022). Number of aspects indicators Governance compared to the number of indicators that exist in the GRI aspects module Governance. Use of GRI 2 for disclosure Governance (Ghazali & Zulmaita, 2022).

$$Gov = \frac{Sum\ of\ Company's\ Disclosure\ Item}{Total\ of\ GRI's\ Disclosure\ Standard\ Item}$$

Credit Risk

One of the key metrics used to evaluate how well banking operations are performing is Non-Performing Loan or NPL. The NPL ratio is a metric that compares the overall amount of non-performing loans to the total amount of bank credit. (Dwihandayani, 2018).

$$NPL = \frac{Total\ NPL}{Total\ Loans}$$

Capital Adequacy (CAR)

By comparing capital to risk-weighted assets, the Capital Adequacy Ratio (CAR) evaluates a bank's capacity to withstand losses (Obeid, 2023). CAR is a metric used to assess the capital adequacy of banks. A comparison of one's own capital and risk-weighted assets, results in this ratio.

$$CAR = \frac{Equity}{Risk\ weighted\ assets} \times 100\%$$

Firm Size

Firm size is a reflection of the total assets owned by a firm. The natural logarithm (Ln) of total assets is used to determine the size of a firm with the following formula:

$$Firm\ size = Ln (Total\ Aset)$$

Data Analysis Techniques

Descriptive Statistical Analysis

The purpose of descriptive statistics in the analysis of this study is to provide a summary of the data used in this study, namely the variables ROA, *Environmental*, *Social*, *Governance*, NPL, Tobin's Q, CAR and *firm size*.

Classic Assumption Test

Before performing a regression analysis, it is important to ensure that the model used meets the basic assumptions of linear regression. Therefore, a classical assumption test is performed to see if the regression model is valid. Basuki & Prawoto (2019) stated that only multicollinearity and heteroscedasticity are required in the data regression panel, not all assumption tests are used. The following assumptions will be tested:

Multicollinearity Test

Ghozali (2011) states that the multicollinearity test is used to determine whether independent variables in the regression model are correlated. One way to test multicollinearity is to check the value of the Variance Inflation Factor (VIF). Strong multicollinearity should be addressed before switching to regression analysis if the VIF value is greater than 10.

Heteroscedasticity Test

The purpose of the heteroscedasticity test is to find out whether there is a difference in residual variance between observations in the regression model. This criterion is called homoscedasticity if the residual variance is constant across observations, and is called heteroscedasticity if it fluctuates. Regression models with homocedasticity properties are best (Ghozali, 2011). The validity of the model can be affected in the event of heteroscedasticity, which suggests that residual variance varies at all levels of the prediction. Heteroscedasticity does not occur if the probability value is greater than 0.05. On the other hand, heteroscedasticity occurs if the probability value is less than 0.05.

Panel Data Regression Analysis

One of the analysis techniques that combines cross-sectional and time series data is panel data regression analysis. This methodology results in an estimate known as Best Linear Unbiased Estimation by measuring the same cross-sectional data unit at different times (Zulfikar & STp, 2018). There are three regression analysis methods for panel data that have three aspects, which can be used to determine criteria in choosing a panel data regression estimation model:

Common Effect Model (CEM)

Common Effect Model integrates cross-section data and time series data, so it is considered the most straightforward model of panel data approach. Because this model does not take into account time or individual dimensions, the firm's behavioral data is considered constant all the time. This approach estimates panel data models using Ordinary Least Square (OLS), which is often known as the least squared methodology (Zulfikar & STp, 2018).

Fixed Effect Model (FEM)

Heterogeneity between individuals (cross section) can be managed with various interceptions in a fixed effect model. Dummy variables can be used to estimate various intercepts. This estimation methodology is known as the Least Squares Dummy Variable, or LSDV for short (Zulfikar & STp, 2018).

Random Effect model (REM)

A regression model for panel data that assumes that the parameters are random is called random effect model. Panel data that can be continuously linked across time and individuals will be estimated using a random effect model. Each firm's error term takes into account the variation of the intercept in random effect model (Zulfikar & STp, 2018). Heteroscedasticity can be eliminated by

using random effect model (Zulfikar & STp, 2018). Generalized Least Square Technique (GLS) and concepts Error Component (ECM) is another name for this concept.

Model Suitability Selection Test

- 1) Chow Test
The Chow test was performed to determine the regression of panel data using the Fixed Effect Model or Common Effect Model.
- 2) Hausman Test
The thirist test is used to determine the regression of panel data using the Fixed Effect Model or Random Effect Model.
- 3) Lagrange Multiplier (LM)
Lagrange Multiplier (LM) is used to determine the regression of panel data with a Random Effect Model or Common Effect Model.

Moderated Regression Analysis (MRA)

As an extension of standard panel data regression, moderated regression analysis (MRA) tests whether moderators, or other variables, affect the impact of independent variables on dependent variables. Based on the type of individual heterogeneity anticipated and the amount of variation available within the unit, the researcher must first choose between the models Common Effect, Fixed Effect, or Random Effect, depending on the nature of the assumed heterogeneity of individuals and the availability of variations within the unit (Simamora, 2022).

The Moderation variable is classified into 4 types (Solimun, 2011), as follows:

- 1) Pure Moderation
Variables that only play a role in moderating the relationship between independent and dependent variables without being independent variables themselves are called pure moderation. Pure moderation occurs when in the regression equation with and without moderation the coefficient β_1 is not significant, but the coefficient β_2 is significant.
- 2) Quasi Moderation
Variables that play a role in moderating the relationship between independent and dependent variables and become independent variables themselves are called quasi-moderation. Quasi-moderation occurs when in the equation regression equation with and without moderation the coefficients β_1 and β_2 are statistically significant.
- 3) Homologize Moderation
Variables that have the potential to become a moderation variable but do not interact with independent variables and have no direct influence on dependent variables are called moderation homologisers. Homologizer of moderation occurs when in the equation of regression equations with and without moderation the coefficients β_1 and β_1 are not statistically significant.
- 4) Predictor Moderation
If in the regression equation equation with and without moderation the coefficient β_1 is declared significant and the coefficient β_2 is not statistically significant, then it can be said that the variable only plays a role as a predictor.

The multiple regression model used is as follows:

- 1) Regression Analysis without Moderation

- a. Equation Model 1

- (1) Without Control Variables

$$FV_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 NPL_{it} + e_{it} \quad (1)$$

- (2) With Control Variables

$$FV_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 NPL_{it} + \beta_6 CAR_{it} + \beta_8 Total_Aset_{it} + e_{it} \quad (2)$$

2) Regression Analysis with Moderation

a. Equation Model 2

(1) Without Control Variables

$$FV_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 NPL_{it} + \beta_6 (Env_{it} \times NPL_{it}) + e_{it} \quad (3)$$

(2) With Control Variables

$$FV_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 NPL_{it} + \beta_6 (Env_{it} \times NPL_{it}) + \beta_7 CAR_{it} + \beta_8 Total_Aset_{it} + e_{it} \quad (4)$$

b. Equation Model 3

(1) Without Control Variables

$$FV_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 NPL_{it} + \beta_6 (Soc_{it} \times NPL_{it}) + e_{it} \quad (5)$$

(2) With Control Variables

$$FV_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 NPL_{it} + \beta_6 (Soc_{it} \times NPL_{it}) + \beta_7 CAR_{it} + \beta_8 Total_Aset_{it} + e_{it} \quad (6)$$

Hypothesis Test

Coefficient of Determination (R^2)

Ghozali (2011) states that R^2 measures the percentage of variance of dependent variables that can be explained by the model's independent variables. A good model is indicated with an R^2 value of around 1, while a less influenceive model is indicated with a number close to 0. The level of independent and moderate factors can explain the variance in financial performance indicated by this coefficient.

F Test

To determine whether each independent variable included in the model has an impact on the dependent variable at the same time, a statistical test F is used (Ghozali, 2011). The hypothesis that independent factors have a simultaneous impact on dependent variables is tested using this test. It can be concluded that independent factors significantly affect the overall dependent variable if the F-value is significant ($p\text{-value} < 0.05$).

T Test

The regression coefficient can be tested separately using the t-test. An alternative hypothesis (H_a), which is accepted if there is a significant influence between independent and dependent variables, is created to perform the t-test. The significance level (α) is set at 0.05. In addition, the calculated t-value and the t-table are compared, and if the calculated t-value is higher than the t-table, H_a is accepted.

RESULTS AND DISCUSSION

Description of Research Data

The subjects of the study are banks listed on the Indonesia Stock Exchange. The secondary data used is in the form of annual reports and bank follow-up reports for 2019–2023. Sampling with purposive sampling is a sampling approach that is carried out with a number of predetermined criteria.

Table 1. Research Sampling Criteria

No	Sample Criteria	Sum
1	Commercial banks listed on the IDX during the 2019-2023 research period	47
2	Commercial banks that did not have sustainability reports during the 2019-2023 research period	(29)
3	Commercial banks that do not provide complete data on research variables	(2)
4	Commercial banks that are announced because of outliers	(3)
Research Sample		13
Total Sample (N) = 13 x 5 Years		65

The table shows the number of research samples that meet the criteria, namely 13 banking firms. The research period was conducted in 2019-2023. Therefore, the total research sample used was 13 banks multiplied by 5 years of research, so that there were 65 observations.

Data Analysis

1. Descriptive Analysis

The following table shows the number of observations, Mean, standard deviation (Std. Dev), minimum value (Minimum), maximum value (Maximum) of the research variable. The proxy variables used in the following descriptive statistics are Tobins Q(Y), ROA(X1), Env(X2), Soc(X3), Gov(X4), NPL(X5). In addition to the main variables, there are control variables in the form of CAR and firm size.

Table 3. Descriptive Statistical Analysis Results

Variable	Obs	Mean	Std. Dev.	Minimal	Maximum
Tobins_Q	65	1,061521	0,2001527	0,85180	1,702045
TOBINS Q	65	1,582934	0,7861116	0,06712	3,455568
Env	65	0,460963	0,2537005	0,16667	1
Soc	65	0,576721	0,2464957	0,13889	1
Gov	65	0,792416	0,3530307	0,09091	1
NPL	65	0,971077	0,5911486	0,31	2,96

Based on the descriptive statistical table, it can be described as follows:

- 1) The Mean Tobins Q is 1.061521 with a standard deviation of 0.2001527. PT Bank Bank SMBC Indonesia Tbk has the lowest Tobins Q in 2023 at 0.8518069. In contrast to PT Bank Central Asia Tbk which had the highest Tobins Q value in 2019, which was 1.702045.

- 2) The Mean ROA is 1.582934 with a standard deviation of 0.7861116. PT PT Bank Tabungan Negara Tbk in 2019 had the lowest value of 0.0671195 and PT Bank Central Asia had the highest value of 3.455568 in 2023.
- 3) The Mean Env shows a figure of 0.4609629 with a standard deviation of 0.2537005. The lowest value is owned by PT Bank Pembangunan Jawa Timur Tbk which is 0.16667, on the other hand, the highest value is 1 owned by PT Bank Negara Indonesia (2020), Bank Rakyat Indonesia (2020 and 2021), PT Bank SMBC Indonesia Tbk (2020 and 2021), PT Bank Mandiri Tbk (2021) and PT Bank Pembangunan Jawa Barat Tbk (2020).
- 4) The Mean Soc shows a figure of 0.5767205 with a standard deviation of 0.2464957. The lowest value of 0.13889 is owned by PT Bank Permata Tbk (2022 and 2023). The highest score is 1 owned by PT Bank Central Asia in (2019), PT Bank Negara Indonesia Tbk (2020), Bank Rakyat Indonesia (2020 and 2021), PT Bank SMBC Indonesia Tbk (2020 and 2021), PT Bank Mandiri Tbk (2021) and PT Bank Pembangunan Jawa Barat Tbk (2020).
- 5) The Mean Gov shows the number 0.7924155 with a standard deviation of 0.3530307. The lowest value of 0.9091 was owned by PT Bank Permata Tbk in 2020. The highest value is 1 owned by PT Bank Negara Indonesia Tbk in (2019-2023), PT Bank Rakyat Indonesia Tbk in (2019-2023), PT Bank Tabungan Negara Tbk (2019-2023), PT Bank SMBC Indonesia Tbk (2020 and 2023), PT Bank CIMB Niaga (2019, 2020, 2022, and 2023), PT Bank Mandiri Tbk (2019-2023), PT Bank Maybank Indonesia Tbk (2019, 2020, and 2023), PT Bank Mega Tbk (2023), PT Bank OCBC NISP (2022 and 2023), PT Bank Pembangunan Jawa Barat (2019,2020,2022, and 2023), East Java Development Bank (2019, 2022, and 2023), and PT Bank Permata Tbk (2019,2020,2022, and 2023).
- 6) The Mean NPL was 0.9710769 with a standard deviation of 0.5911486. PT Bank Mandiri in 2022 had the lowest score of 0.31 and PT Bank Tabungan Negara Tbk had the highest score of 2.96.

2. Classic Assumption Test

According to Basuki & Prawoto (2019) In the regression of panel data, not all classical assumption tests are applied, only multicollinearity and heteroscedasticity are required.

a. Multicollinearity Test

This study uses the Variance Inflation Factor (VIF) value as a multicollinearity test. If the VIF value is > 10 , then there is a strong multicollinearity, which needs to be overcome before proceeding to regression analysis. Based on the VIF value of the equation model 1 shows that the VIF value of each variable is less than < 10 . The VIF model in equation model 2 also shows the VIF value of each variable less than < 10 . In equation model 3, it shows the presence of symptoms of multicollinearity, so mean centering is carried out on variables that indicate symptoms of multicollinearity. After mean centering, the symptoms of multicollinearity in equation 3 are resolved. Therefore, based on the results of the three models, it indicates that there are no symptoms of multicollinearity in this study.

b. Heteroscedasticity Test

Based on the results of the heteroscedasticity test on 3 equation models, all three obtained a probability value of less than 0.05 which indicates the existence of heteroscedasticity in the model. Therefore, this study uses the robust standard error in the panel regression analysis to ensure that the estimated results remain valid. The model used is Fixed Effect Model (FEM) by the VCE (robust) in order to estimate standard error more reliably and reduce potential bias due to violations of classical assumptions (Raharjo, 2024).

3. Model Suitability Selection Test

There are three regression analysis methods for panel data that have three aspects, which can be used to determine criteria in choosing a panel data regression estimation model.

a. Chow Test

Based on the chow test, a probability of $0.0000 < 0.05$ was obtained, so it can be concluded that FEM is better than CEM.

b. Hausman Test

Based on Hausman's test, a probability of < 0.05 was obtained, so it can be concluded that FEM is better.

c. Test Lagrange Multiplier (LM)

Based on the chow test and the hausman test that have been performed, the selected model is FEM, so a lagrange multiplier test is not required.

4. Panel Data Regression Analysis

Based on the chow, hausman, and lagrange multiplier tests, the most suitable result was FEM. The following are the results of the regression of panel data with FEM:

**Table 3. Fixed Effect Model (FEM) Regression Results
without Control Variables**

Variable	Coefficient	Std. err.	t-statistic	Prob
ROA	0,0441235	0,0165491	2.67	0,010
Env	-0,0889578	0,0382814	-2.32	0,025
Soc	0,114293	0,0392099	2.91	0,005
Gov	-0,023206	0,0201924	-1.15	0,256
NPL	0,0148771	0,0196813	0.76	0,453
F sig				0,0089
R ²				0,2718

**Table 4. Fixed Effect Model (FEM) Regression Results
with Control Variables**

Variable	Coefficient	Std. err.	t-statistic	Prob
ROA	0,0444699	0,0167759	2,65	0,011
Env	-0,0851759	0,0418006	-2,04	0,047
Soc	0,1071723	0,0469428	2,28	0,027
Gov	-0,0197645	0,0208573	-0,95	0,348
NPL	0,0113989	0,0225084	0,51	0,615
CAR	0,0020575	0,0024912	0,83	0,413
Total_Aset	-0,0398935	0,065499	-0,61	0,546
F sig				0,0267
R ²				0,2840

The addition of control variables in the form of CAR and Total Assets to the Fixed Effect Model (FEM) model, although not significant individually, was shown to improve the model's ability to explain the variation in the firm's value, which was shown by the increase in R² from 0.2718 to 0.2840. In addition, the model becomes more stable, which is indicated by the disappearance of the indication of heteroscedasticity after the addition of the control variable. Although there are differences in estimation approaches, namely the use of robust standard error in models without control because there is heteroscedasticity, and without robust in models with controls because heteroscedasticity is not detected.

This indicates that the addition of control variables contributes to the improvement of classical assumptions and model stability, thereby improving the overall reliability of the estimates. The change in the significance of the Social variable, as well as the improvement in the assumption of heteroscedasticity after the addition of the control also showed that the panel regression model was sensitive to the addition of variables. This means that the structure of the initial model is not yet completely stable, and the resulting estimates can change significantly when new variables are included.

5. Moderated Regression Analysis (MRA)

In this study, the moderation test was used to test the influence of credit risk variables as a moderation variable of the relationship between ESG variables, Environmental and Social aspects on firm value.

Table 5. Fixed Effect Model (FEM) Moderation Regression Results without Control Variables

Variable	Coefficient	Std. Err.	t-statistic	Prob
ROA	0,0434292	0,0126709	3,43	0,005
Env	-0,0201421	0,0513236	-0,39	0,702
Soc	0,1123595	0,0524933	-1,06	0,054
Gov	-0,0289127	0,0271897	1,70	0,309
NPL	0,0327341	0,0192291	1,04	0,114
Env_NPL	-0,0829384	0,0339609	-2,44	0,031
F sig				0,0019
R ²				0,3114

Table 6. Fixed Effect Model (FEM) Moderation Regression Results with Control Variables

Variable	Coefficient	Std. Err.	t-statistic	Prob
ROA	0,0437829	0,0135357	3,23	0,007
Env	-0,0123171	0,0439097	-0,28	0,784
Soc	0,1055027	0,0665426	1,59	0,139
Gov	-0,0252778	0,0272483	-0,93	0,372
NPL	0,0304573	0,0291877	1,04	0,317
Env_NPL	-0,088266	0,0328365	-2,69	0,020
CAR	0,0024912	0,001612	1,55	0,148
Total_Aset	-0,0438017	0,05108	-0,86	0,408
F sig				0,0010
R ²				0,3284

The addition of control variables in the form of CAR and Total Assets to the Fixed Effect Model (FEM) moderation model involving the interaction of Environmental and NPL variables had a positive impact on the quality of the model, which was reflected in the increase in the R² value from 0.3114 to 0.3284. Although the control variables are not significant individually, their presence helps to increase the apparent power of the model as a whole. In addition, the moderation influence between the environmental aspects (Env) and credit risk (NPL) remained significant after the addition of controls, which indicates the stability of the moderation interaction. However, there are small changes in the coefficients

and significance of the main variables, so it can be concluded that the regression model is sensitive to the addition of other variables.

Based on the regression test without interaction variables, it shows that the environmental aspects has a negative and significant influence on the firm's value. Furthermore, the regression test involving the environmental and NPL inreaction variables showed negative and significant results. Therefore, it can be concluded that credit risk proxied with NPLs is a type of Quasi Moderation.

Table 7. Fixed Effect Model (FEM) Moderation Regression Results without Control Variables

Variable	Coefficient	Std. Err.	t-statistic	Prob
ROA	0,0442833	0,0111653	3,97	0,002
Env	-0,0953445	0,0330599	-2,88	0,014
Soc	0,1045923	0,0482703	2,17	0,051
Gov	-0,0210261	0,0259645	-0,81	0,434
NPL	0,0033689	0,0099329	0,34	0,740
Soc_NPL	0,1080538	0,0248899	-4,34	0,001
F sig				0,0003
R ²				0,3502

Table 8. Fixed Effect Model (FEM) Moderation Regression Results with control Variables

Variable	Coefficient	Std. Err.	t-statistic	Prob
ROA	0,0446375	0,0124342	3,59	0,004
Env	-0,1029694	0,0363956	-2,83	0,015
Soc	0,2334436	0,1009311	2,31	0,039
Gov	-0,0169303	0,0238936	-0,71	0,492
NPL	0,0765805	0,0405594	1,89	0,083
Soc_NPL	-0,1250108	0,0402374	-3,11	0,009
CAR	0,003315	0,0016102	2,06	0,062
Total_Aset	-0,0155483	0,0527214	-0,29	0,773
F sig				0,0000
R ²				0,3784

The addition of control variables in the form of CAR and Total Assets to the Fixed Effect Model (FEM) moderation model involving the interaction of Social and NPL variables had a positive impact on the quality of the model, which was reflected in the increase in the R² value from 0.3502 to 0.3784. Although the control variables are not significant individually, their presence helps to increase the apparent power of the model as a whole. In addition, the moderation influence between the Social aspects (Soc) and credit risk (NPL) remained significant after the addition of controls, indicating the stability of the moderation interaction. However, there are small changes in the coefficients and significance of the main variables, so it can be concluded that the regression model is sensitive to the addition of other variables.

Based on the regression test without interaction variables, it shows that the Social aspects has no influence on the firm's value. Furthermore, the regression test involving the social and NPL inreaction variables showed negative and significant results. Therefore, it can be concluded that credit risk proxied with NPLs is a type of Pure Moderation.

6. Hypothesis Test

a. Coefficient of Determination

Based on the FEM model used, the value of the determination coefficient in the regression equation model without moderation was 27.18%, while 71.88% was explained by the unstudied variable. This means that the variables of profitability, environmental, social, governance and credit risk affect the firm's value by 27.18%.

b. F Test

The statistical test F is used to test whether all the independent variables included in the model have a simultaneous influence on the dependent variables (Ghozali, 2011). In this study, the results of the F test showed the probability in equation model 1 of $0.0267 < 0.05$. Therefore, equation 1 shows that the variables ROA, Env, Soc, Gov, NPL simultaneously affect the Tobins Q value.

c. T test

The regression coefficient can be tested separately using the t-test. If the probability is less than 0.05, the hypothesis is accepted. Based on $df = \alpha$, $(nk) = 0.05$; $(65 - 6) = 0.05$; 58, the T-table value in this study is 1.672.

Table 9. T Test Results

Variable	T-Value	T-Table	Prob	Influence
ROA	2,67	1,672	0,010	Positive (+) and sig
Env	-2,32	1,672	0,025	Negative (-) and sig
Soc	2,91	1,672	0,005	Positive (+) and sig
Gov	-1,15	1,672	0,256	Positive (+) and not sig
NPL	0,76	1,672	0,453	Positive (+) and not sig
Env_NPL	-2,44	1,672	0,031	Negative (-) and sig
Soc_NPL	-4,34	1,672	0,001	Negative (-) and sig

Based on the t-test above, it can be concluded that:

1) Profitability to the value of banking firms

Based on the table, it shows a probability of ROA of $0.010 < 0.05$ and has a positive coefficient direction. This means that the hypothesis (H1) which states that profitability has a positive influence on the value of the banking firm is accepted.

2) Environmental Aspects of the Value of Banking Firms

Based on the table, the probability of the Environmental aspects is $0.025 < 0.05$ and has a negative coefficient direction. This means that the hypothesis (H2) which states that the Environmental aspectss has a positive influence on the value of banking firms is rejected.

3) Social Aspects of the Value of Banking Firms

Based on the table, it shows the probability of the Social aspects of $0.005 < 0,05$ and has a positive coefficient direction. This means that the hypothesis (H3) which states that the social aspects has a positive influence on the value of banking firms is accepted.

4) Governance Aspects of the Value of Banking Firms

Based on the table, the probability of the Governance aspects is $0.256 > 0.05$ and has a negative coefficient direction. This means that the hypothesis (H4) which

states that the Governance aspects has a positive influence on the value of the banking firm is rejected.

5) Credit risk to the value of a banking firm

Based on the table, it shows a probability of NPL of $0.453 > 0.05$ and has a positive coefficient direction. This means that the hypothesis (H6) which states that credit risk has a negative influence on the value of banking firms is rejected.

6) Credit risk moderates the influence of environmental aspects on the value of banking firms

Based on the table, the probability of environmental and NPL interaction is $0.031 < 0.05$ and has a negative coefficient direction. This means that the hypothesis (H6) which states that credit risk weakens the influence of environmental aspects on the value of banking firms is accepted.

7) Credit risk moderates the influence of social aspects on the value of banking firms

Based on the table, the probability of Social and NPL interaction is $0.001 < 0.05$ and has a negative coefficient direction. This means that the hypothesis (H6) which states that credit risk weakens the influence of social aspects on the value of banking firms is accepted.

Discussion

The Influence of Profitability on the Value of Banking Firms

The results of the study show that ROA, a measure of profitability, has a positive impact on firm value. This suggests that investors have more faith in the firm's performance prospects if the firm makes more profits from its assets. A high return on assets (ROA) indicates how well a business manages its resources to generate profits. Ultimately, this condition increases the value of the stock.

In line with signal theory, good financial performance in this case in the form of profitability shown by ROA is able to provide positive signals to the market so as to create a positive perception of investors and affect the value of the firm. The results of this study are in line with (Halimah & Komariah, 2017). Similar results were shown in a study conducted by (Mumtazah & Purwanto, 2020).

The Influence of Environmental Aspects on the Value of Banking Firms

The issue of sustainability at the global level is increasingly an important factor that must be considered in carrying out business activities. According to stakeholder theory, the firm is not only responsible to the shareholders but also to the environment. In this study, it is shown that Environmental negatively affect the firm's value. The same results are shown by (Xaviera & Rahman, 2023). In the context of emerging markets such as Indonesia, firms have not fully internalized environmental issues in the firm's assessment (Fatemi et al., 2018).

Nizamuddin et al., (2024) in his research highlights that environmental aspects in the context of ESG can affect financial performance, especially when such activities require large costs. This has caused confusion among investors, who consider that these efforts increase costs without any guarantee of return. Garcia et al., (2017) It also revealed that the disclosure of environmental aspects to the firm's value is not always strong, depending on the industry sector and regulations. Generally, the environmental will be more relevant and noticed by investors in industrial sectors that have a major impact on the environment. Therefore, depending on the industrial sector in which it operates, the application of environmental elements does not always show a positive impact on the value of the firm.

While there is research showing positive impacts, challenges remain in transforming sustainability practices into direct financial gains. Often investments in sustainability are not fully recognized by investors unless they are influenceively communicated (Cui, 2022). In sectors such as banking, where the direct environmental impact is not very visible, these challenges are even greater, potentially causing environmental performance to be a low priority in investment

valuations (Harimauwan & Lukman, 2023). Based on this, the development of strategies should be carried out by firms to clearly explain the long-term financial benefits of their environmental initiatives.

The Influence of the Social Aspects on the Value of Banking Firms

The Social aspects in the ESG framework refers to how a business interacts with its stakeholders, including the community, staff, and customers. This study shows that the Social aspects has a positive impact on the value of banking organizations. According to Purwanti et al. (2024), the use of CSR as a strategic tool by banks can improve the firm's image, which in turn can attract investors and increase stakeholder engagement.

Banks can gain a competitive advantage in the market by improving a company's reputation, improving financial performance, and ensuring transparency through governance and reporting. Banks that prioritize and communicate their social contributions will experience increased value and long-term sustainability as stakeholders increasingly demand accountability in social practices.

The Influence of the Governance Aspects on the Value of Banking Firms

Aspects governance in the context of ESG refers to the mechanisms, processes and structure of corporate governance. Governance play a role in ensuring that the firm is managed and run properly and can be accounted for to all stakeholders. ESG aspects in particular governance, is considered to have the potential to make a positive contribution to financial performance due to increased transparency, reduced risk, and increased investor confidence (Nanda & Yandari, 2025)

Aspects governance This study shows that there is no influence on the firm's value. In the banking sector, there are regulations for the implementation of corporate governance (governance) cause Heterogenitas Structure governance interbank relationship, which ultimately has a less significant impact, especially if it is only a formality. Mollah & Zaman, 2015) in his research stated that the application of governance Strictly regulated by regulators cannot guarantee an increase in the value of the firm if it is not implemented influenceively.

The Influence of Credit Risk on the Value of Banking Firms

Credit risk is an inseparable risk from banking. These risks are reflected in NPLs. The higher the NPL, the higher the risk of non-performing loans. This results in a decrease in profits, because banks must set aside reserves for credit risk. High credit risk also sends a negative signal to the market regarding the bank's performance and risk management.

However, the results of this study show that there is no influence of credit risk on the value of the firm. This is similar to research (Maryadi & Susilowati, 2020) and (Kansil et al., 2021). In general, banks in Indonesia have risk anticipation efforts Non-Performing Loan in the form of adequate reserves through the Impairment Loss Reserve (CKPN). Therefore, credit risk that is able to be well anticipated by banks, does not directly affect the value of the firm.

The Influence of Credit Risk as a Moderating Variable in the Relationship Between Environmental to the Value of the Firms

A firm's attention to environmental aspects, such as energy efficiency, waste management, and carbon emission reduction, can enhance a firm's reputation and attract ESG-focused investors, which in the long run ultimately increases the firm's value. Khan et al., (2024) Shows that banks that implement sustainability practices contribute positively to social and environmental outcomes while increasing their profitability. This positive perception can lead to higher valuations as the market rewards firms that demonstrate a commitment to responsible operations. In the context of the banking industry, an increase in NPLs can significantly reduce such positive impacts.

Based on the regression results, the interaction coefficient between Environmental and NPL was negative and statistically significant. This shows that when credit risk increases, the positive influence of the Environmental against the value of the firm becomes reduced or not as strong as when credit risk is low. In other words, the results show that credit risk weakens the

relationship between the Environmental to the value of the firm. These results are supported by Al Hazmi et al., (2024) which states that a firm's ability to participate in environmental initiatives may be reduced if credit risk limits its operations. Ultimately, it will weaken the influence on the firm's value. In conditions of high credit risk, firms will prioritize the funds they have to overcome these risks.

The Influence of Credit Risk as a Moderating the Relationship Between Social to the Value of the Firms

Apek Social in the context of ESG refers to the firm's relationship with the community, employees, customers, and other stakeholders. Good social practices such as corporate social responsibility programs, protection of employee rights and other social practices can improve the firm's reputation which will have an impact on the firm's value. However, in the context of banking, when banks have to deal with the high credit risks reflected in NPLs, the market will prioritize financial health and operational efficiency over running social programs. This means that investor confidence will decline as financial risks increase, even though the firm has been carrying out social activities.

Based on the regression results, the interaction coefficient between Social and negative and significant credit risk (NPL). That is, when credit risk increases, the positive influence of the implementation of the Social to the firm's value becomes weaker. In other words, the results shows that credit risk weakens the influence of the implementation of aspects Social to the value of the firm. This is because when firms face high operational risks, investors tend to focus on the bank's ability to manage risks rather than social programs that do not directly affect the firm's profitability. As credit risk increases, markets may view the bank's environmental commitments with skepticism, questioning whether these efforts can yield tangible gains as the institution struggles with asset quality and potential financial instability (Arintoko et al., 2024).

CONCLUSION

The conclusions of this study can be described as follows:

1. The value of banking firms is positively influenced by profitability. This indicates that the value of the firm will rise or fall in response to low or high profitability. On the other hand, low profitability can result in a decline in the value of the firm.
2. The implementation of environmental aspects in the context of ESG has a negative impact on the value of banking firms. This indicates that the high implementation of environmental aspects can reduce the value of banking firms.
3. The implementation of social aspects in the context of ESG has a positive impact on the value of banking firms. This indicates that the high implementation of the Social aspects can increase the value of banking firms.
4. The implementation of the Governance aspects has no influence on the value of the banking firm. This indicates that the high implementation of the Governance aspects cannot increase the value of banking firms.
5. Credit Risk has no influence on the value of the banking firm. This indicates that the high risk of corruption cannot reduce the value of the firm.
6. Credit Risk plays a role in weakening the relationship between environmental aspects and the value of banking firms. This means that in the condition of a banking firm with a high level of credit risk, the contribution of environmental disclosure or implementation to the increase in the firm's value becomes suboptimal or underappreciated by the market.
7. Credit Risk plays a role in weakening the relationship between social aspects and the value of banking firms. This indicates that in conditions of high credit risk, the market or investors pay more attention to financial conditions than to corporate social commitments.

Implication

The implications of this research include:

1. This research can be one of the literature references on the influence of profitability, environmental, social, governance, and credit risk on firm value. The results of the study show the implementation of the theory of financial intermediation, signals, and stakeholders which play an important role in describing the firm's internal conditions, providing signals to investors and the influence of efforts to fulfill responsibilities to stakeholders in the banking sector.
2. Results that show profitability have a positive influence on the firm can be used as material for evaluating banking management to carry out influenceive and efficient asset management so that optimal balance can be obtained. The firm's ability to generate these profits is one of the benchmarks for investors to determine their investment decisions which ultimately have an impact on the firm's value.
3. In relation to ESG implementation, firms must consider and ensure whether real implementation has been implemented or just a disclosure for regulatory compliance. With real implementation, it will be able to help reduce negative perceptions of investors or even create a positive perception of the firm's contribution to Environmental, Social, and Governance aspects.
4. Credit risk that does not have a negative influence on the firm's value indicates the firm's good ability to implement risk management. If not managed properly, credit risk will encourage negative investor perception and can even reduce the value of the firm.

Limitations and Suggestions

This research has limitations, including:

1. This study has a small sample, because there are still many banks that do not have sustainability reports in the research period, so the next study is recommended to choose business sectors that have revealed a lot of sustainability.
2. This study uses the 2019-2023 period involving the pandemic period, so there is a possibility that the data is not able to explain the actual influence that occurs when conditions are stable. Therefore, it is recommended that further research not include the pandemic period to obtain accurate results and interpretations.
3. Because this study uses a number of variables that are specific to banking, the findings cannot be applied to other industries. Therefore, the selection of other industrial sectors whose findings can be applied in general can be the focus of future research.

BIBLIOGRAPHY

- Aboud, A., & Diab, A. (2018). The impact of social, environmental and corporate governance disclosures on firm value. *Journal of Accounting in Emerging Economies*, 8(4), 442–458. <https://doi.org/10.1108/JAEE-08-2017-0079>
- Al Hazmi, R. A., Ramadhan, A., & Firmansyah, A. (2024). *Moderating Role of Profitability in The Association Between Green Accounting and Firm Value*.
- Almeyda, R., & Darmansya, A. (2019). The influence of environmental, social, and governance (ESG) disclosure on firm financial performance. *IPTEK Journal of Proceedings Series*, 5, 278–290.
- Alyssa, H. P., & Lestari, H. S. (2022). Pengaruh Manajemen Risiko Kredit Terhadap Kinerja Keuangan Bank Umum Yang Terdaftar Di Bursa Efek Indonesia. *Ijd-Demos*, 4(1). <https://doi.org/10.37950/ijd.v4i1.184>
- Arintoko, A., Badriah, L. S., Rahajuni, D., Kadarwati, N., & Priyono, R. (2024). The Impact of Macroeconomic Variables on Credit Risk: Evidence Regarding Sustainable Lending in ASEAN

- Countries. *International Journal of Sustainable Development and Planning*, 19(4), 1589–1597. <https://doi.org/10.18280/ijstdp.190435>
- Astuti, L. Y., & Badjuri, A. (2023). Pengaruh NPL dan LDR Terhadap Kinerja Keuangan dengan NIM Sebagai Variabel Intervening. *Value : Jurnal Manajemen Dan Akuntansi*, 18(2), 460–471. <https://doi.org/10.32534/jv.v18i2.4235>
- Azmi, W., Hassan, M. K., Houston, R., & Karim, M. S. (2021). ESG activities and banking performance: International evidence from emerging economies. *Journal of International Financial Markets, Institutions and Money*, 70, 1–18. <https://doi.org/10.1016/j.intfin.2020.101277>
- Bansal, S., Garg, I., & Singh, S. (2023). Corporate Social Responsibility: Insights From COVID-19 and Stakeholder Theory. *Global Business and Organizational Excellence*, 42(6), 154–169. <https://doi.org/10.1002/joe.22222>
- Basuki, A. T., & Prawoto, N. (2019). Analisis Regresi: dalam Penelitian Ekonomi dan Bisni. Depok: Rajagrafindo Persada.
- Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*, 30(1), 98–115.
- Chandra, R. (2016). Analisis Kinerja Keuangan Pt Bank Syariah Mandiri Dan Pt Bank Mandiri Tbk Dengan Menggunakan Metode Camel. *Jurnal Berkala Ilmiah Efisiensi*, 16(2).
- Connelly, B. L., Certo, S. T., Reutzel, C. R., DesJardine, M. R., & Zhou, Y. (2024). Signaling Theory: State of the Theory and Its Future. *Journal of Management*, 51(1), 24–61. <https://doi.org/10.1177/01492063241268459>
- Cui, X. (2022). *Environmental Investment and Operation Strategy of Sustainable Supply Chain Considering Resource Reuse: Based on Stackelberg Game Model*. 9. <https://doi.org/10.1117/12.2652328>
- Dwihandayani, D. (2018). Analisis Kinerja Non Performing Loan (Npl) Perbankan Di Indonesia Dan Faktor-Faktor Yang Mempengaruhi Npl. *Jurnal Ekonomi Bisnis*, 22(3), 265–274.
- El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). ESG and financial performance of banks in the MENAT region: concavity–convexity patterns. *Journal of Sustainable Finance and Investment*, 13(1), 406–430. <https://doi.org/10.1080/20430795.2021.1929807>
- Fachrezi, M. F., Fauziah, S., Iqbal, M., & Firmansyah, A. (2024). ESG RISK Dan Nilai Perusahaan Di Indonesia. *Akuntansiku*, 3(2), 64–76. <https://doi.org/10.54957/akuntansiku.v3i2.691>
- Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal*, 38, 45–64. <https://doi.org/10.1016/j.gfj.2017.03.001>
- Galbreath, J. (2013). ESG in focus: The Australian evidence. *Journal of Business Ethics*, 118, 529–541.
- Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of Cleaner Production*, 150, 135–147.
- Ghazali, A., & Zulmaita, Z. (2022). Pengaruh pengungkapan environmental, social, and governance (esg) terhadap tingkat profitabilitas perusahaan (studi pada perusahaan sektor infrastruktur yang terdaftar di bursa efek indonesia). *Seminar Nasional Akuntansi Dan Manajemen PNJ*, 3.
- Ghozali, I. (2011). Aplikasi analisis multivariate dengan program IBM SPSS 19. Semarang: Badan Penerbit Universitas Diponegoro, 68, 9947–9957.
- Giannarakis, G., Andronikidis, A., & Sariannidis, N. (2020). Determinants of environmental disclosure: investigating new and conventional corporate governance characteristics. *Annals of Operations Research*, 294(1), 87–105.
- Hakimi, A., Boussaada, R., & Hamdi, H. (2020). The Interactional Relationships Between Credit Risk, Liquidity Risk and Bank Profitability in MENA Region. *Global Business Review*, 23(3), 561–583. <https://doi.org/10.1177/0972150919879304>
- Halimah, S. N., & Komariah, E. (2017). Pengaruh roa, car, npl, ldr, bopo terhadap nilai perusahaan bank umum. *Jurnal Akuntansi, Ekonomi Dan Manajemen Bisnis*, 5(1), 14–25.
- Handayani, N., Asyikin, J., Ernawati, S., & Boedi, S. (2023). Volume 20 Issue 2 (2023) Pages 233-242 KINERJA : Jurnal Ekonomi dan Manajemen Analisis pengaruh kinerja keuangan terhadap nilai

- perusahaan perbankan indonesia indonesian banking*. 20(2), 233–242.
- Harimauwan, J., & Lukman, H. (2023). *The Influence of Environmental Performance, Corporate Social Responsibility, Earnings Per Share, and Return on Assets on Stock Returns on Manufacturing Firms*. 1(1), 61–69. <https://doi.org/10.24912/ijaeb.11.61-69>
- Haryanto, L., & Susanto, N. (2023). Pengaruh Profitabilitas, Leverage, dan Non Performing Loan terhadap Nilai Perusahaan. *Konferensi Ilmiah Akuntansi X 2023*, 10, 1–17. <https://jurnal.umj.ac.id/index.php/KIA/article/view/17717>.
- Hawaladar, I. T., Meher, B. K., Kumari, P., & Kumar, S. (2022). Modelling the influences of capital adequacy, credit losses, and efficiency ratio on return on assets and return on equity of banks during COVID-19 pandemic. *Banks and Bank Systems*, 17(1), 115.
- Hery, S. E. (2017). *Riset Akuntansi*. Gramedia Widiasarana Indonesia.
- Indira Pramesti, I. A. M., & Wirajaya, I. G. A. (2019). Pengaruh Kecukupan Modal, Penyaluran Kredit dan Efisiensi Operasional pada Risiko Kredit. *E-Jurnal Akuntansi*, 28(3), 2050. <https://doi.org/10.24843/EJA.2019.v28.i03.p26>
- Jeanice, J., & Kim, S. S. (2023). Pengaruh Penerapan ESG Terhadap Nilai Perusahaan di Indonesia. *Owner*, 7(2), 1646–1653. <https://doi.org/10.33395/owner.v7i2.1338>
- Kansil, L. A., Van Rate, P., & Tulung, J. E. (2021). Analisis Pengaruh Kinerja Keuangan Terhadap Nilai Perusahaan Perbankan Yang Terdaftar di Bursa Efek Indonesia Periode 2015-2019. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi*, 9(3).
- Khan, I. U., Hameed, Z., Khan, S. U., & Khan, M. A. (2024). Green banking practices, bank reputation, and environmental awareness: evidence from Islamic banks in a developing economy. *Environment, Development and Sustainability*, 26(6), 16073–16093.
- Lee, Y. J. (2022). The Signaling Role of IPO Lockups: Evidence From SMEs in Korea. *Asia-Pacific Journal of Financial Studies*, 51(5), 761–784. <https://doi.org/10.1111/ajfs.12397>
- Maryadi, A. R., & Susilowati, P. I. M. (2020). Pengaruh Return on Equity (Roe), Loan To Deposit Ratio (Ldr), Non Performing Loan (Npl) Dan Biaya Operasional Terhadap Pendapatan Operasional (Bopo) Terhadap Nilai Perusahaan Pada Subsektor Perbankan Yang Terdaftar Di Bei Pada Tahun 2015-2017. *Jurnal Sains Manajemen Dan Kewirausahaan*, 4(1), 69–80.
- Mauliddin, J. A., & Subardjo, A. (2023). Pengaruh Leverage, Profitabilitas, Environmental Social Dan Government (Esg) Terhadap Nilai Perusahaan Yang Mengungkapkan Esg Pada Tahun 2022. *Jurnal Ilmu Dan Riset Akuntansi*, 13(5), 1–21.
- Melinda, A., & Wardhani, R. (2020). the Influence of Environmental, Social, Governance, and Controversies on Firms' Value: Evidence From Asia. *International Symposia in Economic Theory and Econometrics*, 27, 147–173. <https://doi.org/10.1108/S1571-038620200000027011>
- Mollah, S., & Zaman, M. (2015). Shari'ah supervision, corporate governance and performance: Conventional vs. Islamic banks. *Journal of Banking & Finance*, 58, 418–435.
- Mumtazah, F., & Purwanto, A. (2020). Analisis pengaruh kinerja keuangan dan pengungkapan lingkungan terhadap nilai perusahaan. *Diponegoro Journal of Accounting*, 9(2).
- Nafisah, N. I., Halim, A., & Sari, A. R. (2018). Pengaruh Return On Assets (Roa), Debt To Equity Ratio(Der), Current Ratio (Cr), Return On Equity (Roe), Price Earning Ratio (Per), Total Assets Turnover (Tato), Dan Earning Per Share (Eps) Terhadap Nilai Perusahaan Manufaktur Yang Terdaftar Di Bei. *Jurnal Riset Mahasiswa Akuntansi*, 6(2), 1–17.
- Nanda, P. S., & Yandari, A. D. (2025). Analysis Environmental Social Governance Disclosure On Financial Performance In Indonesia. *Journal of Accounting and Financial Issue (JAFIS)*, 6(1), 28–40.
- Nasution, M. I. S., Yulia, I. A., & Fitrianti, D. (2024). Pengaruh Pengungkapan Enviromental, Social dan Governance (ESG) Terhadap Nilai Perusahaan (Studi Kasus Pada Perusahaan Perbankan Yang Terdaftar di BEI Tahun 2023). *Jurnal EMT KITA*, 8(4), 1255–1264. <https://doi.org/10.35870/emt.v8i4.2939>
- Nizamuddin, M., Mushir, N., & Thakur, M. (2024). *Impact of Environmental, Social, and Governance Risk on the Financial Performance of Selected Indian Banks*. 6354–6364.

- <https://doi.org/10.53555/kuey.v30i5.3944>
- Nugroho, N. A., & Hersugondo Hersugondo. (2022). Analisis Pengaruh Environment, Social, Governance (ESG) Disclosure Terhadap Kinerja Keuangan Perusahaan. *E-Bisnis : Jurnal Ilmiah Ekonomi Dan Bisnis*, 15(2), 233–243. <https://doi.org/10.51903/e-bisnis.v15i2.810>
- Obeid, R. (2023). Determinants of Capital Adequacy Ratio in the Banking Sector: Evidence From the Arab Region. *International Journal of Business and Management*, 18(5), 63. <https://doi.org/10.5539/ijbm.v18n5p63>
- Pracoyo, A., & Ladjadjawa, A. E. C. (2022). Pengaruh Non-Performing Loan, Loan to Deposit Ratio, dan Good Corporate Govern-ance terhadap Profitabilitas (ROA) atau Nilai Perusahaan (Tobin's Q) periode 2015-2019. *Jurnal Ekonomi, Manajemen Dan Perbankan (Journal of Economics, Management and Banking)*, 6(3), 109. <https://doi.org/10.35384/jemp.v6i3.234>
- Raharjo, A. W. (2024). *Analisis Prediksi Kebangkrutan Pada Bank Perekonomian Rakyat Syariah (BPRS) dan Faktor Internal yang Mempengaruhinya (Studi pada BPRS di Provinsi Jawa Barat)*. Universitas Islam Indonesia.
- Rezkyana, S. P. (2024). *Pengaruh Pengungkapan Environmental, Social, and Governance (ESG) Terhadap Kinerja Perusahaan (Studi Pada Perusahaan yang Terdaftar di Indeks IDX ESG Leaders Bursa Efek Indonesia)*. Universitas Jenderal Soedirman.
- Risqi, U. A., & Suyanto, S. (2022). Pengaruh Return On Asset dan Return On Equity terhadap Nilai Perusahaan dengan Ukuran Perusahaan sebagai Variabel Moderasi. *Al-Kharaj: Jurnal Ekonomi, Keuangan & Bisnis Syariah*, 4(4), 1122–1133.
- Simamora, A. J. (2022). Determinant Factors of Founding-Family Firms' Performance in Indonesia. *Jfba Journal of Financial and Behavioural Accounting*, 1(2), 25–46. <https://doi.org/10.33830/jfba.v1i2.2334.2021>
- Sofiani, L., & Siregar, E. M. (2022). Analisis Pengaruh ROA, CR dan DAR Terhadap Nilai Perusahaan Sektor Makanan dan Minuman. *Jurnal Ilmiah Akuntansi Kesatuan*, 10(1), 9–16.
- Solimun. (2011). *Analisis Variabel moderasi dan Mediasi*. Program Studi Statistika FMIPA Universitas Brawijaya.
- Srihayati, D., Tandika, D., & Azib, A. (2015). Pengaruh Kinerja Keuangan Perbankan terhadap Nilai Perusahaan Dengan Metode Tobin's Q Pada Perusahaan Perbankan. Yang Listing di Kompas 100. *Prosiding Penelitian Sivitas Akademika Sosial Dan Humaniora (SPeSIA)*. Universitas Islam. Bandung. Gelombang, 1, 2014–2015.
- Stobierski, T. (2021). What is Sustainable Teaching? *Havard Business School*. <https://online.hbs.edu/blog/post/sustainable-investing>
- Swain, S. K. (2022). Under-Pricing of IPOs: A Literature Review. *International Journal of Research Publication and Reviews*, 202–205. <https://doi.org/10.55248/gengpi.2022.3.9.4>
- Wang, C. (2024). The Relationship Between ESG Performance and Corporate Performance - Based on Stakeholder Theory. *SHS Web of Conferences*, 190, 3022. <https://doi.org/10.1051/shsconf/202419003022>
- Xaviera, A., & Rahman, A. (2023). Pengaruh Kinerja Esg Terhadap Nilai Perusahaan Dengan Siklus Hidup Perusahaan Sebagai Moderasi : Bukti Dari Indonesia. *Jurnal Akuntansi Bisnis*, 16(2), 226. <https://doi.org/10.30813/jab.v16i2.4382>
- Zaleski, P. A. (2024). A Useful Interpretation of Firm Level Tobin's q . *Managerial and Decision Economics*, 45(8), 5381–5389. <https://doi.org/10.1002/mde.4332>
- Zulfikar, R., & STp, M. M. (2018). Estimation model and selection method of panel data regression: An overview of common effect, fixed effect, and random effect model. *JEMA: Jurnal Ilmiah Bidang Akuntansi*, 9(2), 1–10.