THE INFLUENCE OF MANAGEMENT DISCUSSION AND ANALYSIS (MD&A) ON INVESTOR REACTIONS

Muhammad Reza[1], Muhammad Dahlan[2], Syaiful Rahman[3]
Faculty of Economics & Business, Universitas Padjadjaran, Indonesia [1,2,3]
Email: mreza0179@gmail.com

ABSTRACT

This research aims to provide empirical evidence of investor reactions to the disclosure of Management's Discussion and Analysis (MD&A) and Trading Volume Activity (TVA) for companies listed on the Indonesia Stock Exchange from 2015 to 2021. The motivation for this study is the lack of research in Indonesia examining the impact of MD&A on investor decisions, as illustrated by market reactions to stock returns and trading volume activity (TVA). The data used in this research is secondary data obtained from the Annual Reports of companies listed on the Indonesia Stock Exchange (IDX), Refinitiv ESG (Environmental, Social, and Governance) data, and the list of Historical Prices from Yahoo Finance for the period 2015-2021. This study includes 259 data points from 37 companies over the period 2015-2021. Hypothesis testing is conducted using multiple linear regression and non-parametric partial correlation tests. The results indicate that (1) there is no significant positive relationship between MD&A disclosures and stock returns, but (2) there is a significant positive effect of MD&A disclosures on trading volume activity (TVA). This study also incorporates a paired sample t-test to identify differences in stock prices and TVA before and after the disclosure. Implementing these strategies can enhance the productivity and performance of healthcare institutions.

KEYWORDS	*MD&A (Management Discussion and Analysis), Refinitiv ESG, Market Reaction, Stock Return, Trading Volume Activity (TVA).*

INTRODUCTION

This research aims to provide empirical evidence of investor reactions to the disclosure of information in the Management Discussion and Analysis (MD&A). The Indonesian capital market, as an emerging market, is characterized by relatively high equity price fluctuations. This volatility is significantly influenced by both internal information published by management and external information that affects management policies. Favorable internal and external factors can lead investors to

invest in shares, increasing demand and consequently raising share prices (Gultom & Lindrianasari, 2015)

Various types of management information can be disclosed to investors, including the company's financial performance, corporate governance, corporate social activities, and MD&A (Clarkson et al., 1999). The researcher chose to focus on MD&A as the primary variable in this study based on the results of the 2013 Annual Report Award (ARA), which highlighted eight categories of Annual Report information that garnered significant attention from investors. MD&A information ranked second (22%) in importance, following Good Corporate Governance (GCG) at 35%. This underscores the importance of presenting MD&A in providing critical information to stakeholders, particularly investors (Bochkay & Levine, 2019).

The content of the MD&A in the annual report provides investors with the necessary information to evaluate the stock prices of companies that present MD&A comprehensively and transparently (Eikner, Hefzi, & Glezen, 2000). This leads to a relatively low bias in investor expectations, as the information provided by management is more open, accurate, and complete, thereby reducing associated stock risk. As a result, investors will respond positively to MD&A information. The increase in stock prices and trading volume is due to investor buying actions, ultimately affecting the average abnormal return and average trading volume activity (Barron et al., 1999).

This research aims to encourage companies to present MD&A comprehensively and transparently to attract investor interest, which is evidenced by rising stock prices and high trading volumes. As the market response improves, the firm's value will also increase.

RESEARCH METHOD

Research Framework

Based on the literature review discussed earlier, the quantitative research framework serves as a theoretical foundation in quantitative research. It assists researchers in developing theories, hypotheses, research variables, and understanding the relationships between these variables (Cho & Muslu, 2021). This framework establishes the theoretical basis for the research and provides a structured approach to guide research design, data collection, and analysis. Consequently, the researcher has developed the following conceptual framework:
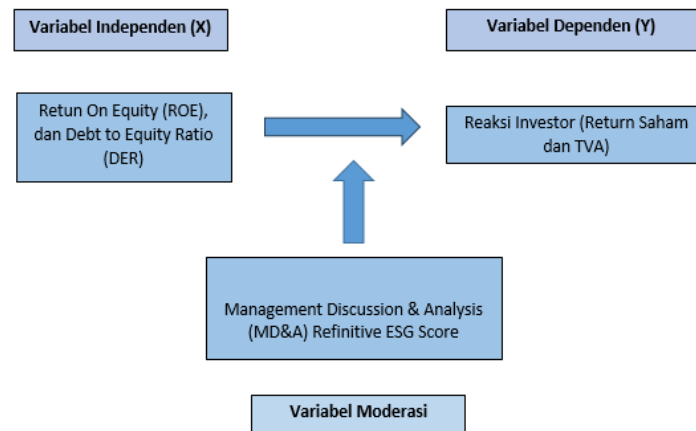
Figure 1. Methods

Data Sources and Collection Techniques.

The study employs secondary data, focusing on publicly listed companies on the Indonesia Stock Exchange (IDX) from 2015 to 2021, with a sample comprising 38 firms. The data includes quantitative information sourced from the Annual Reports of IDX-listed companies with a Refinitiv ESG Score, available on statista.com, and historical price records from Yahoo Finance for the same period.

Population and Sample

This research utilizes secondary data for data collection, with the population consisting of companies listed on the Indonesia Stock Exchange (IDX) from 2017 to 2021. The final dataset includes 37 companies, resulting in 259 company samples during the observation period (Eikner, 2000). The data used in this study is quantitative, sourced from the Annual Reports of companies listed on the IDX, Refinitive ESG Score, and the Historical Prices list from Yahoo Finance for the same period.

The variables used in this research are as follows:

Variables

This study employs the Management Discussion and Analysis (MD&A) disclosure index based on the criteria set by the Annual Report Award (ARA) institution. The index consists of 17 items with 50 disclosure sub-items (Appendix 1). Each MD&A disclosure that meets the ARA criteria is given a score of (1), while non-compliant disclosures are scored (0). The index is then calculated by dividing the total number of disclosures by the 50 sub-items in the ARA criteria. The dependent variable in this study is the market response, which is proxied by stock returns and trading volume activity (Lu et al., 2023).

Debt to Equity Ratio (DER).

The Debt to Equity Ratio (DER) is a financial metric used to assess the proportion of a company's debt in relation to its equity. A higher DER indicates a greater amount of debt, which can diminish the company's ability to pay dividends (Bahri, 2020).

The ESG (Environmental, Social, and Governance) Score from LSEG (London Stock Exchange Group) aims to measure companies' relative ESG performance, commitment, and effectiveness transparently and objectively, based on reported company data. It encompasses 10 main themes including emissions, environmental product innovation, human rights, shareholder rights, and more. LSEG provides an overall combined ESG score (ESGC), as well as scores for significant ESG controversies affecting companies. This data supports investment processes with data solutions, analytics, and best workflow practices. Scores are available for over 15,500 public and private companies worldwide, with historical data dating back to 2002. The percentile ranking scores are easily understood, available as both percentages and letter grades from D- to A+. These scores reference the LSEG Business Classification (TRBC - Industry Group) for all environmental and social categories and controversy scores, and are measured against country-specific governance categories (Refinitive, 2020).

Data Analysis Method

This study applies multiple regression with panel data using the Random Effect model to examine the relationship between MD&A disclosure index and both stock returns (Yit1) and trading volume (Yit2) across all companies in the sample. The analytical approach for testing the research hypothesis involves this method. The general formula for conducting multiple regression with panel data and random effects is outlined by Baltagi (2005).

$$Yit = \beta0 + \beta11X1it + \beta2X2it + \ldots + \beta kXkit + \alpha i + \epsilon it \text{ (Baltagi, 2005)}$$

1. Descriptive Analysis

Descriptive analysis statistics involve techniques used to summarize, describe, and present data in a clear and understandable way. This approach highlights the fundamental characteristics of the data under study, without extending to conclusions or predictions.

2. Verificative Analysis

Verificative analysis statistics, also known as inferential statistics, is a field of statistics that involves drawing conclusions or making predictions about a population based on data from a sample. This type of analysis includes hypothesis testing, parameter estimation, and predictive modeling. In this study, various

concepts and techniques related to verificative analysis statistics are used, such as the Outlier Test and Panel Data Test (Mayew et al., 2015).

RESULT AND DISCUSSION

Research Results

This section explores the effect of Management Discussion and Analysis (MD&A) on investor reactions. The research focuses on companies listed on the Indonesia Stock Exchange with a Refinitiv ESG score for the years 2015-2021. The study sample includes 37 companies, yielding a total of 259 data points.

Descriptive Analysis of Return on Equity

Return on Equity (ROE) is a metric used to evaluate a company's performance. ROE measures the ratio of net profit to total equity (Clarkson, Kao Jennifer, & Richardson, 2010). The table below provides an overview of ROE data for companies listed on the Indonesia Stock Exchange with a Refinitiv ESG score for the period 2015-2021.

Table. 1. Result
Descriptive Statistics

ROE

Kode_Emiten	N	Mean	Std. Deviation	Minimum	Maximum
AALI	7	.0744	.03875	.01	.12
ADRO	7	.4514	.31848	.04	.90
AKRA	7	.1438	.04251	.08	.19
ANTM	7	.0484	.03974	.00	.09
ASII	7	.1243	.02918	.08	.17
BBCA	7	.1711	.01821	.15	.20
BBNI	7	.1120	.04262	.03	.15
BBRI	7	.1799	.08416	.03	.31
BDMN	7	.2585	.49799	.02	1.39
BMRI	7	.1261	.03097	.08	.18
BMTR	7	.0682	.03761	.02	.13
BSDE	7	.0803	.05453	.01	.18
BUMI	7	-.0570	1.14928	-2.55	.85
CPIN	7	.1679	.03127	.14	.23
EXCL	7	-.0037	.08032	-.18	.06
GGRM	7	.1620	.03850	.09	.21
HMSP	7	.3081	.04969	.24	.37
ICBP	7	.1529	.05858	.05	.21
INCO	7	.0285	.02779	-.01	.08

INDF	7	.0989	.01420	.08	.12
INTP	7	.1005	.04693	.05	.18
ISAT	7	.1415	.26014	-.17	.52
ITMG	7	.1908	.12359	.05	.40
JSMR	7	.2273	.38621	.02	1.10
KLBF	7	.1278	.05750	.05	.19
LPKR	7	.0946	.42789	-.38	1.00
LPPF	7	.6156	.98773	-1.50	1.61
MNCN	7	.1126	.05157	.03	.16
PGAS	7	.0498	.07184	-.09	.13
PTBA	7	.2605	.09025	.18	.43
SCMA	7	.2781	.08923	.18	.45
SMGR	7	.0779	.03519	.05	.15
SMRA	7	.0670	.03950	.02	.14
TBIG	7	.3874	.32103	.11	.91
TLKM	7	.3399	.29462	.17	1.00
UNTR	7	.1383	.04554	.07	.20
UNVR	7	1.3339	.08626	1.21	1.45
Total	259	.1957	.36075	-2.55	1.61

Source: Processed Financial Statements

This section explores the effect of Management Discussion and Analysis (MD&A) on investor reactions. The research focuses on companies listed on the Indonesia Stock Exchange with a Refinitiv ESG score for the years 2015-2021. The study sample includes 37 companies, yielding a total of 259 data points.

Descriptive Analysis of Return on Equity

Return on Equity (ROE) is a metric used to evaluate a company's performance. ROE measures the ratio of net profit to total equity (Clarkson, Kao Jennifer, & Richardson, 2010). The table below provides an overview of ROE data for companies listed on the Indonesia Stock Exchange with a Refinitiv ESG score for the period 2015-2021.

Investors might view companies with consistently high Return on Equity (ROE) as attractive investment options (Brigham & Houston, 2019). For companies listed on the IDX with a Refinitiv ESG score from 2015 to 2021, ROE has shown variability. The average ROE over this period is relatively high at 0.1957 (19.57%), but there is significant variation among companies, ranging from a low of -0.0570 to a high of 1.3339.

Descriptive Analysis of Investor Reaction

Investor reaction is assessed using stock returns and trading volume activity (TVA). The following data illustrates stock return and trading volume metrics for IDX-listed companies with a Refinitiv ESG score from 2018 to 2022. The average stock return for these companies during 2015-2021 is 0.0019 (0.19%). The average stock return for the 37 companies listed on the IDX with a Refinitiv ESG score during 2015-2021 is displayed in the accompanying table, showing fluctuations over the period.

Opinion for Investors

To mitigate risk, investors should consider diversifying their portfolios across different sectors or companies with varying ESG and financial performance levels. The average trading volume for shares of IDX-listed companies with a Refinitiv ESG score during 2015-2021 is 0.0284 (2.84%) of shares outstanding. This reflects moderate liquidity, although trading volumes vary significantly, with the lowest at 0.0051 (0.51%) and the highest at 0.0990 (9.9%).

Verification Analysis

To statistically verify the impact of Management Discussion and Analysis (MD&A) on investor reactions, a moderating regression analysis was performed.

Panel Data Test

Panel data testing determined the appropriate regression model: common effect, fixed effect, or random effect. The tests conducted include the Chow Test, Hausman Test, and Lagrange Multiplier Test.

Influence of Management Discussion and Analysis on Stock Returns

The equation coefficients are interpreted as follows:

A constant of -0.0002 suggests that the average stock return for IDX-listed companies with a Refinitiv ESG score, when debt to equity ratio and return on equity are zero, is -0.0002 (a decrease of 0.02%).

The debt to equity ratio has a negative coefficient of 0.001, indicating that for each unit increase in this ratio, the stock return is expected to decrease by 0.001. This implies that companies with higher debt to equity ratios generally experience lower stock returns.

The return on equity has a positive coefficient of 0.00009, suggesting that for each unit increase in this return, the stock return is expected to increase by 0.00009. This means that companies with higher return on equity typically see higher stock returns.

Coefficient of Determination of Management Discussion and Analysis on Stock Returns

Without MD&A as a moderating variable, the R-squared is 0.005638, showing that the debt to equity ratio and return on equity account for 0.5638% of the variation in stock returns for IDX-listed companies with a Refinitiv ESG score. With MD&A included as a moderating variable, the R-squared increases to 0.02135, indicating that the influence of the debt to equity ratio and return on equity on stock returns rises to 2.135%.

Impact of Management Discussion and Analysis (MD&A) on Stock Returns

The effect of MD&A on stock returns is examined through the ESG coefficient. A significant ESG coefficient at a 5% error level would indicate that MD&A significantly affects stock returns. According to Table 4.21, the t-value for the ESG variable is 1.798 with a probability value of 0.0734. Since this probability value exceeds 0.05, it suggests that MD&A does not significantly impact stock returns at the 5% error level.

Influence of Debt to Equity Ratio on Stock Returns

The effect of the debt to equity ratio on stock returns is analyzed using the DER coefficient. A significant DER coefficient at a 5% error level would imply that the debt to equity ratio has a notable impact on stock returns. In Table 4.21, the t-value for the DER variable is -0.701 with a probability value of 0.4837. Since this probability value is greater than 0.05, it indicates that the debt to equity ratio does not have a significant effect on stock returns at the 5% error level.

Influence of Return on Equity on Stock Returns

The effect of return on equity on stock returns is evaluated using the ROE coefficient. A significant ROE coefficient at a 5% error level would suggest that return on equity significantly influences stock returns. In Table 4.21, the t-value for the ROE variable is 0.277 with a probability value of 0.7823. Since the probability value is higher than 0.05, it implies that return on equity does not significantly affect stock returns at the 5% error level.

Influence of Debt to Equity Ratio Moderated by Management Discussion and Analysis on Stock Returns

The impact of the debt to equity ratio, moderated by MD&A, on stock returns is assessed through the DERESG coefficient. A significant DERESG coefficient at a 5% error level would indicate that MD&A significantly moderates the effect of the debt to equity ratio on stock returns. In Table 4.21, the t-value for

the DER*ESG variable is 0.555 with a probability value of 0.5796. Since this probability value exceeds 0.05, it suggests that MD&A does not significantly moderate the influence of the debt to equity ratio on stock returns at the 5% error level.

Influence of Return on Equity Moderated by Management Discussion and Analysis on Stock Returns

The effect of return on equity, moderated by MD&A, on stock returns is analyzed using the ROEESG coefficient. A significant ROEESG coefficient at a 5% error level would imply that MD&A significantly moderates the impact of return on equity on stock returns. According to Table 4.21, the t-value for the ROE*ESG variable is -0.678 with a probability value of 0.4982. Since this probability value is greater than 0.05, it indicates that MD&A does not significantly moderate the influence of return on equity on stock returns at the 5% error level.

Influence of Management Discussion and Analysis on Stock Trading Volume

This analysis evaluates how the variables DER, ROE, and the moderating factors MD&A and ESG score affect a company's stock trading volume. Investors can use this information to better understand the factors influencing stock liquidity and make more informed investment decisions.

Coefficient of Determination of Management Discussion and Analysis on Stock Trading Volume

Without MD&A as a moderating variable, the R-squared value is 0.670095, indicating that the debt to equity ratio and return on equity explain 67.0095% of the variation in stock trading volume for IDX-listed companies with a Refinitiv ESG score. When MD&A is included as a moderating variable, the R-squared increases to 0.750749, showing that the influence of the debt to equity ratio and return on equity on stock trading volume rises to 75.0749%.

Influence of Management Discussion and Analysis (MD&A) on Stock Trading Volume

The impact of MD&A on stock trading volume is tested using the ESG coefficient. If the ESG coefficient is significant at a 5% error level, it would indicate that MD&A has a notable effect on stock trading volume. In Table 4.26, the t-value for the ESG variable is 4.132 with a probability value of 0.0001. Since this probability value is less than 0.05, it suggests that MD&A significantly impacts stock trading volume at the 5% error level.

Influence of Debt to Equity Ratio on Stock Trading Volume

The effect of the debt to equity ratio on stock trading volume is examined through the DER coefficient. A significant DER coefficient at a 5% error level would imply that the debt to equity ratio significantly affects stock trading volume. In Table 4.26, the t-value for the DER variable is -3.312 with a probability value of 0.0011. Since this probability value is less than 0.05, it indicates that the debt to equity ratio has a significant impact on stock trading volume at the 5% error level.

Influence of Return on Equity on Stock Trading Volume

The effect of return on equity on stock trading volume is tested using the ROE coefficient. A significant ROE coefficient at a 5% error level would suggest that return on equity significantly influences stock trading volume. According to Table 4.26, the t-value for the ROE variable is -1.634 with a probability value of 0.1039. Since this probability value exceeds 0.05, it indicates that return on equity does not significantly affect stock trading volume at the 5% error level.

Influence of Debt to Equity Ratio Moderated by Management Discussion and Analysis on Stock Trading Volume

The effect of the debt to equity ratio, moderated by MD&A, on stock trading volume is analyzed using the DERESG coefficient. A significant DERESG coefficient at a 5% error level would imply that MD&A significantly moderates the impact of the debt to equity ratio on stock trading volume. In Table 4.26, the t-value for the DER*ESG variable is 0.966 with a probability value of 0.3354. Since this probability value is greater than 0.05, it suggests that MD&A does not significantly moderate the influence of the debt to equity ratio on stock trading volume at the 5% error level.

Influence of Return on Equity Moderated by Management Discussion and Analysis on Stock Trading Volume

The impact of return on equity, moderated by MD&A, on stock trading volume is assessed through the ROEESG coefficient. A significant ROEESG coefficient at a 5% error level would indicate that MD&A significantly moderates the effect of return on equity on stock trading volume. In Table 4.26, the t-value for the ROE*ESG variable is 2.221 with a probability value of 0.0275. Since this probability value is less than 0.05, it suggests that MD&A significantly moderates the influence of return on equity on stock trading volume at the 5% error level.

Discussion

Based on Research Findings Titled "The Impact of Management Discussion and Analysis (MD&A) on Investor Reaction in Companies Listed on the Indonesia Stock Exchange with Refinitiv ESG Score for the Period 2015-2021"

Descriptive Analysis of Return on Equity (ROE) and Debt to Equity Ratio (DER) on Stock Returns:

The descriptive analysis indicates that ROE and DER do not significantly affect investor reactions as measured by stock returns.

Descriptive Analysis of ROE and DER on Stock Returns with MD&A as a Moderating Variable:

The analysis reveals that ROE and DER, when moderated by MD&A, do not significantly influence investor reactions as reflected in stock returns.

Analysis of ROE and DER on Total Volume Activity (TVA):

ROE and DER significantly impact investor reactions as measured by stock trading volume (TVA). Analysis of the Influence of ROE and DER on Stock Returns and TVA with and without MD&A as a Moderating Variable:

The analysis explores how ROE and DER impact stock returns and TVA, both with and without MD&A as a moderating factor.

Whether MD&A is included as a moderating variable or not, ROE and DER do not significantly affect investor reactions as measured by stock returns. However, they do impact other aspects of investor reactions, such as stock trading volume (TVA). The constant value of 0.0266 represents the average stock trading volume for companies listed on the Indonesia Stock Exchange with a Refinitiv ESG score.

CONCLUSION

This study demonstrates that financial variables like ROE and DER have a more significant effect on investor reactions regarding stock trading volume than on stock returns. The presence of MD&A as a moderating variable enhances this effect on trading volume but does not similarly impact stock returns. These results underscore the role of qualitative information in MD&A in shaping investor trading behavior, though it does not always affect their views on the potential profitability of a company's stock.

REFERENCES

Bahri, M. A. (2020). Menggunakan Md&A Untuk Meningkatkan Perkiraan Pendapatan dan Reaksi Investor (Studi Empiris Perusahaan Go Public di Indeks Saham Syariah Indonesia). *Jurnal Ekonomi Syariah, Akuntansi, Dan Perbankan*, *4*(2), 309–332.

Baltagi, B. H. (2005). Analysis of panel data. *England: John Wiley & Son, Ltd*.

Barron, O. E., Kile, C. O., & O'KEEFE, T. B. (1999). MD&A quality as measured by the SEC and analysts' earnings forecasts. *Contemporary Accounting Research*, *16*(1), 75–109.

Bochkay, K., & Levine, C. B. (2019). Using MD&A to improve earnings forecasts. *Journal of Accounting, Auditing & Finance*, *34*(3), 458–482.

Cho, H., & Muslu, V. (2021). How do firms change investments based on MD&A disclosures of peer firms? *The Accounting Review*, *96*(2), 177–204.

Clarkson, P. M., Kao, J. L., & Richardson, G. D. (1999). Evidence that management discussion and analysis (MD&A) is a part of a firm's overall disclosure package. *Contemporary Accounting Research*, *16*(1), 111–134.

Eikner, A. E. (2000). *Prospective information in managements' discussion and analysis: A test of incremental information content*.

Gultom, S. B., & Lindrianasari, L. A. (2015). Management Discussion and Analysis (MD & A) dan Reaksi Investor (Studi Empiris Perusahaan Go Public di BEI). *Simposium Nasional*.

Lu, H., Shin, J.-E., & Zhang, M. (2023). Financial reporting and disclosure practices in China. *Journal of Accounting and Economics*, *76*(1), 101598.

Mayew, W. J., Sethuraman, M., & Venkatachalam, M. (2015). MD&A disclosure and the firm's ability to continue as a going concern. *The Accounting Review*, *90*(4), 1621–1651.

Refinitive. (2020). *Environmental, Social and Governance (ESG). Retrieved from refinitiv Web Site: https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/esg-scores-methodology.pdf*.