

THE ROLE OF R&D INVESTMENT IN MODERATING THE EFFECT OF ROA, DER, CR ON FINANCIAL SUSTAINABILITY IN FOOD AND BEVERAGE MANUFACTURING COMPANIES

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Abstract

This study aims to analyze the effect of Return on Assets (ROA), Debt to Equity Ratio (DER), and Current Ratio (CR) on Financial Sustainability, as well as to examine the role of Research and Development (R&D) Investment as a moderating variable in food and beverage subsector manufacturing companies listed on the Indonesia Stock Exchange. The research method used is a quantitative approach with secondary data obtained from the company's financial statements. Data analysis techniques use multiple linear regression and Moderated Regression Analysis (MRA) to test the direct effect and interaction between variables. The results of the study indicate that ROA, DER and CR do not have a positive and significant effect on Financial Sustainability. In addition, the results of the moderation test indicate that R&D Investment is able to significantly moderate the effect of ROA on Financial Sustainability, but is unable to moderate the effect of DER and CR on Financial Sustainability. These findings indicate that investment in research and development plays an important role in strengthening the relationship between profitability proxied by ROA and financial sustainability, so that companies that are active in R&D activities tend to have better ability to maintain long-term financial growth and stability.

Keywords: Current Ratio (CR), Debt to Equity Ratio (DER), Financial Sustainability, R&D Investment, Return on Assets (ROA)

INTRODUCTION

The increasingly dynamic business environment driven by globalization, the development of digital technology, shifting consumer preferences, and increasing economic uncertainty have created increasingly complex challenges for manufacturing companies, including the food and beverage industry. Companies are no longer solely required to generate short-term profits, but must also be able to maintain operational continuity, maintain financial stability, and create sustainable growth in the long term. In these conditions, *financial sustainability* has become a strategic aspect that determines a company's ability to survive and thrive amidst increasingly fierce business competition. Financial sustainability reflects a company's ability to manage financial resources effectively and efficiently so that it can meet financial obligations, fund operational activities, finance investments, and generate sustainable profits without sacrificing future growth prospects.

The food and beverage industry is a strategic sector that is the largest contributor to the processing industry in Indonesia. In 2024, this subsector contributed 36.44% of the added value of the processing industry, while in the first quarter of 2024, its contribution reached 39.91% of the GDP of the non-oil and gas processing industry, or approximately 6.47% of national GDP. Although this industry continued to grow by 5.53% in the second quarter of 2024 and recorded investment realization of approximately IDR 21.47 trillion, companies in the food and beverage sector still face

various challenges such as fluctuating raw material prices, rising operational costs, increasingly fierce competition, and demands for product innovation. These conditions mean that not all companies are able to translate increased sales into increased net profit. In fact, several Food & Beverage issuers on the Indonesia Stock Exchange have found the phenomenon of increasing sales but actually decreasing net profit, indicating that sales growth alone is not sufficient to ensure *financial sustainability*.

Research and Development (R&D) Investment is required, namely profit generated from assets (ROA), use of debt (DER), and liquidity capacity (CR) are fundamental factors that determine a company's ability to achieve financial sustainability. These three aspects have not been able to fully explain the sustainability of a company's financial performance amidst increasingly innovation-based industrial competition. In the food and beverage industry, a company's success is not only determined by its ability to generate profits, manage debt, or meet short-term obligations, but also by its ability to create new products, improve product quality, develop more efficient production processes, and respond quickly to changes in consumer preferences. One strategy that can support these capabilities is through Research and Development (R&D) Investment, namely company investment in research and development activities to produce innovations that can increase competitiveness and create long-term economic value.

Furthermore, research on the factors influencing *financial sustainability* still produces inconsistent results, creating a *research gap* that requires further study. This is shown in Table 1 below:

Table 1. Research Gap

No	Researchers	Variables Studied	Research result	Research Gap
1	(Suci Nurhikman 2021)	ROA → Financial Sustainability Ratio	ROA has a positive and significant effect on the Financial Sustainability Ratio (FSR).	Shows that profitability is able to increase financial sustainability.
2	(Oktoviyanti and Etty Murwaningsari 2023)	ROA → Financial Sustainability	ROA has a positive effect on Financial Sustainability in banking.	The research results support the positive influence of ROA on financial sustainability.
3	(Sawitri 2023)	CR, DER, ROA → Sustainability Report and Financial Performance	Current Ratio (CR), Debt to Equity Ratio (DER), and Return on Assets (ROA) have a significant effect on Sustainability Report and Financial Performance.	Research has not tested the direct influence of CR, DER, and ROA on Financial Sustainability.
4	(Wahid and Prasetya 2024)	ROA → Financial Sustainability with DER as mediation	Debt to Equity Ratio (DER) is not able to mediate the effect of ROA on Financial Sustainability ($p > 0.05$).	This shows that the relationship mechanism between ROA and Financial Sustainability is still inconsistent.
5	(Ján Užík 2025)	R&D Investment → Financial Performance and Sustainable Performance	R&D spending has a positive impact on ROA, ROE, ROCE, and ESG in the short term, but high R&D intensity has a negative impact on financial performance and sustainability.	Shows that the influence of R&D on sustainability is not consistent and depends on the effectiveness of the investment.

6	(Sulimany 2025)	R&D Expenditure impacts the Financial Sustainability → Financial Sustainability of S&P 500 companies and drives long-term growth.	It shows that R&D is able to increase Financial Sustainability, but the research was conducted on American companies so its generalization to Indonesian companies is still limited.

Source: Processed Data (2026)

LITERATURE REVIEW

Financial Sustainability

Financial sustainability is a company's ability to maintain operational continuity, meet financial obligations, and support long-term business growth through efficient management of economic resources (Gleißner, W., Günther, T., & Walkshäusl 2022) . This concept emphasizes a company's ability to generate sustainable income without sacrificing financial stability or future operational capacity. From the Resource-Based View (RBV) perspective developed by Barney (2025), A company's sustainability is determined by the organization's ability to effectively manage its resources, thus generating sustainable competitive advantage. Company assets are viewed as strategic resources that, when optimally utilized, will enhance the company's ability to generate revenue and maintain business continuity.

In line with the RBV, Dynamic Capabilities Theory (Teece et al., 1997) explains that companies capable of integrating, developing, and reconfiguring resources according to the dynamics of the business environment will be able to maintain sustainable financial performance. Therefore, asset utilization efficiency is an important indicator in assessing a company's ability to maintain financial sustainability.

The Influence of ROA on Financial Sustainability

According to Brigham, EF, & Houston (2022) , Return on Assets (ROA) is an important indicator for assessing a company's efficiency in utilizing assets to generate profit. This ratio provides an overview of a company's ability to convert investment in assets into net profit that can be used to support operational activities, investments, and growth. Therefore, the more effectively a company manages its assets, the greater its ability to generate profits. A high ROA indicates that the company is able to generate greater profits from the asset resources used. This profit can be used to finance operational activities, make investments, develop innovations, strengthen working capital, and meet financial obligations without excessive reliance on external funding sources. This condition can increase a company's financial resilience and provide greater room for the company to face economic uncertainty, thereby supporting long-term financial sustainability.

Empirically, research conducted by (Suci Nurhikman 2021) , (Muhammad Abdul Muis 2024) , (Chairul Adhim 2024) , (Chelsie Monica Ignlesias Sihite 2024) , (Kansa Dwi Putri Angelina Sudrajat 2025) showed that profitability, proxied by return on assets (ROA), has a positive and significant effect on financial sustainability. These results indicate that companies with high profitability levels have a greater ability to maintain operational activities, increase investment, and strengthen financial stability, thereby supporting business sustainability. However, the results of this study are not entirely consistent with previous studies conducted by (Apriliyanto and Putra Prasetya 2024) , (Nahya Shaffa Alyara, Lasmanah 2024) , (Nurwulandari 2023) which found that profitability had no significant effect on Financial Sustainability. These differences in results indicate a research gap in the form of inconsistent empirical findings (inconsistency gap) regarding the influence of profitability on Financial Sustainability. Differences in company characteristics, business sectors, research periods, business environmental conditions, and the company's ability to manage assets and financial resources are suspected to be factors causing the relationship to produce different

findings. Therefore, there is still room for research to re-examine the effect of Return on Assets (ROA) on Financial Sustainability to obtain stronger empirical evidence regarding the direction and significance of this relationship.

Based on the Resource-Based View (RBV) perspective, a company's ability to generate profits through asset utilization reflects the effectiveness of internal resource management. The higher the ROA, the greater the company's ability to generate financial resources internally. The availability of these resources enables the company to maintain operational activities, meet obligations, make investments, and better cope with financial pressures. Therefore, researchers argue that increasing ROA will enhance the company's ability to maintain financial sustainability. Based on the theoretical basis, inter-variable relationships, previous research findings, and the research gaps outlined above, the research hypothesis is formulated as follows:

H1: Return on Assets (ROA) has a positive effect on Financial Sustainability.

The Influence of DER on Financial Sustainability

The Debt to Equity Ratio (DER) is a solvency ratio used to measure the proportion of a company's funding that comes from debt compared to its own capital (Kasmir 2019). A higher DER indicates a greater dependence of the company on external funding sources in the form of debt. The relationship between DER and *Financial Sustainability* can be explained through the Trade-Off Theory, which states that companies will determine the optimal capital structure by considering the balance between the benefits of using debt, such as *tax shields*, and the costs incurred by increasing the risk of *financial distress*. The use of debt at a certain level can provide benefits for the company, especially in financing productive activities. However, when the use of debt has exceeded the optimal level, increasing interest expenses and debt principal repayment obligations can increase financial risk and reduce the company's flexibility in managing its financial resources.

Empirically, research by Wahid and Putra Prasetya (2024), Sri Hartaty (2024), and Heliani (2024) shows that *leverage* has a positive and significant effect on company growth. These findings indicate that debt can be utilized as a source of funding to support a company's expansion and productive activities. However, these findings indicate a different direction of the relationship from the argument of this study, which predicts that an increase in the Debt to Equity Ratio (DER) can actually reduce *Financial Sustainability*. This difference indicates a research gap in the form of inconsistent direction of leverage's influence on a company's financial condition, especially when the dependent variable used is *Financial Sustainability*, not company growth. Therefore, further testing is needed to obtain empirical evidence regarding whether an increase in DER can support a company's financial sustainability or actually increases the burden of liabilities and the risk of *financial distress*, which ultimately reduces *Financial Sustainability*.

Based on these arguments, the researcher argues that the higher the DER, the greater the company's dependence on debt and the greater the obligation to pay interest and principal. This condition can reduce the company's ability to provide funds for operations, investment, and sustainable business development. Therefore, although debt can provide benefits when at an optimal level, excessively high DER increases are expected to reduce the company's ability to maintain *financial sustainability*. Therefore, this study proposes the following hypothesis:

H2: DER has a positive effect on Financial Sustainability.

The Influence of CR on Financial Sustainability

The Current Ratio (CR) is a liquidity ratio used to measure a company's ability to meet short-term obligations using its current assets. A higher Current Ratio indicates a better company's ability to meet short-term obligations and finance its operational needs in a timely manner (Brigham & Houston, 2019). The Current Ratio is related to Financial Sustainability because an adequate level of liquidity provides a company with room to meet short-term obligations, finance operational activities, and face cash flow uncertainty. Companies with a good CR tend to have greater financial

flexibility in maintaining business activities and responding to changes in the business environment. Conversely, low liquidity can increase the risk of difficulty in meeting short-term obligations, potentially disrupting the company's operational continuity and financial condition. Therefore, the better a company's ability to manage its current assets, the greater its ability to maintain Financial Sustainability.

Empirically, research (Sawitri 2023) , (Elisabete Nogueira, Sofia Gomes 2024) , (Wu 2023) , (Emilia Herman 2023) This study shows that a company's financial health is related to its ability to maintain business sustainability. Companies that are able to maintain a healthy financial condition have a greater opportunity to maintain operational activities and face long-term financial pressures. These findings indicate that liquidity, as a component of financial health, can be a crucial factor in supporting financial sustainability. Although previous research has indicated that financial health plays a role in supporting business sustainability, studies that specifically examine the Current Ratio as a measure of liquidity in relation to financial sustainability still show room for development. Previous research tends to focus on financial health or performance in general, while a company's ability to maintain financial sustainability is determined not only by profitability but also by its ability to provide adequate current assets to meet short-term obligations and support operational activities. Therefore, there is still a research gap regarding the extent to which liquidity, as represented by the Current Ratio, can promote financial sustainability.

Based on the RBV perspective, an adequate Current Ratio reflects a company's ability to effectively manage internal financial resources. The availability of current assets allows a company to meet short-term obligations, maintain smooth operations, mitigate financial pressures, and capitalize on emerging business opportunities. This condition can improve a company's ability to maintain sustainable business activities. Therefore, companies with a better Current Ratio are expected to have a stronger ability to achieve Financial Sustainability. However, this relationship still needs to be empirically proven because excessive liquidity can also indicate the presence of less productive current assets. Therefore, empirical testing is needed to determine the direction and strength of the relationship between the Current Ratio and Financial Sustainability.

H3: Current Ratio (CR) has a positive effect on Financial Sustainability (FS).

RESEARCH METHODS

Research Design

This research was designed using a quantitative explanatory approach that aims to examine the causal relationship between financial performance variables, namely *Return on Assets* (ROA), *Debt to Equity Ratio* (DER), and *Current Ratio* (CR), on *financial sustainability* , and analyze the role of *Research and Development (R&D) Investment* as a moderating variable. This study uses secondary data obtained from the annual financial reports of manufacturing companies engaged in the food and beverage sector listed on the Indonesia Stock Exchange for the period 2022-2025.

The research design used is a causality design with a panel data approach, which combines the time *series* and individual company dimensions (Wooldridge 2010) . This design was chosen based on the ability of panel data to provide more accurate estimates by controlling for heterogeneity between companies and capturing the dynamics of changes in financial performance over time. The independent variables in this study consist of ROA, DER, and CR, which represent aspects of a company's profitability, leverage, and liquidity. The dependent variable is financial sustainability, which reflects a company's ability to maintain long-term financial performance. Meanwhile, *R&D Investment* is placed as a moderating variable that functions to strengthen or weaken the relationship between the independent and dependent variables.

Population and Sample

The population in this study was all 83 manufacturing companies in the food and beverage subsector listed on the Indonesia Stock Exchange during the study period. The sampling technique used was purposive sampling, with the following criteria:

1. Manufacturing companies in the food and beverage subsector listed consecutively on the Indonesia Stock Exchange during the research period.
2. Companies that publish complete annual financial reports.
3. Companies that have data related to the variables ROA, DER, CR, Financial Sustainability, and R&D Investment.
4. Companies that did not experience delisting during the research period.

Based on the search criteria for annual reports and financial statements of companies in the Food & Beverage sector listed on the Indonesia Stock Exchange for the 2022–2025 period, only 12 companies explicitly disclosed research and development (R&D) expenses in their financial reports. Meanwhile, most other companies either did not present R&D expense information separately or did not disclose it at all.

Data Collection Techniques and Instrument Development

This study uses secondary data obtained through documentation techniques, namely by collecting and reviewing annual financial reports *and* sustainability reports *from* manufacturing companies listed on the Indonesia Stock Exchange during the observation period. The data was accessed through the official Indonesia Stock Exchange website, the websites of each company, and other supporting data sources such as the Indonesian Capital Market Directory (ICMD) or financial database platforms.

The research instrument was developed using a worksheet or data collection template systematically structured based on the operational definition of each variable. This instrument was designed to ensure consistency and accuracy in the data recording process. Each variable was measured using quantitative indicators that have been tested in the financial literature. To ensure the quality of the instrument, conceptual validity and reliability testing were conducted, ensuring that all indicators used refer to theory and previous empirical research (*content validity*). Furthermore, *cross-checking* of data between sources was performed to minimize *data entry errors*.

With systematic data collection techniques and instrument development, this study is expected to be able to produce accurate and reliable data to test the influence of ROA, DER, and CR on financial sustainability, as well as the moderating role of *R&D Investment* in manufacturing companies in Indonesia.

Data Analysis Techniques

The initial stage of analysis was conducted through descriptive statistics to provide a general overview of the characteristics of the data, including the average value (*mean*), minimum value, maximum value, and standard deviation of each research variable. This analysis aims to understand the distribution of data and detect any initial anomalies before further testing is carried out. The moderating role of *R&D Investment*, this study uses the Moderated Regression Analysis (MRA) approach by including interaction variables between R&D and each independent variable (ROA, DER, and CR). Furthermore, hypothesis testing was conducted using a t-test (partial) to determine the effect of each independent variable on the dependent variable. With this data analysis technique, this study is expected to be able to provide valid and reliable empirical results regarding the influence of financial performance on financial sustainability, as well as the strategic role of *R&D Investment* in strengthening or weakening this relationship in manufacturing companies in Indonesia.

Operational Definition of Variables

Table 2. Definition of Variables and Indicators

No	Variables	Variable Types	Operational Definition	Indicators / Proxies	Measurement Formula	Scale
1	Financial Sustainability (FS)	Dependent	Financial sustainability is a company's ability to maintain operational continuity and long-term business growth. (Barney 2025)	Net sales/Total assets	$FS = \frac{\text{Net Sales}}{\text{Total Assets}}$	Ratio
2	Return on Assets (ROA)	Independent	A company's ability to generate profits from all its assets. (Brigham, EF, & Houston 2019)	Net Profit and Total Assets	$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$	Ratio
3	Debt to Equity Ratio (DER)	Independent	The level of debt usage compared to equity in a company's financing structure. (Kasmir 2019a)	Total Debt and Total Equity	$DER = \frac{\text{Total Debt}}{\text{Total Equity}}$	Ratio
4	Current Ratio (CR)	Independent	The company's ability to meet short-term obligations using current assets. (Subramanyam 2014)	Current Assets and Current Liabilities	$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$	Ratio
5	R&D Investment (RDI)	Moderation	The level of company investment in research and development activities to create innovation. (Manual 2015)	R&D Expenditure to Total Assets / Sales	$RDI = \frac{\text{R\&D Expenditure}}{\text{Total Assets}}$	Ratio

Source: Processed Data (2026)

RESULTS AND DISCUSSION

Descriptive Statistics

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
ROA	37	3.59	18.27	8.7592	3.68191
DER	37	.08	5.67	.9916	1.17562
CR	37	.37	3.59	1.8224	.73914
RD	37	.00	.99	.3167	.34773
FS	37	.00	2.43	.6054	.59603
Valid N (listwise)	37				

Source: SPSS Output (2026)

Overall, the research data consisted of 37 observations, all of which could be analyzed (Valid N = 37). The ROA and CR variables showed relatively low data dispersion because the standard deviation value was smaller than the average, so the data for both variables tended to be more homogeneous. In contrast, the DER, RD, and FS variables showed a greater data dispersion, indicating heterogeneity in company characteristics in terms of capital structure, research and development investment, and level of financial sustainability. These findings indicate that the companies in the sample had quite diverse financial conditions and resource management strategies, making them worthy of further analysis through hypothesis testing.

Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		37
Normal Parameters ^a	Mean	.0000000
	Standard Deviation	.57212905
Most Extreme Differences	Absolute	.189
	Positive	.189
	Negative	-.085
Kolmogorov-Smirnov Z		1.152
Asymp. Sig. (2-tailed)		.141

a. Test distribution is Normal.

Source: SPSS 2026 Output

Based on the results of the normality test using the One-Sample Kolmogorov-Smirnov Test on the unstandardized residual value, the number of samples (N) was 37 with a Kolmogorov-Smirnov Z value of 1.152 and an Asymp. Sig. (2-tailed) value of 0.141. This significance value is greater than the significance level of 0.05 ($0.141 > 0.05$), so the residuals in the regression model are normally distributed. Thus, the null hypothesis (H_0) which states that the residual data is normally distributed is accepted, while the alternative hypothesis (H_1) is rejected. These results indicate that the regression model has met the assumption of normality, so it is suitable for further analysis, such as linear regression testing and hypothesis testing, because there is no deviation from the normal distribution of the residual distribution.

The Influence of Return on Assets on Financial Sustainability

Based on the results of the regression test, Return on Assets (ROA) does not have a significant effect on Financial Sustainability, as evidenced by a significance value of 0.533 (> 0.05), indicating that changes in the level of profitability measured using ROA have not been able to explain changes in the company's Financial Sustainability. Thus, the hypothesis stating that ROA has an effect on Financial Sustainability cannot be accepted. The findings of this study indicate that corporate financial sustainability is a multidimensional concept that is not only influenced by profitability, but also by the company's ability to manage liquidity, capital structure, operational efficiency, long-term investment, innovation, and business risk management. Therefore, companies need to balance the goal of obtaining profits with strategies to strengthen financial fundamentals in order to maintain business continuity amidst the dynamics of the business environment.

The results of this study can be explained through the Resource-Based View (RBV) perspective, which states that sustainable competitive advantage is not only determined by a company's ability to generate profits, but also by the ability to manage strategic resources that are valuable, rare, inimitable, and non-substitutable. These results are in line with the results of research conducted by (Apriliyanto and Putra Prasetya 2024) , (Nahya Shaffa Alyara, Lasmanah 2024) , (Nurwulandari 2023) , which shows that profitability is not the only determining factor for a company's financial sustainability. However, these results differ from those of research conducted by (Suci Nurhikman 2021) , (Muhammad Abdul Muis 2024) , (Chairul Adhim 2024) , (Chelsie Monica Ignias Sihite 2024) , and (Kansa Dwi Putri Angelina Sudrajat 2025) , which concluded that ROA has a positive effect on financial sustainability. These differences may be caused by variations in the characteristics of the research sample, industry sector, observation period, economic conditions, and the use of different financial sustainability indicators. Therefore, these findings reinforce the view that the relationship between profitability and financial sustainability is contextual, requiring consideration of other factors that may influence a company's ability to maintain long-term business continuity.

The Influence of Debt Equity Ratio (DER) on Financial Sustainability

The test results show that the Debt to Equity Ratio (DER) does not have a significant effect on Financial Sustainability, as indicated by a significance value of 0.311 (> 0.05). The findings of this study indicate that corporate financial sustainability is a multidimensional concept and is not only influenced by capital structure. Financial Sustainability is more determined by the company's ability to manage all financial resources effectively, maintain a balance between profitability, liquidity, solvency, operational efficiency, and make investments that support long-term growth. The results of this study can be explained through the perspective of Trade-off Theory which states that companies will try to determine the optimal capital structure by balancing the benefits of using debt, such as tax savings (*tax shield*), with the costs arising from the risk of bankruptcy (*financial distress*) and agency costs.

The results of this study are in line with the results of research conducted by (Halim 2024) and (Hati 2024) who showed that leverage level is not a primary factor in determining a company's financial sustainability. However, the results of this study differ from previous research conducted by (Prasetya 2024) and (Sri Hartaty 2024). And (Heliani 2024) found a positive relationship between the Debt-to-Equity Ratio and Financial Sustainability. These differences in results may be due to differences in the characteristics of the research samples, industry sectors, observation periods, macroeconomic conditions, and the use of different Financial Sustainability indicators. Therefore, these findings reinforce the view that the influence of capital structure on Financial Sustainability is contextual and influenced by a company's ability to effectively manage debt funds to support sustainable business growth.

The Influence of Current Ratio (CR) on Financial Sustainability

The test results show that the Current Ratio (CR) has a significant influence on Financial Sustainability, as indicated by a significance value of 0.582 (< 0.05). This finding indicates that the

company's liquidity level, measured by the ability to meet short-term obligations using current assets, has not been able to significantly improve Financial Sustainability. This shows that the ability to meet short-term obligations is not the only factor that determines a company's success in maintaining business continuity and creating sustainable financial growth. The results of this study can be explained through the Resource-Based View (RBV) perspective, which emphasizes that company sustainability is determined by the ability to effectively manage strategic resources to create sustainable competitive advantage.

The results of this study are in line with the results of research conducted by (Tampubolon 2026) and (Aronokhale, et., al 2026) , which found that the Current Ratio had no significant effect on Financial Sustainability, indicating that the level of liquidity is not a major factor in determining a company's financial sustainability. However, the results of this study differ from the results of research conducted by (Sawitri 2023) which found that the Current Ratio had a positive effect on Financial Sustainability. These differences in results may be caused by variations in the characteristics of the research sample, industrial sector, observation period, economic conditions, and differences in proxies used to measure Financial Sustainability. Thus, these findings reinforce the view that the effect of liquidity on Financial Sustainability is contextual and depends on the company's ability to manage current assets efficiently to create long-term business growth and sustainability.

Research and Development (R&D) Moderation: The Effect of Return on Assets on Financial Sustainability

Based on the results of the moderated regression analysis, it is known that the interaction variable between Return on Assets (ROA) and Research and Development (R&D) Investment ($ROA \times RD$) has a significance value of 0.020, which is smaller than the significance level of 0.05. This finding indicates that the magnitude of the influence of company profitability on financial sustainability is not only determined by the company's ability to generate profits from its assets, but is also influenced by the level of company investment in research and development activities.

The results of this study imply that companies, particularly in the food and beverage sector, need to make R&D investment part of their long-term business strategy. Profits generated through increased ROA should not only be used for operational needs or dividend distribution, but also allocated to research and development activities to generate sustainable innovation. This strategy will strengthen the company's ability to sustain growth, face industry competition, and maintain *financial sustainability* in the future.

The results of this study are supported by previous studies conducted by (Ján Užík 2025) , (Sulimany 2025) and (AYUN 2023) which stated that Research and Development (R&D) investment plays an important role in improving financial sustainability explaining that R&D investment is a strategic factor that is able to increase the productivity and competitiveness of the company so that the benefits of profitability can be maintained in the long term, R&D investment makes a positive contribution to the company's financial performance because it is able to produce innovations that increase efficiency and competitive advantage. This finding is also consistent with the Resource-Based View (RBV) which states that sustainable competitive advantage comes from the ownership and management of strategic resources that are valuable, rare, difficult to imitate, and not easily substituted. Therefore, companies that have high profitability and consistently invest in R&D activities will be better able to maintain Financial Sustainability than companies that only rely on profitability without being followed by innovation development.

Research and Development (R&D) Moderation: The Effect of Debt Equity Ratio (DER) and Current Ratio (CR) on Financial Sustainability

Based on the results of the moderated regression analysis, it was found that the interaction variable between Debt to Equity Ratio (DER) and Research and Development (R&D) Investment ($DER \times RD$) has a significance value of 0.616, which is greater than the significance level of 0.05. This indicates that the level of company investment in research and development activities has not been

able to strengthen or weaken the relationship between capital structure proxied by DER and the company's financial sustainability. Thus, high or low R&D investment does not change the effect of debt use on the company's ability to maintain a sustainable financial condition.

Furthermore, the interaction variable between Current Ratio (CR) and Research and Development (R&D) Investment ($CR \times RD$) has a significance value of 0.612, which is greater than the 0.05 level of significance. This finding indicates that the level of company investment in research and development activities has not been able to strengthen or weaken the relationship between the level of company liquidity and financial sustainability. Thus, high or low R&D investment does not change the influence of the company's ability to meet short-term obligations on Financial Sustainability.

This finding can be explained through the Resource-Based View (RBV), which states that R&D investment is a strategic resource that can create competitive advantage if managed effectively. However, these benefits do not directly impact a company's ability to meet short-term obligations, as reflected in the Current Ratio. A company's liquidity depends more on the management of working capital, cash flow, and the efficiency of current asset management than on research and development activities. Consequently, R&D does not act as a variable that strengthens or weakens the influence of the Current Ratio on Financial Sustainability.

The study's findings align with those of Islamudin (2024) and Adilla Dwi Cahyani (2026), which show that the benefits of R&D investment do not always mitigate the financial risks stemming from high corporate leverage. These studies explain that the success of R&D activities is highly dependent on the effectiveness of innovation implementation, industry characteristics, the company's ability to manage research results, and the investment time horizon. Consequently, R&D does not always serve as a factor that strengthens or weakens the relationship between capital structure and corporate financial sustainability.

CONCLUSION

This study aims to analyze the effect of Return on Assets (ROA), Debt to Equity Ratio (DER), and Current Ratio (CR) on Financial Sustainability and examine the role of Research and Development (R&D) Investment as a moderating variable in Food and Beverage companies listed on the Indonesia Stock Exchange. Based on the analysis and hypothesis testing, the following conclusions were obtained.

1. Return on Assets (ROA), Debt to Equity Ratio (DER) and Current Ratio (CR) do not have a significant effect on Financial Sustainability. These results indicate that the company's profitability level has not been able to guarantee the achievement of financial sustainability. Companies that have high profit levels are not necessarily able to maintain financial performance in the long term because financial sustainability is influenced by various other factors, such as operational efficiency, investment strategy, innovation, and the company's ability to adapt to changes in the business environment.
2. Research and Development (R&D) Investment moderates the effect of Return on Assets (ROA) on Financial Sustainability. These results indicate that investment in research and development activities can strengthen the relationship between profitability and financial sustainability. Companies that optimally allocate R&D investments have a greater opportunity to convert profits into competitive advantages through product innovation, increased efficiency, and long-term value creation.
3. Research and Development (R&D) Investment is unable to moderate the influence of Debt to Equity Ratio (DER) and Current Ratio (CR) on Financial Sustainability. This indicates that R&D investment has neither strengthened nor weakened the relationship between capital structure and a company's financial sustainability. The effectiveness of capital structure is more influenced by funding policies and the company's ability to manage financial risk than by the size of R&D investment.

Suggestions

Based on the research results, several suggestions that can be given are as follows.

1. For Food and Beverage companies, improving Financial Sustainability should not only focus on increasing profitability, capital structure, and liquidity, but also on developing innovation, operational efficiency, and long-term business strategies.
2. Company management is advised to increase the effectiveness of Research and Development (R&D) investments, as research shows that R&D can strengthen the impact of profitability on financial sustainability. Investments in product innovation, production technology, and business process development are expected to create sustainable competitive advantage.
3. Investors should not rely solely on ROA, DER, and CR for investment decisions. Assessments should also consider the company's innovation strategy, R&D investment, corporate governance, growth prospects, and other non-financial factors that can impact the company's sustainability.
4. Future research is recommended to use a larger sample size and a longer observation period to provide more comprehensive results. Furthermore, further research could include other variables, such as company size, sales growth, operational cash flow, intellectual capital, ESG, corporate governance, or innovation quality, as independent or moderating variables to gain a deeper understanding of the factors influencing financial sustainability.

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