

Volume as a Mediating in the Effect of Costs on Net Profit

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ABSTRACT

This research aims to determine the effect of promotional costs and production costs on net profit, with sales volume as a mediating variable. The data source uses secondary data with a quantitative research method. The sample was taken using purposive sampling techniques based on specific criteria, resulting in the annual financial reports of 13 companies in the food processing subsector for the period of 2020-2022. The data analysis method was conducted using path analysis models, with testing carried out through panel data regression, correlation analysis, determination coefficient analysis, hypothesis testing using t-tests and F-tests, and the bootstrap method. The analysis results show that both promotion costs and production costs have a low correlation with net profit, while the contribution of promotion costs, production costs, and sales volume to net profit is very strong when considered together. In the relationship between promotion costs and net profit, sales volume mediates the indirect relationship; whereas in the relationship between production costs and net profit, there is no mediation

INTRODUCTION

In the midst of the slowing global economic conditions in 2022, Indonesia's economic growth consistently recorded positive performance on a quarterly basis throughout 2022 and into the second quarter of 2023. In 2022, the economic growth rate of 5.31% was the highest since 2014. Almost all business sectors recorded positive growth. The three sectors with the highest growth are Transportation and Warehousing (19.87%), Accommodation and Food Services (11.9%), and Manufacturing at (4.8%), following a period when the Indonesian economy was shaken, leading to a recession in 2020-2021 when the Covid-19 pandemic first struck. Quarter-to-quarter, the contraction in economic growth that occurred consecutively over two quarters in 2020 and 2021 has placed Indonesia into a phase of technical recession. (Badan Pusat Statistik, 2023)

One of the factors influencing Indonesia's economy to grow against recession is driven by an increase in household consumption, particularly in the Accommodation and Food Services industry, as well as in the Processing Industry. The growth of household consumption is supported by the development of the non-cyclical sector, also known as the primary consumer goods sector in Indonesia, classified under code (D), which is a new sector classification listed on the IDX-IC. The primary consumer goods sector consists of 12 sub-sectors, one of which is the processed food industry. Within the IDX-IC, the processed food sector is designated with code (D222). (sahamu.com, 2023)

The food processing industry continues to grow, since its lowest point in 2020. *Badan Pusat Statistik* (BPS) stated that the Gross Domestic Product (GDP) based on Constant Prices (ADHK) for the food and beverage industry reached IDR 813.06 trillion in 2022. This figure shows an increase of 4.90% compared to the previous year, which reached IDR 775.10 trillion. The food and beverage industry has shown consistent growth over the past ten years. During this period, the highest growth occurred in 2012 with a figure of 10.33%, while the lowest growth took place in 2020, at 1.58%, coinciding with the Covid-19 pandemic that struck the world, including Indonesia. The food and beverage industry, as a subsector of the processing industry, contributes 33.92% to the GDP of the processing industry. (dataindonesia.id, 2023)

To gain a clearer understanding of the condition of the food and beverage industry sector in Indonesia, here is the growth chart from 2012 to 2022:

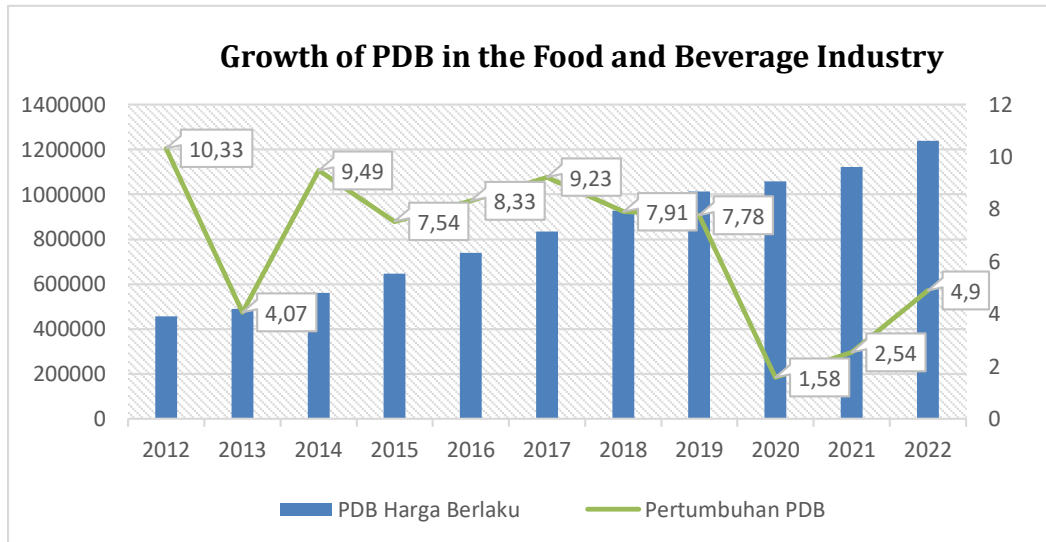


Figure 1. Growth of GDP in the Food and Beverage Industry
 Source: *Badan Pusat Statistik* (2023)

The year-on-year comparison conducted for 2021 and 2022 shows that the food and beverage industry experienced growth of 2.54% and 4.90%, respectively. However, this also negatively impacted the growth condition of the processed food subsector, which shrank below the national food and beverage industry GDP, recording -1.62% and 3.66%. Overall, both the food and beverage industry and the processed food subsector tended to decline compared to the previous year, but improved in the following year, although still considered low below the national GDP at 5.31%.

Produk Domestik Bruto (PDB) Current Prices in Indonesia experienced consistent growth every year from 2012 to 2022, indicating that the Indonesian economy continued to grow despite the recession that occurred in 2020 and 2021. However, the growth of GDP in the food and beverage sector in Indonesia from 2012 to 2018 did not align with this trend, as it had previously always been above the national GDP, but then fell below the national GDP from 2019 to 2022, with a drastic decline occurring in 2020 when the Covid-19 pandemic caused the recession.

There is a difference between the reality on the ground and the theory explained by (Kayo, 2023), which states that the food and beverage industry is a sector that does not depend on economic conditions, as consumers continue to purchase products even during crises or recessions. However, the recession of 2020 and 2021 led to a drastic decline in the growth of the food and beverage industry. This also significantly affected the subsector of processed food, which has unstable growth, with GDP lower than that of the national food and beverage industry and also the national GDP.

LITERATURE REVIEW

Analysis Cost, Volume, & Profit (CVP)

Cost volume profit analysis (CVP) is a method for analyzing how operational and marketing decisions affect net profit, based on an understanding of the relationship between variable costs, fixed costs, selling price per unit, and output level. Blocher et al. (2009:387) in (Maemunah et al., 2023).

Hansen and Mowen (2005) further explain that cost volume profit analysis (CVP) is an important tool in planning and decision-making. This tool emphasizes the relationship between costs, sales volume, and price. Thus, all the financial data contained within can be used as an effective tool to identify the scope and scale of the economic challenges faced by a division, as well as to assist in finding solutions to those challenges. (Santoso et al., 2023).

In understanding the direct relationship between costs, volume, and profit, cost-volume-profit analysis is essential. A deep understanding of the interconnections between costs, volume, and profit can assist managers in designing strategies that can enhance commitment to the company. Cost-volume-profit analysis is proposed as a method to understand the behaviour of costs and profits in response to fluctuations in the company's activity level. (Williams et al., 2008) in (Santoso et al., 2023).

Promotion Costs

According to Sari et al. (2023), promotional costs are expenses used as a means of managing marketing, shipping goods, and selling goods, which can be interpreted as advertising costs, travel expenses, and others. According to Santoso et al. (2023). Promotion costs are one of the important expenditures for companies in their efforts to generate revenue or profit through sales. These costs are incurred for various activities, such as advertising, discounts, and sponsorships, with the aim of attracting consumer interest and increasing sales. According to Nursanty et al. (2022), promotion costs are the expenses incurred to carry out product marketing activities. Examples include advertising costs, marketing expenses, transportation costs from the company's warehouse to the buyer's warehouse, and salaries for marketing department employees.

Production Costs

Production costs are the total expenses associated with a company's production process to generate its main products. This includes the costs of raw materials, direct labor costs, and factory overhead costs. (Santoso et al. 2023). According to Nursanty et al. (2022), production costs are the expenses incurred to transform raw materials into finished products that are ready for sale. This includes costs such as raw materials, auxiliary materials, labor, and depreciation of machinery and equipment. Sari et al. (2023) explains in more detail that production costs are the expenses incurred during the production process, which consist of the beginning inventory of goods in process plus manufacturing costs, which are related to the production process, minus the ending inventory. Production costs include raw material costs, direct labor costs, and overhead costs.

Sales Volume

Sales are the primary objective in a company's operations to generate profit by offering goods or services to consumers. In the company structure, sales play a key role in producing products that can provide revenue for the company and serve as the main source of income. Product marketing, whether in the form of goods or services, is the fundamental concept of sales. This sales concept involves activities that companies must undertake by promoting their products. If a company wants to achieve maximum profit, then its sales must meet the expected sales target. (Sanjaya et al. 2021).

Nursanty et al. (2022) Production costs are the expenses incurred to transform raw materials into finished products that are ready for sale. This includes costs such as raw materials, auxiliary materials, labor, and depreciation of machinery and equipment. Sari et al. (2023) explains in more detail that production costs are the expenses incurred during the production process, which consist of the beginning inventory of goods in process plus manufacturing costs, which are related to the production process, minus the ending inventory. Production costs include raw material costs, direct labor costs, and overhead costs.

Net Profit

Every company strives to achieve maximum profit from the sale of goods or services. This profit is used for the company's survival in the future. Management is responsible for planning profit targets to achieve the company's objectives. Profit is the net result of a company's operations and serves as a benchmark for management's performance in managing the company's assets (Maemunah et al. 2023). Net profit is explained by Kasmir (2019) as the profit that has been reduced by costs that are the company's expenses over a certain period, including taxes. Hansen and Mowen (2009) in (Maemunah et al. 2023) define profit as the excess income earned by a company over the costs incurred during one accounting period. This is in line with the understanding of net profit explained by Nursanty et al. (2022), where profit is the difference between income and all expenses incurred during the accounting period.

Hypotheses

H1: Promotion costs have an effect on sales volume

H2: Production costs have an effect on sales volume

H3: Promotion costs and production costs have an effect on sales volume

H4: Promotion costs have an effect on net profit

H5: Production costs have an effect on net profit

H6: Sales volume has an effect on net profit

H7: Promotion costs, production costs, and sales volume have an effect on net profit

H8: Sales volume mediates the indirect relationship between promotion costs and net profit

H9: Sales volume mediates the indirect relationship between production costs and net profit

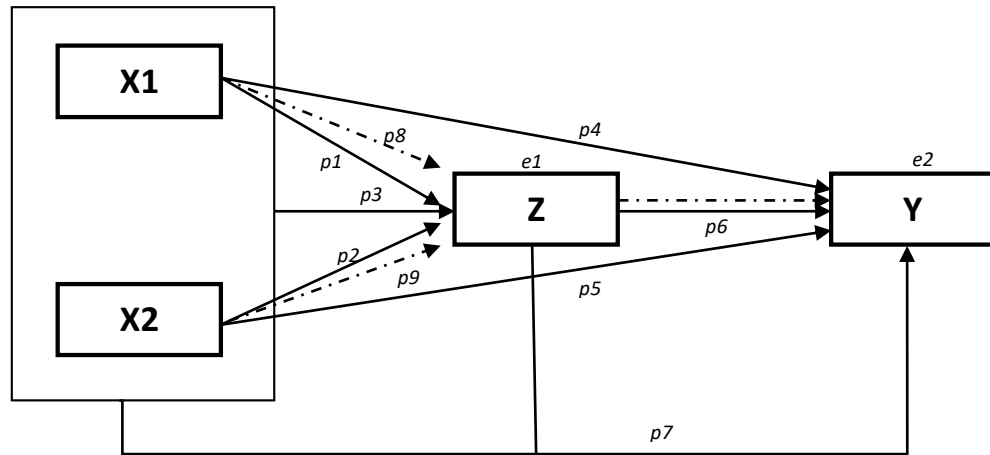


Figure 2. Conceptual Framework

Description:

- X1 : Promotion Costs (Independent Variable)
- X2 : Production Costs (Independent Variable)
- Y : Net Profit (Dependent Variable)
- Z : Sales Volume (Intervening/ Mediating Variable)

METHODOLOGY

The research uses quantitative research methods. The research data uses secondary data sources in the form of financial reports from the food processing subsector, which were downloaded from the internet through the official company websites and the Indonesia Stock Exchange website at www.idx.co.id. The population of this study consists of the financial reports of companies within the food processing subsector with the code (D222) that are listed on the Indonesia Stock Exchange in 2023, totalling 26 registered companies. Further criteria were applied using non-probability sampling techniques with purposive sampling to obtain relevant data. As a result, the annual financial reports of 13 companies in the food processing subsector for the period 2020-2022 were selected, resulting in a total sample of 39 samples based on 13 companies over a 3-year period.

Technical analysis uses path analysis, while mediation testing is conducted using the bootstrap method, with a panel data regression approach. To ensure that the data is not biased, classical assumptions are employed so that the estimated parameters obtained are more accurate. To answer the research hypothesis, t-test and F-test were used.

RESULTS

Classical Assumption Test

Multicollinearity Test

The Multicollinearity Test is a test aimed at examining the relationship between independent variables, to determine whether there is a correlation in the regression model or not. (Ghozali, 2018). To detect the presence of multicollinearity, a correlation matrix analysis of the independent variables is used, with the criterion that a high correlation value between independent variables (usually > 0.90 and < -0.90) may indicate a multicollinearity problem.

1) Structure I

Table 1. Results of the Multicollinearity Test Structure I

	X1	X2
X1	1.000000	0.696157
X2	0.696157	1.000000

Source: Processed Researcher from Eviews 13, 2024

The results of the testing show that the correlation values of all independent variables are below the correlation ≤ 0.90 and < -0.90 , indicating no strong indication of multicollinearity among the independent variables.

2) Structure II

Table 2. Results of the Multicollinearity Test Structure II

	X1	X2	Z	Y
X1	1.000000	-0.480427	0.120434	0.236868
X2	-0.480427	1.000000	-0.136664	-0.342281
Z	0.120434	-0.136664	1.000000	0.448046
Y	0.236868	-0.342281	0.448046	1.000000

Source: Processed Researcher from Eviews 13, 2024

The results of the testing show that the correlation values of all independent variables are below the correlation ≤ 0.90 and < -0.90 , indicating no strong indication of multicollinearity among the independent variables.

Heteroskedasticity Test

In a regression model, the heteroskedasticity test is used to determine whether there is a difference in the variance of residuals among observations. If the variance of residuals among observations remains constant, the test is referred to as homoscedasticity; however, if it does not, the test is referred to as heteroscedasticity. (Ghozali, 2018).

1) Structure I

Table 3. Results of the Multicollinearity Test Structure I
Heteroskedasticity Test: Glejser
Null hypothesis: Homoskedasticity

F-statistic	1.630493	Prob. F(2,35)	0.2104
Obs*R-squared	3.238742	Prob. Chi-Square(2)	0.1980
Scaled explained SS	2.511530	Prob. Chi-Square(2)	0.2849

Source: Processed Researcher from Eviews 13, 2024

The test results for heteroskedasticity, using the Chi-Square probability test, show that the Prob. value is greater than 0.05, specifically (0.198 > 0.05), indicating no strong indication of heteroskedasticity among the independent variables.

2) Structure II

Table 4. Results of the Multicollinearity Test Structure II
Test Equation:
Dependent Variable: ARESID
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.046401	0.024532	1.891471	0.0669
Z	-6.99E-11	1.55E-10	-0.451863	0.6542
X1	-0.018883	0.144947	-0.130276	0.8971
X2	-0.027845	0.030019	-0.927582	0.3600

Source: Processed Researcher from Eviews 13, 2024

The results of the test for heteroscedasticity using the White test indicate that the p-values for each variable are all greater than 0.05. Specifically, (X1 is 0.89 > 0.05), (X2 is 0.36 > 0.05), and (Z is 0.65 > 0.05), suggesting that there is no strong indication of heteroscedasticity among the independent variables.

Panel Data Regression

Accurate data is crucial in research because it reflects the actual conditions. Panel data is a combination of cross-sectional and time series data merged in a single data processing method, known as pooling (Ekananda, 2019) as cited in Eviatiwi, K., et al., 2022).

Selection of Panel Data Regression Model

Model selection in regression is performed to determine which regression model to use. There are three tests that need to be conducted: the Chow test, the Hausman test, and the Lagrange Multiplier test.

Chow Test

The Chow test is used to determine whether the common effect model (CEM) or the fixed effect model (FEM) is more appropriate for estimating panel data (Eviatiwi, K., et al., 2022).

1) Structure I

Table 5. Results of the Chow Test Structure I
 Redundant Fixed Effects Tests
 Equation: Untitled
 Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	30.922547	(12,24)	0.0000
Cross-section Chi-square	109.239412	12	0.0000

Source: Processed Researcher from Eviews 13, 2024

The test results show that the probability value of the cross-section is less than the significance level, specifically $0.000 < 0.05$. Therefore, the more appropriate regression model for this research is the Fixed Effects Model (FEM) compared to the Common Effects Model (CEM). Consequently, the next step is to perform the Hausman test.

2) Structure II

Table 6. Results of the Chow Test Structure II
 Redundant Fixed Effects Tests
 Equation: Untitled
 Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	15.907748	(12,23)	0.0000
Cross-section Chi-square	86.969280	12	0.0000

Source: Processed Researcher from Eviews 13, 2024

The test results show that the probability value of the cross-section is less than the significance level, specifically $0.000 < 0.05$. Therefore, the more appropriate regression model for this research is the Fixed Effects Model (FEM) compared to the Common Effects Model (CEM). Consequently, the next step is to perform the Hausman test.

Hausman Test

The Hausman test is a statistical method used to determine whether the Fixed Effects Model (FEM) or the Random Effects Model (REM) is more appropriate for panel data (Eviatiwi, K., et al., 2022).

1) Structure I

Table 7. Results of the Hausman Test Structure I
 Correlated Random Effects - Hausman Test
 Equation: Untitled
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	30.370682	2	0.0000

Source: Processed Researcher from Eviews 13, 2024

The test results show that the probability value is less than the significance level, specifically $0.00 < 0.05$. Therefore, the Hausman test results indicate that the Fixed Effects Model (FEM) is valid and more suitable for this research compared to the Random Effects Model (REM). Consequently, there is no need to proceed with the Lagrange Multiplier test.

2) Structure II

Table 8. Results of the Hausman Test Structure II
 Correlated Random Effects - Hausman Test
 Equation: Untitled
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.193420	3	0.0067

Source: Processed Researcher from Eviews 13, 2024

The test results show that the probability value is greater than the significance level, specifically $0.006 > 0.05$. Therefore, the Hausman test results indicate that the Fixed Effects Model (FEM) is valid and more appropriate for this research compared to the Random Effects Model (REM). Consequently, there is no need to proceed with the Lagrange Multiplier test.

Selection of Panel Data Estimation Models

In Structure I and Structure II, the selected estimation model is the Fixed Effects Model (FEM). This means that the intercept differs between subjects, but the slope remains the same across subjects. This model is also known as the Least Squares Dummy Variable (LSDV) model because it uses dummy variables to represent differences in characteristics between individuals and across time.

1) Structure I

Table 9. Estimated Results Fixed Effect Model (FEM) Structure I
 Dependent Variable: Z
 Method: Panel Least Squares

Variable	Coefficien			
	t	Std. Error	t-Statistic	Prob.
C	1832.184	378.5294	4.840268	0.0001
X1	0.647531	0.381740	1.696261	0.1028
X2	1.265044	0.032647	38.74917	0.0000

Source: Processed Researcher from Eviews 13, 2024

From Table 9, the results of the panel data regression using the Fixed Effect Model (FEM) yield the following panel data regression equation:

$$Z = 1832.18359433 + 0.647531157153*X1 + 1.2650436657*X2 + [CX=F]$$

The test results show that the constant value of 1832 indicates that if the promotion costs (X1) and production costs (X2) are zero, the sales volume (Z) in the processed food subsector will reach 1832. Furthermore, the regression coefficient for promotion costs (X1) is 0.65, which means that for each unit increase in promotion costs, the sales volume will increase by 0.65. Meanwhile, the regression coefficient for production costs (X2) is 1.26, indicating that for each unit increase in production costs, the sales volume will increase by 1.26.

2) Structure II

Table 10. Estimated Results Fixed Effect Model (FEM) Structure II
 Dependent Variable: Y
 Method: Panel Least Squares

Variable	Coefficien			
	t	Std. Error	t-Statistic	Prob.
C	0.173830	0.069378	2.505539	0.0198
Z	-1.39E-09	6.24E-10	-2.233010	0.0356
X1	-0.753451	0.323176	-2.331393	0.0289
X2	-0.091703	0.095902	-0.956220	0.3489

Source: Processed Researcher from Eviews 13, 2024

From Table 10, the results of the panel data regression using the Fixed Effect Model (FEM) yield the following panel data regression equation:

$$Y = 0.173830147562 - 1.39243274049e-09*Z - 0.753450581144*X1 - 0.0917030466763*X2 + [CX=F]$$

The test results show that the constant value of 0.17383 indicates that if the independent variables (X1, X2, and Z) are zero, the net profit (Y) in the processed food subsector will be 0.17383. Furthermore, the regression coefficient for promotion costs (X1) is -0.7634, meaning that for each unit increase in promotion costs, net profit will decrease by 0.7634. Meanwhile, the regression coefficient for production costs (X2) is -0.0917, indicating that each unit increase in production costs will also reduce net profit by 0.0917. Finally, the regression coefficient for sales volume (Z) is very small, -0.00000000139, suggesting that changes in sales volume have an almost negligible effect on net profit.

Correlation Test

To determine the strength or degree of association between independent and dependent variables, as expressed by Sugiyono (2019), this can be illustrated in Table 11:

Tabel 11. Guidelines for Interpreting Correlation Coefficients

Interval Coefficient	Level of Relationship
0.000 - 0.199	Very Low
0.200 - 0.399	Low
0.400 - 0.599	Medium
0.600 - 0.799	Strong
0.800 - 1.000	Very Strong

Source: Sugiyono (2019)

1) Structure I

Table 12. Results of Structure I Correlation Test
Covariance Analysis: Ordinary

Correlation Probability	X1	X2	Z
X1	1.000000		

X2	0.696157	1.000000	
	0.0000	-----	
Z	0.686491	0.997775	1.000000
	0.0000	0.0000	-----

Source: Processed Researcher from Eviews 13, 2024

The test results show that the promotion costs variable (X1) has a positive correlation value of $r = 0.68$, indicating a strong and direct relationship between promotion costs and sales volume; in other words, an increase in promotion costs tends to enhance sales volume. Meanwhile, the production costs variable (X2) has a very high positive correlation value of $r = 0.99$, indicating a very strong and direct relationship between production costs and sales volume, where an increase in production costs also tends to increase sales volume.

2) Structure II

Table 13. Results of Structure II Correlation Test
 Covariance Analysis: Ordinary

Correlation Probability	X1	X2	Z	Y
X1	1.000000			

X2	-0.480427	1.000000		
	0.0020	-----		
Z	0.120434	-0.136664	1.000000	
	0.4652	0.4068	-----	
Y	0.236868	-0.342281	0.448046	1.000000
	0.1465	0.0329	0.0042	-----

Source: Processed Researcher from Eviews 13, 2024

The test results show that the promotion costs variable (X1) has a positive correlation value of $r = 0.23$, indicating a weak direct relationship; in other words, an increase in promotion costs tends to slightly increase net profit. Conversely, the production costs variable (X2) has a negative correlation value of $r = -0.34$, indicating a weak inverse relationship; this means that an increase in production costs is likely to decrease sales volume. Meanwhile, the sales volume variable (Z) has a positive correlation value of $r = 0.44$, indicating a moderate direct relationship; thus, an increase in sales volume tends to increase net profit.

Test the Coefficient of Determination

The analysis of the coefficient of determination is conducted to measure the model's ability to explain the variance in the dependent variable. (Ghozali, 2018) The range of the coefficient of determination is $0\% < R^2 < 100\%$, where a higher R^2 value indicates a stronger influence of the independent variables on the dependent variable.

1) Structure I

Table 14. Results of the Coefficient of Determination Test Structure I

Dependent Variable: Z	
Method: Panel Least Squares	
R-squared	0.999738
Adjusted R-squared	0.999585

Source: Processed Researcher from Eviews 13, 2024

The test results show that the coefficient of determination (R-squared) is 0.99, or 99%. This indicates that the independent variables (promotion costs and production costs) account for 99% of the variation in sales volume (Z), while the remaining 1% is attributed to other factors not included in the research model.

2) Structure II

Table 15. Results of the Coefficient of Determination Test Structure II

Dependent Variable: Y

Method: Panel Least Squares

R-squared	0.923062
Adjusted R-squared	0.872886

Source: Processed Researcher from Eviews 13, 2024

The test results show that the coefficient of determination (R-squared) is 0.99, or 99%. This indicates that the independent variables (promotion costs and production costs) account for 99% of the variation in sales volume (Z), while the remaining 1% is attributed to other factors not included in the research model.

Partial Test (T Test)

According to Ghozali (2018), the t-test assesses the extent to which each independent variable individually influences the dependent variable. To determine the t-test value, a significance level of 5% is used.

1) Structure I

Table 16. Partial Test Results (T) Structure I

Dependent Variable: Z

Method: Panel Least Squares

Variable	Coefficien			
	t	Std. Error	t-Statistic	Prob.
C	1832.184	378.5294	4.840268	0.0001
X1	0.647531	0.381740	1.696261	0.1028
X2	1.265044	0.032647	38.74917	0.0000

Source: Processed Researcher from Eviews 13, 2024

The test results show that the promotion costs variable (X1) has a probability value of 0.1028, which is greater than 0.05, indicating that its effect on sales volume (Z) is not statistically significant. In contrast, the production costs variable (X2) has a probability value of 0.0000, which is much smaller than 0.05, indicating that its effect on sales volume (Z) is statistically significant.

2) Structure II

Table 17. Partial Test Results (T) Structure II
 Dependent Variable: Y
 Method: Panel Least Squares

Variable	Coefficie		t-Statistic	Prob.
	nt	Std. Error		
C	0.173830	0.069378	2.505539	0.0198
Z	-1.39E-09	6.24E-10	-2.233010	0.0356
X1	-0.753451	0.323176	-2.331393	0.0289
X2	-0.091703	0.095902	-0.956220	0.3489

Source: Processed Researcher from Eviews 13, 2024

The test results indicate that the variables significantly affecting the dependent variable net profit (Y) are the sales volume (Z) with a probability value of 0.0356, and the promotion costs (X1) with a probability value of 0.0289, as both have probability values less than 0.05. Conversely, the production costs variable (X2) is not statistically significant because its probability value is 0.3489, which is greater than 0.05.

Simultaneous Test (Test F)

The F-test aims to determine whether the independent variables collectively affect the dependent variable (Ghozali, 2018). The significance level used is 5%.

1) Structure I

Table 18. Simultaneous Test results (F) Structure I
 Dependent Variable: Z
 Method: Panel Least Squares

F-statistic	6533.729
Prob(F-statistic)	0.000000

Source: Processed Researcher from Eviews 13, 2024

The test results show that the probability value for the simultaneous effect of promotion costs (X1) and production costs (X2) on sales volume (Z) is 0.00, which is less than 0.05. Therefore, it can be concluded that there is a significant simultaneous effect of promotion costs (X1) and production costs (X2) on sales volume (Z).

2) Structure II

Table 19. Simultaneous Test results (F) Structure II
 Dependent Variable: Y
 Method: Panel Least Squares

F-statistic	18.39624
Prob(F-statistic)	0.000000

Source: Processed Researcher from Eviews 13, 2024

The test results show that the probability value for the simultaneous effect of promotion costs (X1), production costs (X2), and sales volume (Z) on net profit (Y) is 0.00, which is less than 0.05. Therefore, it can be concluded that there is a significant simultaneous effect of promotion costs (X1), production costs (X2), and sales volume (Z) on net profit (Y).

Mediation Test (Bootstrap Method)

The non-parametric resampling test is a method that involves creating new samples from existing data by randomly selecting cases and allowing for repeated selections. This testing relies on a 95% confidence interval from the empirical distribution of parameter estimates, such as regression coefficients. The confidence interval is determined with a lower bound at the 2.5th percentile and an upper bound at the 97.5th percentile (Preacher and Hayes, 2004, as cited in Sidhu et al., 2021). The decision criterion is that an indirect effect is considered significant if the confidence interval does not include zero.

- 1) The Influence of Promotion Costs (X1) on Net Profit (Y) Through Sales Volume (Z)

Table 20. Results of the Bootstrap Method Test X1

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***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****
Total effect of X on Y
  Effect      se      t      p      LLCI      ULCI
  1.7691     .3881     4.5580   .0001   .9827     2.5556

Direct effect of X on Y
  Effect      se      t      p      LLCI      ULCI
  -.3396     .1754    -1.9361   .0607  -.6952     .0161

Indirect effect(s) of X on Y:
  Effect      BootSE   BootLLCI  BootULCI
z      2.1087    .7794     1.1238    4.1222
    
```

Source: Processed Researcher from SPSS 27, 2024

The test results show that the indirect effect of promotion costs (X1) on net profit (Y) through sales volume (Z) is 2.1087. The bootstrap confidence interval (CI) is from 1.123 to 4.122, which does not include zero, indicating that the mediation effect is statistically significant. Based on this test, it means that sales volume (Z) mediates the relationship between promotion costs (X1) and net profit (Y)

2) The Influence of Production Costs (X2) on Net Profit (Y) Through Sales Volume (Z)

Table 21. Results of the Bootstrap Method Test X2

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***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****
Total effect of X on Y
  Effect      se      t      p      LLCI      ULCI
-3325.2784  3000.8972  -1.1081  .2750 -9405.7671  2755.2103

Direct effect of X on Y
  Effect      se      t      p      LLCI      ULCI
 -902.4238   837.3108  -1.0778  .2883 -2600.5964  795.7488

Indirect effect(s) of X on Y:
  Effect      BootSE  BootLLCI  BootULCI
z -2422.8546  2443.2379 -8858.1804  623.6275
```

Source: Processed Researcher from SPSS 27, 2024

The test results show that the indirect effect of production costs (X2) on net profit (Y) through sales volume (Z) is -2422.85. The bootstrap confidence interval (CI) ranges from -8858 to 623, which includes zero, indicating that the mediation effect is not statistically significant. Based on this test, it means that sales volume (Z) does not mediate the relationship between production costs (X2) and net profit (Y).

CONCLUSIONS AND RECOMMENDATIONS

Based on the tests that have been conducted, it can be concluded to answer the hypothesis that was formulated :

1. Hypothesis H1 is not supported by the data. Promotional costs do not have a significant effect on sales volume.
2. Hypothesis H2 is supported by the data. Production costs have a significant effect on sales volume.
3. Hypothesis H3 is supported by the data. Promotional costs and production costs together have a significant effect on sales volume.
4. Hypothesis H4 is supported by the data. Promotional costs have a significant effect on net profit.
5. Hypothesis H5 is not supported by the data. Production costs do not have a significant effect on net profit.
6. Hypothesis H6 is supported by the data. Sales volume has a significant effect on net profit.
7. Hypothesis H7 is supported by the data. Promotional costs, production costs, and sales volume together have a significant effect on net profit.
8. Hypothesis H8 is supported by the data. Sales volume significantly mediates the relationship between promotional costs and net profit.
9. Hypothesis H9 is not supported by the data. Sales volume does not significantly mediate the relationship between production costs and net profit.

Based on the analysis results and conclusions from the proposed hypotheses, here are some policy recommendations for food processing companies listed on the Indonesia Stock Exchange:

1. Increase production cost efficiency to boost sales volume, as production costs significantly impact sales volume.
2. Optimize promotional strategies to maximize their impact on net profit, considering that promotion costs significantly affect net profit.
3. Focus on increasing sales volume to improve net profit, since sales volume significantly affects net profit and mediates the relationship between promotion costs and net profit.
4. Integrate the management of promotion and production costs into strategies to effectively increase sales volume, as both costs simultaneously affect sales volume.
5. Regularly refine promotional and production strategies to ensure positive impacts on net profit, considering the simultaneous effects of promotion and production costs on net profit.
6. Monitor and regularly evaluate the impact of production costs on operations and their potential effect on net profit to maintain efficiency, even though their influence is not significant in this analysis.
7. Implement promotions focused on increasing net profit by leveraging test results showing a significant relationship between promotion costs and net profit.
8. Use sales analysis data to optimize strategies based on the significant influence of sales volume on net profit and its mediation in the relationship between promotion costs and net profit.
9. Avoid ineffective strategies in mediating sales volume between production costs and net profit, as test results show that sales volume does not significantly mediate the relationship between production costs and net profit.

By implementing this policy recommendation, the company can enhance operational efficiency, optimize promotional strategies, and maximize overall net profit.

FURTHER STUDY

In writing this article, the researcher acknowledges that there are many shortcomings in terms of language, writing, and presentation, given the researcher's own limited knowledge and skills. Therefore, to improve this article, the researcher welcomes constructive criticism and suggestions from various parties. This study's limitations include restricting the sample to companies within the food processing subsector, which may not fully represent all industry sectors listed on the IDX. Additionally, the variables used in this research are only a subset of the factors predicted to influence company performance regarding net profit, namely promotion costs, production costs, and sales volume. Other factors that could affect the company's value have yet to be considered.

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