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PRODUCTION COSTS, OPERATING COSTS, AND SALES VOLUME AFFECT NET PROFIT

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Abstract. The study's focus is on the food and beverage industry sub-sector between 2017 to 2021, and it aims to examine the effect of production costs, operational costs, and sales volume on net profit. Purposeful sampling was used to choose a subset of 18 businesses for this investigation, yielding 90 observations. The findings show that production expenses, operational costs, and sales volume all have a role in the company's net profit. This phrase implies that in order to turn a profit, operating and production costs would rise in proportion to the volume of sales. Investors should think about these things while deciding how to allocate their funds.

Keywords: net profit; production cost; operating cost; sales volume

I. INTRODUCTION

The primary objective of establishing a company is typically to generate maximum profit. This is essential for ensuring the company's survival and promoting sustainable growth. In managing resources and costs, companies need to know sales activities and cost behavior that occur in the company **[1]**. The food and beverage industry is projected to remain one of the mainstay sectors that support manufacturing growth and the national economy. The important role of this strategic sector can be seen from its consistent and significant contribution to the gross domestic product (GDP) of the non-oil and gas industry and increased investment realization. In addition, the Minister of Industry said that the national food and beverage industry is expected to be able to make strategic efforts to increase competitiveness in order to be able to compete at the global level (Ministry of Industry, 2021). The highest peak growth in the contribution of the food and beverage industry sector to GDP occurred in 2020-2021 where it was the largest contribution compared to previous years, which was 319,444 billion to 1,130,167 billion. A survey of 6,000 respondents on 6-20 October 2020 by Mondelez Indonesia showed that 60% of Indonesians consumed more snacks during the pandemic. This condition makes the food and beverage subsector has a high investment value and can attract investors to invest in the company. So as to be able to make a greater contribution to industrial growth in Indonesia.

Based on data shows that profit growth fluctuates every year in the food and beverage industry. The profit growth in 2018 to 2019 was lower than that of 2017. This was due to the decrease in world palm oil prices, which resulted in a reduction in the total value of the exports of palm oil and commercial value exported (www.kemenperian.go.id, 2019). Furthermore, profit growth in 2020 experienced a drastic decline, this happened due to the outbreak of the spread of Covid-19, economic activity and public mobility had stopped and caused low purchasing power at that time (www.bisnis.tempo.co, 2020). In 2021, the profit growth of the food and beverage sub-sector increased and rose from the Covid-19 pandemic. Moreover, every single year, businesses in the food and drink industry see a boost in their average net income. This is in accordance with the economist's statement that millennial wants all practicality in transactions. The increase in net profit every year makes this sub-sector the largest contributor to the economy in Indonesia and makes investors interested in investing in this sector, so that the food and beverage sub-sector in enlarging the company's operations and increasing net profit. The discourse pertains to the correlation between a corporation's net earnings and the deliberations surrounding the determinants that impact said net earnings. Production costs are the largest cost expenditure for manufacturing companies. Therefore, management must control production costs and optimize their utilization rationally and systematically so that production costs become rational and effective, and can increase the company's net profit if controlled properly. Therefore, management must control production costs and optimize their utilization rationally and systematically so that production costs become rational and effective, and can increase the company's net profit if controlled properly. According to research conducted by **[2]** states that production costs have a positive effect on net profit. This research is different from research conducted by **[3]**stating that production costs have no effect on net profit.

The size of the organization will have an influence on the level of commercial transactions, thereby increasing the costs incurred in running business operations **[4]**. Poor management of operational costs can result in a decrease in

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revenue received. In the majority of instances, operational costs have an impact on a company's ability to accomplish its objectives within enhancing the company's earnings. As a result, the products produced in the company go through a very long production process and by reaching consumers. Because the purpose of the company's operations is to achieve maximum net profit. Based on research conducted by **[5]** stated that operating costs have a positive effect on net profit. In contrast to research conducted by **[6]** which states that operating costs negatively affect net profit.

Sales volume is the total of sales activities obtained from commodities traded at a certain time **[6]**. To get optimal profit, one of them is by paying attention to sales volume and reducing operational costs that will be incurred by the company **[3]**. Growing sales volume can be achieved by preserving the quality of products. As time passes, it is inevitable that competitors will emerge for a company. Therefore, to preserve balance or increase sales volume, a company must always prioritize the quality of its products. To reduce costs, the company can suppress and closely monitor the expenses incurred. It is obvious that larger companies will incur greater costs. In such cases, it is important for the company to manage and prepare effectively to prevent losses resulting from these expenses. Research conducted by [7] states that sales volume has a good impact on net profit. However, contrary to the findings of [8], the relationship between sales volume and net profit does not exist.

Michael Spence first proposed signal theory in his research paper titled "Job Market Signaling." This theory explains that there are two parties involved: internal parties and external parties. As stated in reference **[4]**, signaling theory refers to actions taken by a company to communicate to external parties or investors how the company's management perceives its future prospects.

According to **[2]**, states that net profit is "Net profit comes from transactions of revenue, expenses, profits, and losses. Thus, net income is the excess revenue or profit generated from the difference in the company's expense costs in a certain period of time. Profit is an important goal of a business-oriented company, the company strives to get profit in every period. If the company gets the difference in revenue or more profit, then the company will make a profit. However, if the company gets a difference in revenue or profit of less or minus, the company suffers a loss.

One of the fundamental functions of a business is to group costs together, and production costs are one of those groups. Full costing and variable costing are two methods that can be used to calculate production expenses **[2]**. Companies incur production costs when they manufacture products or prepare finished goods for sale. Production costs are the sum total of a company's outlays for the production elements and raw materials necessary to manufacture a product, as defined by **[9]**.

Operational costs according to **[4]** are costs related to the company's operating activities including sales and administrative costs, advertising costs, depreciation costs, and repairs and maintenance. Thus, operational cost is a cost related to activities that occur in the company, but has no relationship with the production activities of goods or services.

According to **[6]** sales volume is a measure of the number or magnitude of the number of goods or services successfully sold by the company in a certain period of time. Thus, sales volume is the total amount of sales of goods or services produced by the company and has an influence on high or low sales on the profits to be generated by the company.

Production costs are costs that contain production functions that process raw materials into finished goods **[9]**. High production costs can negatively affect the company's sales. Therefore, it is important for companies to adjust their production costs **[4]**. According to research **[10]**concluded that production costs negatively affect net profit. The same thing also happened to research conducted by **[11]** which stated that production costs negatively affect company profits, meaning that if production costs are high, it can reduce company profits and vice versa.

H1: Production costs negatively affect net profit

According to **[12]**, operational costs or business costs are costs that do not have a direct relationship with the company's product activities but are related to the company's operational activities. In controlling costs in the company so that profits can be obtained optimally, namely by the way the company emphasizes operational costs, the company will be able to increase net profit to the maximum. Vice versa, if operational costs occur excessive waste will result in a decrease in net profit. According to previous research conducted **[6]** stated that operating costs negatively affect profits, meaning that if the company can reduce operating costs, the profits captured by the company will enchance and vice versa if operating costs increase, net profit will decrease. Therefore, it can be concluded that operating expenses negatively affect net income.

H2: Operating expenses negatively affect net income

According to **[3]** if the more or higher the number of sales obtained by enterprise, the higher the profit obtained. This is known through the profit incurred when the company's product sales are greater than the costs incurred, and 34 there is an increase in profit each year along with the sales volume that also increases. According to previous research conducted by **[7]** stated that sales volume has a favorable impact on profits. According to research carried out by **[3]** which stated that sales volume partially has a positive effect on profits, meaning that if sales volume increases, the company's profits will also increase and vice versa. Therefore, it can be concluded that sales volume has a beneficial effect on net profit.

H3: Sales volume positively affects net profit

II. RESEARCH METHODS

Companies in the food and beverage subsector that were traded on the Indonesia Stock Exchange (IDX) between 2017 and 2021 represent the population. Purposeful sampling was implemented for this analysis. Researchers use the following criteria to select samples:

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1) A food and beverage subsector company listed on the Indonesia Stock Exchange in 2017-2021.
2) Food and beverage subsector companies that consistently publish audited financial statements and annual reports in 2017-2021.

Based on this method, the number of research samples was 18 companies and the number of observational data was 90 companies in this study.

Operational Definition And Variable Measurement

1) Net income (Y)
The term "net profit" is used to describe the surplus or deficit that results from the accumulation of all of a company's revenues and expenses over a given time period **[13].**

$$Net\ Profit = Sales - COGS - Operating\ Expenses - Tax\ Expenses$$

2) Porduction Cost (X1)
Production costs refer to the total expenses that a firm incurs in converting raw materials into finished goods that are prepared for commercial transactions **[14]**.

$$Production\ Cost = Raw\ Material + Cost\ +\ Direct\ Labor\ Costs + Fixes\ Plant\ Overhead\ Costs\ +\ Variable\ Plant\ Overhead\ Costs$$

3) Operating Cost (X2)
Operating costs or business costs are costs related to the company's operating activities including sales and administrative costs, advertising costs, depreciation costs, and repair and maintenance **[12]**.

$$Operating\ Cost = Sales\ Cost + General\ Administration\ Cost$$

4) Sales Volume (X3)
The volume of sales is a metric that quantifies the quantity or magnitude of products or services that have been effectively sold by a company within a particular duration **[3]**.

$$Volume =\ Total\ Product\ Sales\ During\ One\ Period$$

The panel data analysis equation model used in this study is:

$$Y\ =\ \alpha\ +\ \beta 1X1it\ +\ \beta 2X2it\ +\ \beta 3X3it\ +\ \varepsilon$$

Keterangan:

Y	= Net Profit
α	= Constant
β1-β3	= Regression coefficient of each independent variable
X1it	= Production Cost
X2it	= Operating Costs
X3it	= Sales Volume
E	= Error term

III. RESULTS AND DISCUSSION

The mean net income of the food and beverage sub-sector companies for 2017-2021 is IDR 1,012,024,153,599, which is lower than the standard deviation value of IDR 2,122,272,824,195. These results indicate that there is a significant variation in the net profit data of these companies during the given period. In 2021, PT. Indofood Sukses Makmur Tbk (INDF) recorded the highest net profit value of IDR 11,203,585,000,000. On the other hand, in 2018, PT. Three Pillars of Sejahtera Food Tbk (AISA) had the lowest net profit value of IDR 123,513,000,000. The average value (mean) of production is IDR 6,555,219,389,819, which is lower than the standard deviation value of IDR 13,352,542,608,449. The mean value and standard deviation of the production cost data for food and beverage sub-sector companies between 2017 and 2021 indicate that there is variation. In 2021, PT. Indofood Sukses Makmur Tbk (INDF) holds the highest production cost value, which amounts to IDR 66,881,557,000,000. On the other hand, in 2020, PT. Prima Cakrawala Abadi Tbk (PCAR) holds the lowest production cost value of IDR 37,460,653,195.

The operating conditions of food and beverage sub-sector companies between 2017-2021 have an average value (mean) of Rp1,610,952,492,605, which is lower than the standard deviation value of Rp3,195,435,796,785. This indicates that the data on operating costs varies among these companies during this time period. In 2021, PT. Indofood Sukses Makmur Tbk (INDF) has the highest operational cost value, which amounts to IDR 15,364,067,000,000. On the other hand, in 2019, PT. Prima Cakrawala Abadi Tbk (PCAR) has the lowest operational cost value of IDR 14,251,789,881. The mean sales value of food and beverage sub-sector companies from 2017-2021 is Rp9,554,302,466,155. However, this value is lower when compared to the standard deviation of Rp19,511,360,823,487. These results indicate that the sales volume data of these companies varies during the given time period. In 2021, PT. Indofood Sukses Makmur Tbk (INDF) holds the highest sales volume value, which amounts to IDR 99,345,618,000,000. On the other hand, in 2020, PT. Prima Cakrawala Abadi Tbk (PCAR) has the lowest sales volume value of IDR 46,602,172,890.

Panel Data Regression

Test Chow

This use aims to determine the use of the common effect model or fixed effect model that is most appropriate in research.

Table 1. Chow Test Results

Cross-section Chi-square	*46.126851*	*17*	*0.0002*

Source: Output, Eviews 10, (2023)

The Chow test in the table shows the Chi-square Cross-section probability of 0.0002 <0.05, then H0 is rejected indicating that the fixed effect model is selected.

Hausman Test

This testaims to determine the use of fixed effect model or random effect model that is most appropriate in this study.

Table 2. Hausman Test Results

Cross-section random	6.807081	3	0.0783

Source: Output, Eviews 10, (2023)

The tabulated Hausman test outcomes reveal a fortuitous cross-sectional value of 0.00783, surpassing the 5% significance threshold. Drawing from the evidence presented by the data, one may deduce that the random effect model

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exhibits superior performance in comparison to the fixed effect model. Henceforth, it is imperative to conduct a Lagrange multiplier or Breusch-Pagan examination.

Lagrange Multiplier Test

The statistical analysis revealed a Breusch-Pagan value of 0.0144, which falls below the established threshold of 0.05 at a 5% level of significance. Drawing from the evidence presented by these data, one may surmise which the model with random effects exhibits superior performance in comparison to the common effect model.

Table 3. Lagrange Multiplier Test Results

Breusch-Pagan	(0.0144)

Source: Output, Eviews 10, (2023)

Hypothesis Testing

Test Coefficient of Determination (R^2)

The result of the coefficient (R^2) or adjusted R Square value is 0.972218 or 97%. From these results, it can be explained production costs, operating costs, and sales volume can simultaneously affect of net profit.

Table 4. Coefficient of Determination Test Results

Adjusted R-Squared	0.972218

Source: Output Eviews 10, (2023)

Simultaneous Test

Simultaneous test results (Test F) obtained Prob (F-statistic) of 0.000000 where the test results are less than 0.05, then production costs, operational costs, and sales volume, simultaneously affect on net profit.

Table 5. Simultaneous Test Results

Prob(Fstatistic)	0.000000

Source: Output Eviews 10, (2023)

Partial Test

If the probability value (p-value) < 0.05, then hypothesis is accepted.

Table 6. Partial Test Results

Variable	t-Statistic	Prob.
C	1.754031	0.0830
X1	-19.80150	0.0000
X2	-5.279351	0.0000
X3	21.26838	0.0000

Source: Output Eviews 10, (2023)

Production Costs Affect Net Profit

Based on table 6 can be decided is H_01 rejected and accepted. Its means that production costs have a partial effect on net income. A positive regression coefficient can explain that when production costs increase, it will make the net profit obtained by the company increase as well.

The study results do not align with the hypothesis that was proposed. According to the results, there is a positive correlation between production costs and the net profit of the current year. The quantity of products sold and the increase in sales can be negatively impacted by high production costs. This, in turn, can have a negative effect on the net profit obtained by the company for the current year. If the production costs decrease or are suppressed, it may lead to a reduction in sales and a decrease in net profit for the current year. This is consistent with the research carried out by references **[8]**, **[13]**, and **[14]**.

Operating Costs Affect Net Profit

Based on table 6 can be decided is H_01 rejected and accepting Ha1 means that operating costs have a partial effect on net income. A positive regression coefficient can explain that when operating costs increase, it will make the net profit obtained by the company increase as well. The study's findings contradict the original hypothesis. The findings indicated that operating costs contributed to the bottom line. It's possible that the company's net profit will rise as a result of an increase in sales, which in turn will be favourably impacted by the high marketing costs that have been invested. As a result, sales and net profit will not be maximized or reduced if operational costs are reduced or suppressed. The result is consistent with the research carried out by **[15]**.

Sales Volume Affect Net Profit

Based on table 6 can be made a decision is H_01 rejected and accepting Ha1 means that sales volume has a partial effect on net profit. A positive regression coefficient can explain that when sales volume increases, it will make the net profit obtained by the company increase. According to the findings, the hypothesis that sales volume would have a beneficial impact on net profit is supported. The company's goal is to grow sales volume as a means of maximizing profit generating. The better the company's prospects for making a profit, the more things it sells. The persistent pursuit of profit through numerous sales is so ingrained in the company's operations that it is treated as ordinary. However, businesses also need to be aware that increased sales volumes might lead to falling product prices, which in turn can have a negative impact on their bottom line **[6]**. This agrees with the findings of **[3]**.

IV. CONCLUSION

Companies in the food and beverage sector have a favorable impact on their earnings from production expenses in the years between 2017 and 2021. Then, increases in product volume lead to greater net profit despite increases in production costs an operating cost. Sales and profits can benefit from enhanced product marketing initiatives. Therefore, Production costs drive up net profit if product sales grow up. Investors should look at the company's net profit, production costs, operating costs, and sales volume because sales volume changes affect net profit. To optimize net profit, the company should improve these factors.

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