

## The Influence of Raw Material Costs, Direct Labor Costs, Overhead Costs, and Operational Costs on Sales Turnover

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### Abstract

The research conducted intends to identify the effect of raw material costs, direct labor costs, indirect costs, and operational costs on sales turnover at the Upik family chip factory, both individually and as a whole. The method applied is a quantitative approach through a causal associative type of study, using secondary data. The resulting research indicates that simultaneously, the variables of raw material costs, labor costs, overhead costs, and operational costs have a significant influence on sales turnover as the dependent variable. Partially, the variables of raw material cost, overhead cost, and operational cost are proven to be able to significantly influence sales, while direct labor cost does not show a significant influence.

## Introduction

Micro, Small and Medium Enterprises (MSMEs) have a crucial and fundamental position to encourage economic progress. MSMEs are productive business entities owned by individuals or economic units (Ahmad et al., 2023). The MSME sector holds an important position in the Indonesian economy and is highly appreciated. This sector has a positive impact on economic growth, both at the national and regional levels. MSMEs are also a form of labor-intensive economy that has significant potential in reducing poverty in our country (Juita, 2016). MSMEs have become a basic factor in helping the Indonesian economy, which maintains the economic activities of the community on a large scale. In accordance with the provisions stipulated in Law Number 20 of 2008 concerning Micro, Small and Medium Enterprises (MSMEs), it explains that these businesses provide great opportunities for the community to become entrepreneurs, create jobs, and contribute to stabilizing individual income. In addition, MSMEs play a vital role in supporting national stability (Kusmilawaty et al., 2023).

The manufacturing of processed foods such as chips is a sector that has great potential in the Indonesian economy, including in areas such as Air Joman Sub-district. Chips products, known for their deliciousness and practicality, are the main choice of people as a snack. Upik's family chip factory, located in Lubuk Palas Village, Air Joman Sub-district, which has been established since 2007 and is managed by Mrs. Upik, is part of a micro enterprise operating in the production of chips that has reached a wide market. Despite having a high-potential product, the factory faces challenges in increasing its sales turnover. In the snack food industry, the sustainability and growth of the company is greatly influenced by the ability to manage production costs appropriately, such as processing raw material costs, direct labor costs, overhead costs, and operational costs. All of these factors play an important role in determining how efficiently and effectively the company can generate optimal sales turnover.

The chip factory not only focuses on producing cassava-based chips with one flavor, but is also committed to developing exciting flavor innovations, such as original and balado flavors. Thus, the factory has the ability to compete with other companies in the same industry, and its operational scale is expanding. The hope is that the presence of these flavor innovations will trigger consumer interest in buying the products being marketed.

In general, every factory, whether small or large-scale, such as Upik's family-owned cassava chip factory, has a target to achieve. The main target is to achieve maximum profit. To achieve this, factories not only need to sell products, but also must strive to minimize the production budget. From the profits earned, a factory can ensure the survival of MSMEs, advance its business, and improve employee welfare. In addition, the success of a company is generally measured based on the profits earned. Assessment of the company is also done by considering the size or value of the company, which is usually categorized into large or small companies according to the amount of assets owned (Nasution et al., 2022).

An entity's production output is determined based on raw material inventory, labor costs, and factory overhead costs (Noerpratomo, 2018). The availability of raw materials plays an important role in the operational continuity of a factory. This has a direct effect on the smooth running of the business process. In the Upik Family chips factory, cassava is the main raw material used. The quality of raw materials is crucial for this factory, because the quality and price of raw materials directly affect the selling price and competitiveness of products in the market. In other words, a spike in raw material prices will result in increased production costs. However, challenges arise when farmers and traders face low availability of raw materials, due to factors such as crop failure and bad weather. This situation not only causes the quality of cassava to decline, but also has an impact on the high purchase price of raw materials. In addition, costs for auxiliary materials and operations in the processing process also need to be considered. One of the materials used in the cassava chips factory is cooking oil, which plays an important role in minimizing revenue losses.

Along with the increase in production volume and workers' demands for wage increases, there is an increase in direct labor costs, overhead costs, and operational costs. In Upik's family-owned chip factory, the use of human labor is still more dominant than machines. When one department has less than one worker, this can hamper the production process. Conversely, if the company has a reserve of workers, then production activities continue optimally. An example is in the product processing section, which still relies heavily on human labor. Meanwhile, if the factory relies on machine power, the production process can run non-stop and the factory does not need to incur additional costs. This certainly affects the factory's profits, considering that the use of human labor requires considerable costs to pay employee wages. In addition, if there are additional product orders that require employee working hours to be increased, the factory must also bear additional costs to extend these working hours.

Based on the data obtained by the author, there is a phenomenon that raw material costs, direct labor costs, overhead costs and operational costs always increase as well as sales turnover. However, the increase in raw material costs, direct labor costs, overhead costs and operational costs is not in line with the increase in irregular sales revenue. Thus, there are problems of high production costs and problems of increasing sales that have an impact on sales volume. Determination of the factory's adjusted production output based on the budget given production costs. If production volume decreases, profits will also be affected. Raw materials with fluctuating costs cause instability in production targets. Then direct labor costs that increase along with the need to maintain product quality and increase the amount of market demand. Overhead costs and operational costs are sometimes poorly controlled, reducing production efficiency and affecting profitability. In addition, the increasingly fierce competition in the

chips market also adds to the challenge of increasing sales turnover. Therefore, the factory needs to know clearly how each cost element can affect revenue and find ways to minimize the negative influence of these costs.

In related literature, various previous studies have shown the importance of cost management in improving business efficiency and competitiveness. Research on the effect of raw material costs, direct labor costs, overhead costs and operational costs on sales turnover has actually also been carried out by several previous researchers. According to Khakim et al. (2024) with the title "The Effect of Raw Material Costs, Direct Labor Costs, and Factory Overhead Costs on Net Income at PT Duta Persada Teknik". The resulting research indicates that the net profit earned is significantly influenced by various cost elements, such as raw material costs, direct labor, and factory overhead.

The study conducted by Setiawan & Kurniasih (2020) with the title "The Effect of Raw Material Costs and Labor Costs on Net Income at Pt. Satwa Prima Utama (Study on RJ Farm Amir Atanudin Kp. Pasir Jati Village Lebak Wangi District Arjasari Bandung Regency) ", has the aim of analyzing the net profit generated by PT Satwa Prima Utama which is determined from various costs such as raw materials and labor for 2011-2018. With the results of the analysis proving that the cost of raw materials has a real impact on net income as evidenced by the t test. Where the acquisition of t count (-2.844) is below the acquisition of t table (2.57058), and the level of significance obtained is  $0.036 < 0.05$ . This finding is reinforced by the acquisition of significance, namely  $0.007 < 0.05$  with a t-statistic of  $4.465 > 2.57056$ . And the F-test results show an F-count of  $11.223 > 5.79$ . Thus, it can be concluded that the net profit the company earned in 2011-2018 was significantly determined by raw material costs and labor costs.

Fadiyah & Zhafirah (2020) his research entitled "The Effect of Production Costs on Gross Profit at CV. Belwayuna Sejahtera Arthaberka", and the results show that production costs simultaneously have a significant effect on gross profit at CV. According to research (Firmanta, 2021) entitled "Analysis of the Effect of Direct Raw Material Costs, Direct Labor Costs, and Factory Overhead Costs on Gross Profit in Consumer Goods Sector Manufacturing Companies Listed on the Indonesia Stock Exchange (IDX) 2014-2018 Period", concluded that simultaneously direct raw material costs, direct labor costs, and factory overhead costs have a significant positive effect on gross profit in manufacturing companies in the consumer goods sector for the 2014-2018 period. This partially shows that direct raw material costs have no significant effect on gross profit, direct labor costs have a significant effect on gross profit, and factory overhead costs have a significant effect on gross profit.

Tarigan & Siagian (2022) in his study entitled "The Effect of Raw Material Costs, Direct Labor, and Factory Overhead on Profitability in the Consumer Goods Industry Sector Listed on the Indonesia Stock Exchange for the 2016-2021 Period," it was concluded that partially Raw Material Costs have no significant effect on ROA and ROE, while Direct Labor Costs show a significant negative effect on ROA and ROE, and Factory Overhead Costs have a positive effect on ROA and ROE. Simultaneously, the independent variables show a significant influence on profitability together. Amalia (2019) in his research entitled "The Effect of Production Costs on Gross Profit (Case Study at Pt. Lestari Alam Segar)", states that partially raw material costs and direct labor costs affect gross profit at PT. Lestari Alam Segar, while factory overhead costs have no effect on the company's gross profit. This study also found that there is a significant influence between direct raw material costs, direct labor costs, and overhead costs on gross profit at PT. Lestari Alam Segar. Based on the description that has been presented, the researcher wishes to carry out a research on the effect of raw material costs,

direct labor costs, factory overhead costs and operational costs on the sales turnover of the Upik family chip factory in Air Joman sub-district.

## Literature Review

### Production Cost Theory

One of the most crucial concepts in microeconomics is production cost theory, as it explains the correlation between the quantity of goods produced and the budget allocated during production activities. Production costs are categorized into several types, namely fixed costs, variable costs, and total costs. Each of these costs is related to changes in production volume. The classification of production costs according to Varian (2001) has two main categories: fixed costs and variable costs. Fixed costs are constant expenses, regardless of the amount of goods produced. Examples of fixed costs include building usage and compensation of permanent employees. In contrast, variable costs fluctuate based on the amount of goods produced. These costs consist of expenditures on raw materials and labor wages that are not fixed in nature. Production costs according to Mankiw (2009) are grouped into two main categories: fixed costs and variable costs. Fixed costs are constant expenditures that remain fixed, even though the volume of production changes. Meanwhile, variable costs will fluctuate based on the production volume of goods or services. In the long run, firms have the flexibility to adjust various factors that affect production costs.

Meanwhile, according to Salvatore (2012) production costs also involve the analysis of scale of returns, which refers to how variations in the amount of input can affect the amount of output produced. This understanding of scale of returns is crucial to assess whether a company is experiencing an increase or decrease in efficiency in its production process. It can be concluded that the main objective in this theory is to maximize efficiency in the use of available resources so that production costs can be kept as low as possible. This concept is important to understand how companies determine optimal prices and production in the face of changing market conditions

### Cost Management Theory

Cost management theory focuses more on ways to manage, control, and optimize costs in the operation of a company or business. Cost management is a process that involves planning, controlling, and evaluating the costs incurred by an entity in order to achieve economic and efficiency goals. Based on Horngren et al. (2009) cost management is an effort in identifying, measuring, and analyzing the various costs paid for various activities or processes in an organization. It aims to optimize the use of resources and minimize waste.

Along with economic and technological developments, the theory of cost management has changed. According to Kaplan & Norton (2008), the concept of cost management focuses not only on cost control, but also on value creation and competitive advantage through effective cost management. This is in accordance with the value-based approach, which integrates costs with the company's long-term strategy. Modern cost management theory also includes concepts such as Activity-Based Costing (ABC), with high accuracy in determining costs based on activities performed in the production or operational process (Cooper & Kaplan, 1991). The purpose of this theory is to show a detailed picture of the causes of costs and enable better decision-making in budget planning and resource allocation. Cost management theory is also strongly influenced by external factors, such as market conditions and government regulations. For this reason, it is important for companies to conduct periodic cost evaluations, using various tools and techniques, such as variance analysis and benchmarking, to measure the effectiveness of the cost management implemented (Drury, 2012).

## **Raw Material Cost**

Based on Rusdiana (2014) raw materials are elements taken from their sources for the purposes of production activities. Natural resources are the place to get some raw materials. According to (Silitonga, 2021) raw materials are the main components needed to support production activities, which directly contribute to product creation. This material is the foundation of the final product and has an important role in the manufacturing process. Based on Harahap & Tukino (2020) Raw material cost is the total expenditure required in obtaining materials until they are suitable for application. This includes the price of the material itself, transportation costs, storage costs, and various other costs. According to Karini et al. (2024) raw material costs include all expenses incurred to obtain materials that are applied to the production activities of an order. These expenses include the price of the purchased raw materials, shipping costs, and other expenses related to the acquisition process.

According to Oktora et al. (2023) raw materials are materials or substances that are used as a basis in the production process. goods or products sold. According to Mawardi et al. (2023) raw material costs are a component that includes all material usage, both at the manufacturing stage and those that have been processed into finished products. This cost will affect unit costs and has a significant economic relationship. Based on the above understanding, it is concluded that raw material costs include all expenses required during the activity of making a product until it is suitable for use.

## **Direct Labor Costs**

Based on Corrina (2021) labor costs include all company expenses in paying salaries and compensation to employees who contribute during production activities, even though their contributions are not always immediately visible. While Fajarini & Nursanti (2021) defines direct labor costs as all expenses intended for employees who directly participate in production activities. They are individuals who actively intervene in the manufacture of a product or good, either through manual or mechanical methods.

According to Harahap & Tukino (2020) direct labor costs include the allocation of funds to fees, salaries, and compensation received by employees with direct involvement in product processing activities to become finished goods. While Lestari & Permana (2020) states that direct labor is a type of expenditure that includes all employees who participate in each processing activity, where their work can be directly related to semi-finished or finished products. Mawardi et al. (2023) added that direct labor costs, which are also often assessed as direct wages, refer to expenses for workers who are active in each processing activity, especially workers who are responsible for converting raw materials into finished products. Based on Karini et al. (2024) direct labor costs are expenses that include wages received by workers who actively contribute to the manufacturing activities of an order. Generally, these costs are calculated based on the number of hours worked or an agreed hourly rate. According to (Hari, 2023) direct labor costs are the performance costs of production employees, where their services can be clearly traced and linked directly to a specific product.

According to Rosdiyati (2017) labor costs refer to the nominal charged in the utilization of human resources in a company. In the context of manufacturing companies, labor costs can be categorized based on the main functions that exist. In a manufacturing company, there are three main components, namely production, marketing, and administration. For this reason, it is necessary to separate labor costs related to manufacturing activities from labor costs that are not relevant to processing activities. The separation is done with the intention of identifying labor costs that are included in the production budget and those that are not included, but are part of the company's operating costs. Overall, labor costs in manufacturing companies are

grouped into three main categories: labor costs for production, marketing, and administration and general. Based on the above understanding, the author confirms that direct labor costs refer to compensation or expenses received by workers who directly contribute to the activities of transforming products into finished goods, either through manual or mechanical means.

### **Factory Overhead Costs**

Based on Dewi & Kristianto (2013) factory overhead costs can generally be defined as expenses that include raw materials and indirect labor, as well as various other production expenses. These costs are difficult to clearly identify or directly allocate to specific jobs, products, or cost units. According to Waty et al. (2023) Factory overhead costs are generally interpreted to be expenses with a scope of indirect spending on raw materials, workers, and other expenses related to factory production activities. These expenses are difficult to link directly to specific individuals, products, or cost targets. In addition, factory overhead costs are also known by various other names, such as manufacturing costs, publication costs, and publication overhead costs.

Based on Sinurat et al. (2021) factory overhead costs are indirect expenses for production that are connected to the products produced. Examples of these expenses include the use of auxiliary materials, mechanical processing supervision, supervisor salaries, rent, levies, coverage, depreciation, electricity, and various other expenses related to production facilities. This entire budget will be allocated to each product according to a predetermined rate. According to Harahap & Tukino (2020) factory overhead costs, also known as indirect production costs (BPTL), include all expenses related to the processing process, except expenses for raw materials and direct labor costs. Lestari & Permana (2020) also explains that factory overhead costs include the entire product processing budget which is directly difficult to allocate to semi-finished or finished products, so it is included in the indirect cost category. (Hari, 2023) adds that factory overhead costs are a type of expenditure for product processing that cannot be allocated directly to specific products.

Based on Karini et al. (2024) factory overhead costs include all costs required for product processing activities, with the exception of costs on raw materials and direct labor. Overhead costs are not limited to factory rent, equipment depreciation, electricity costs, maintenance costs, and various other costs. Mawardi et al. (2023) defines factory overhead costs as indirect expenses to production, including all expenses related to the production process but difficult to trace back to a specific cost object, such as work in progress or finished goods. According to Oktora et al. (2023) factory overhead costs refer to expenses that are indirectly connected to the production process of a product or service, such as raw materials. According to economists, overhead costs are expenses that are borne by the company but have no real correlation to product processing activities. Nonetheless, factory overhead costs, also known as general overhead costs, play an important role in maintaining the smooth operation of the company as a whole. The author concludes that overhead costs are expenses that are indirectly correlated to product processing activities or service provision.

### **Operational Costs**

According to Feinberg & Zanardi (2022) operational costs are a crucial aspect of a business. This cost has a major influence on the total expenditure and efficiency of warehouse management. The focus of operational costs lies on the expenses and needs required by the business, as well as being a measuring tool for the revenue generated. Operating expenses are outgoing assets or other parties that use the assets of a business or create liabilities, or a combination of all three. This takes place when the company produces and sells goods,

provides services, or carries out other activities that are an integral part of its main business (Pasaribu & Hasanuh., 2021).

### Sales Turnover

Sales turnover is the total products purchased by customers from a company within a certain period of time. This term is often referred to as gross sales or gross profit because the nominal received does not include the cost of producing goods or other operational costs incurred by the company. According to Chaniago, turnover can be defined as the total amount of income obtained through product sales for a certain period. Based on Philip Kotler's view, sales are individual efforts to distribute various products that have been produced to consumers who need them in exchange for funds in accordance with the price agreement. Turnover is the total income obtained through the sale of goods and services for a certain period. From the various existing explanations, it can be concluded that turnover is the accumulation of all product sales results with a certain duration, which is calculated according to the total receipt of money (Aura & Husna, 2022). The author concludes that revenue is the total money earned through product sales activities with a certain duration.

### Framework of Thought

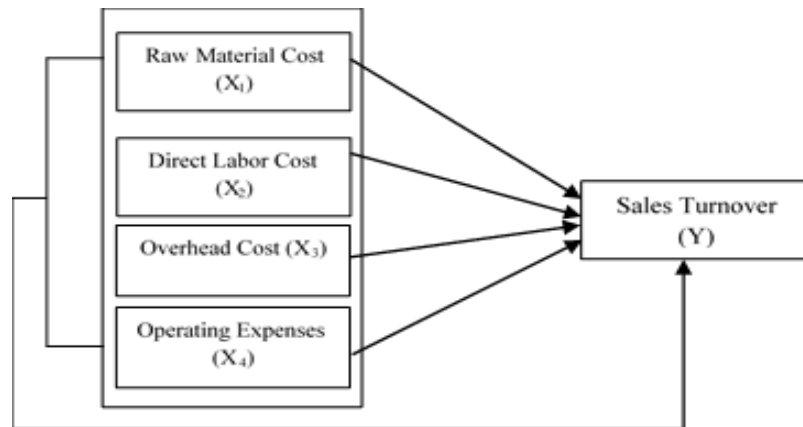


Figure 1. Thinking Framework Chart

To make this research more focused, a clear and detailed theoretical framework is needed. This theoretical framework will provide an overview of the solutions proposed to overcome the problem. The following is an explanation of the theoretical framework:

#### The Effect of Raw Material Costs on Sales Turnover

According to Wasilah (2009) direct raw material costs are expenses paid to obtain raw materials with the aim of supporting the processing of finished products. Direct raw material costs are expenses paid by the company with the aim of producing a product. When direct raw material costs increase, this will have an impact on increasing the cost of goods sold. As a result, the company may experience a decrease in operating profit. Juwita and Rizcha Puspita (2021) reveal that sales turnover can be influenced by raw material costs. Thus, the hypothesis proposed based on the previous explanation, namely:

H1: Raw material costs affect sales turnover

#### Effect of Direct Labor Costs on Sales Turnover

Based on Mulyadi (2005) direct labor costs refer to expenses paid by the company during product processing activities, including employee compensation and wages. This cost is part of the total labor cost. The increase in the cost of goods sold is due to an increase in costs for

workers, resulting in a decrease in gross profit. The study produced by Oktaviani et al. (2023) found that direct labor costs have no effect on sales turnover. Meanwhile, a study from Nursanti et al. (2021) proves the influence given by direct labor costs on sales turnover. Thus, the hypothesis proposed based on the previous explanation, namely:

H2: Direct labor costs affect sales turnover.

### **Effect of Overhead Costs on Sales Turnover**

The largest component of the production budget is factory overhead costs, along with other costs of raw materials and direct labor. These expenses include several types of costs that are not always directly correlated to the products made by the company or other revenue-generating activities. The study produced by Oktriansyah (2022) shows that sales turnover is determined from overhead costs. The study conducted by Hernawati et al. (2022) revealed that sales turnover is also determined based on direct labor costs. Thus, the hypothesis proposed based on the previous explanation, namely:

H3: Overhead costs affect sales turnover

### **Effect of Operating Costs on Sales Turnover**

The budget must be utilized as efficiently as possible so that the company is able to achieve the expected profit plan. There is a conflicting relationship between profits and costs. When costs are high, profits tend to decrease, and conversely, an increase in profits is often accompanied by a decrease in costs. Therefore, it is important to minimize variable costs, as these costs fluctuate according to the volume of business. However, before taking steps to reduce costs, especially variable costs, it is necessary to clarify whether such cost reduction is really necessary. According to Fadhlia & Ratnasih (2017) if management is able to manage and reduce costs effectively, the company's net profit has the potential to increase. Conversely, if the company is too wasteful in spending, its net profit will decrease.

H4: Operating costs affect sales turnover

### **The Effect of Raw Material Costs, Direct Labor Costs, Overhead Costs and Operating Costs on Sales Turnover**

According to Resdiana (2022) and Oktariansyah et al. (2022), sales turnover is significantly affected by raw material costs, direct labor costs, overhead costs and operational costs. Some cost elements are inversely proportional to sales turnover, which means that when these costs increase, sales will decrease.

H5: Raw material costs, direct labor costs, overhead costs and operating costs simultaneously affect sales turnover.

## **Methods**

The research object determined in the research carried out is the Upik Family Chips Factory. This factory processes all kinds of food from cassava, bananas, sweet potatoes and mushrooms. However, here I only focus on conducting research on the development of sales reports on cassava chips. The research conducted adopted a causal associative quantitative method with ratio data analysis. The purpose of this research is to measure the strength of the influence between the variables studied. This causal associative quantitative research aims to identify and observe the correlation formed from several variables.

The data source used was obtained from the Upik Air Joman family chip factory. The data analyzed is categorized as secondary data, where it has gone through a previous processing process. This analysis includes year-end financial statements, which reflect various cost

components, such as raw material costs, labor costs, factory overhead costs, operating costs, as well as sales that occurred throughout the January 2021-December 2023 period. Population is defined as a leveling area in which there are objects or subjects with their own characteristics and uniqueness, which the researcher determines for research purposes. In this study, I utilize all available data from 2021-2023. The research sample is part of the research object taken and considered representative of the population as a whole (Machali, 2021) . The number of eligible samples ranges from 30 to 500. In this study, I used a technique that covers three years of data, from 2021 to 2023. The total data analyzed data per month  $12 \times 30 = 36$  months.

### **Raw Material Cost**

Raw material costs refer to the expenditures required to obtain materials for application in the chip-making process. These expenditures include spending on the main raw materials that are essential in such production activities such as yam, oil, and other additives used in making chips. Measurement of this variable is calculated based on the amount of money spent in a certain period for the purpose of purchasing raw materials. Measurement is carried out through observation of purchase reports or records of raw material purchase transactions. As for some indicators in this study, the following were found: 1) Total expenditure on raw material purchases; 2) The amount of raw materials used during production activities (kg).

### **Direct Labor Costs**

Direct labor costs refer to expenditures used to meet the obligations of all employees who play an active role in chip-making activities, such as workers who peel, cut, fry, and package chips. The measurement of this variable is calculated based on the total wage or salary payments received by workers from their direct involvement in production activities. This can be measured from financial reports that record expenditures for salaries and benefits of workers directly involved. The following are some of the indicators determined in the research carried out: 1) Number of workers involved; 2) The number of working hours allocated to workers who participate in production activities, calculated on an hourly; 3) Total wages for direct labor

### **Overhead Costs**

Factory overhead costs are expenses needed to support product processing activities, even though they are not directly identified to a specific product, such as expenses for electricity, water, premises rent, and equipment maintenance costs. The measurement of this variable is measured by calculating all expenses related to the existence of fixed and variable costs that are not directly related to production, which are recorded in the financial statements or factory books. Here are some indicators in this study: 1) Costs for electricity, water, and fuel; 2) Total indirect costs per month.

### **Operational Costs**

Operating costs refer to budgeted expenditures in carrying out the day-to-day activities of producing chips, including marketing, distribution and administrative costs associated with factory operations. The measurement of this variable is calculated based on the total costs recorded in the company's financial statements to support sales and distribution activities, such as transportation, promotion, and administration costs. As for some indicators in this study, the following were found: 1) Administrative costs and other costs that are not directly related to production activities; 2) Distribution (transportation) costs.

### **Sales Turnover**

Sales turnover is the amount of income that a chip factory gets through the sale of chip products for a certain duration. This turnover is calculated based on the total products sold and multiplied

by the price of the products sold. Measurement of this variable is calculated by summing up all revenue earned from the sale of chip products within a predetermined period of time (for example monthly or annually), which is recorded in the sales report. There are several indicators in this study, namely: 1) Total revenue earned from selling chips per month; 2) Number of product units sold during a certain period.

### **Collection Technique**

The data obtained in this research was done through various techniques, including: 1) Interview Technique: The researcher conducted questions and answers with the factory owner, Ms. Upik, to obtain relevant information; 2) Observation technique: Next, the researcher observed the production process of yam chips at Upik's family-owned factory; 3) Documentation technique: Researchers also collected various necessary information, including reports from cost elements, such as raw material costs, direct, indirect, operational labor, as well as income reports from the production of yam chips at the Upik Family Chips Factory for the period 2021 to 2023.

### **Data Analysis Method**

The analytical method applied in the research carried out is multiple linear regression, which is processed through the IBM SPSS Statistic 22 program to examine the collected data. This multiple linear regression analysis functions and has the purpose of evaluating the correlation resulting from each independent variable on the dependent variable, namely sales turnover. This analysis will help find out how much each factor contributes to sales turnover, and whether the effect is significant or not). The following is the formula

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Description:

Y= Net Profit Margin

a= Constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = Regression Coefficient

X1= Raw Material Cost

X2= Direct Labor Costs

X3= Overhead Costs

X4= Operating Expenses

e= Error term, the value of the observation error is equalized to zero

### **Data Analysis Technique**

In evaluating the quality of data from tests conducted by researchers with various analytical techniques, the following researchers present some important points:

#### ***Classical Assumption Test***

This test is carried out with the intention of identifying problems that exist in the classical assumptions in the Ordinary Least Square (OLS) regression model. This process involves several important tests, including:

#### ***Normality Test***

The purpose of conducting this test is to check the presence of residuals in the regression model built with normal distribution. One of the techniques applied in evaluating normality is through the Kolmogorov-Smirnov statistical test. The standard applied, namely: if the acquisition of probability or significance exceeds 0.05, then the data is declared to be normally distributed.

However, if the acquisition does not reach 0.05, then the data distribution occurs abnormally (Syafina & Harahap, 2019).

### ***Multicollinearity Test***

Multicollinearity test is a crucial procedure in the evaluation of regression models, with the intention of detecting the presence of an influence of independent variables. In carrying out this test, two indicators are used, namely the Tolerance value and the Variance Inflation Factor (VIF). The standard set, namely: if the resulting tolerance  $> 0.10$  and  $VIF < 10$ , it is concluded that there is no significant multicollinearity problem in the model (Syafina & Harahap, 2019).

### ***Heteroscedasticity Test***

This test is carried out with the intention of identifying the existence of differences in variance between residuals from each review of the regression model. The quality of the regression model is determined based on the absence of indications of heteroscedasticity, which means that the variance is homogeneous.

### ***Hypothesis Test***

Hypothesis testing is a technique applied in evaluating the validity of a statement through statistical analysis. It helps determine whether the information should be accepted or rejected. Hypothesis itself refers to temporary information or conjecture that needs to be verified. This test is carried out with the intention of providing a solid foundation for the evidence collected from the data, so that it can be used as a decision consideration regarding the acceptance or rejection of a proposed statement or allegation (Syafina & Harahap, 2019). Hypothesis testing includes various testing methods, including:

#### ***F Test (Simultaneous Test)***

The F test or simultaneous test, is a method applied in ensuring that there is a significant impact given by all independent variables simultaneously on the dependent variable. The following is the basis for determining the decision on the F test: 1) The significant effect given by the independent variables simultaneously on the dependent variable is based on the resulting  $F > F$  table and the Sig.  $F < \alpha = 0.05$ ; 2) The significant effect that the independent variables do not exert simultaneously on the dependent variable is based on the resulting  $F < F$  table and the Sig.  $F > \alpha = 0.05$ . (Syafina & Harahap, 2019)

#### ***Test t (Partial Test)***

The t test or partial test, is a method applied in measuring the ability of the independent variable to influence the dependent variable, in an individual form or in a partial context. The following is the basis for determining the decision on the t test: 1) The significant effect given by the independent variables partially on the dependent variable is based on the resulting  $t\text{-count} > t\text{-table}$  and Sig.  $t\text{-count} < \alpha = 0.05$ ; 2) The significant effect that is not given by the independent variable partially on the dependent variable is based on the resulting  $t\text{-count} < t\text{-table}$  and the Sig.  $T\text{-count} > \alpha = 0.05$  (Syafina & Harahap, 2019).

## **Results and Discussion**

The data used in this study are production costs, which include raw material costs, direct labor costs, indirect costs, operating costs, and revenue, during the period January 2021-December 2023. The purpose of the research carried out is to examine the effect that raw material costs, direct labor costs, indirect costs, and operating costs have on the revenue of the Upik Family Chips Factory located in Air Joman District. The following data was obtained:

Table 2. Sales Data of Upik Chips Factory 2021

No	Month	Raw Material Cost	Direct Labor Cost	Factory Overhead Cost	Operational Cost	Revenue	Profit / Loss
1	January	11,332,000	4,600,000	3,338,585	1,795,634	23,000,000	2,933,781
2	February	10,920,000	4,600,000	2,828,585	1,795,634	23,000,000	2,855,781
3	March	13,000,000	4,600,000	3,733,585	1,795,634	23,000,000	-105,219
4	April	13,000,000	5,000,000	3,643,585	1,795,634	23,000,000	-1,439,219
5	May	11,450,000	4,600,000	2,666,585	1,795,634	23,000,000	2,487,781
6	June	12,150,000	4,600,000	3,385,585	1,795,634	23,000,000	1,068,781
7	July	12,160,000	4,600,000	3,175,585	1,795,634	23,000,000	1,268,781
8	August	12,140,000	4,600,000	3,286,585	1,795,634	23,000,000	1,177,781
9	September	13,135,000	4,600,000	3,260,585	1,795,634	23,000,000	208,781
10	October	13,720,000	4,600,000	3,344,585	1,795,634	23,000,000	-1,460,219
11	November	13,450,000	4,600,000	3,434,585	1,795,634	23,000,000	-1,280,219
12	December	13,200,000	4,600,000	3,097,585	1,795,634	23,000,000	306,781

Table 2. Sales Data of Upik Chips Factory 2022

No	Month	Raw Material Cost	Direct Labor Cost	Factory Overhead Cost	Operational Cost	Revenue	Profit / Loss
1	January	13,320,000	4,600,000	3,414,158	1,900,158	23,500,000	265,684
2	February	12,770,000	4,600,000	3,349,158	1,868,158	23,480,000	234,283
3	March	12,700,000	4,600,000	3,289,158	1,986,158	23,430,000	271,123
4	April	12,790,000	4,600,000	2,779,158	1,868,158	22,150,000	291,133
5	May	15,980,000	4,600,000	3,884,158	1,986,158	26,500,000	126,780
6	June	13,880,000	4,600,000	3,239,158	1,900,158	24,750,000	705,478
7	July	11,880,000	4,600,000	3,220,158	1,986,158	23,880,000	1,199,633
8	August	14,160,000	4,600,000	3,942,158	1,986,158	25,200,000	3,187,981
9	September	15,030,000	5,000,000	4,120,158	1,922,111	24,800,000	3,329,731
10	October	12,220,000	4,600,000	3,412,158	1,986,158	23,000,000	2,053,179
11	November	11,770,000	4,600,000	3,153,158	1,913,158	21,600,000	163,459
12	December	12,750,000	4,600,000	3,287,158	1,920,523	23,700,000	1,142,319

Table 3. Sales Data of Upik Chips Factory 2023

No	Month	Raw Material Cost	Direct Labor Cost	Factory Overhead Cost	Operational Cost	Revenue	Profit / Loss
1	January	11,780,000	5,400,000	3,514,998	1,867,604	22,950,000	357,398
2	February	12,810,000	5,400,000	3,664,998	1,941,983	24,580,000	559,049
3	March	12,870,000	5,400,000	3,615,998	1,903,983	23,660,000	132,908
4	April	13,910,000	5,400,000	3,934,998	1,980,443	25,680,000	424,048
5	May	13,400,000	5,400,000	3,500,998	1,926,158	24,680,000	338,833
6	June	13,030,000	5,400,000	3,609,498	1,820,158	24,380,000	164,623
7	July	12,670,000	5,400,000	3,282,498	1,910,551	23,680,000	236,911
8	August	14,860,000	5,400,000	3,729,498	1,951,158	25,380,000	659,412
9	September	15,310,000	6,000,000	3,919,498	1,893,688	28,220,000	1,057,463
10	October	12,390,000	5,400,000	3,317,498	1,916,141	23,840,000	526,591
11	November	12,960,000	5,400,000	3,519,998	1,923,047	24,340,000	536,955
12	December	12,170,000	5,400,000	3,349,998	1,926,984	23,690,000	759,138

In this study, the independent variables are raw material costs, direct labor costs, indirect costs, and operating costs, as shown in the table presented. While the dependent variable is sales.

Multiple regression analysis is applied with the intention of seeing the validity, impartiality, and fulfillment of all the criteria set from the data used and the classical assumption test is carried out before multiple linear regression analysis is carried out. The following are the results of the classical assumption test carried out:

## Data Analysis Results

### *Classical Assumption Test*

#### Normality Test with Histogram Test

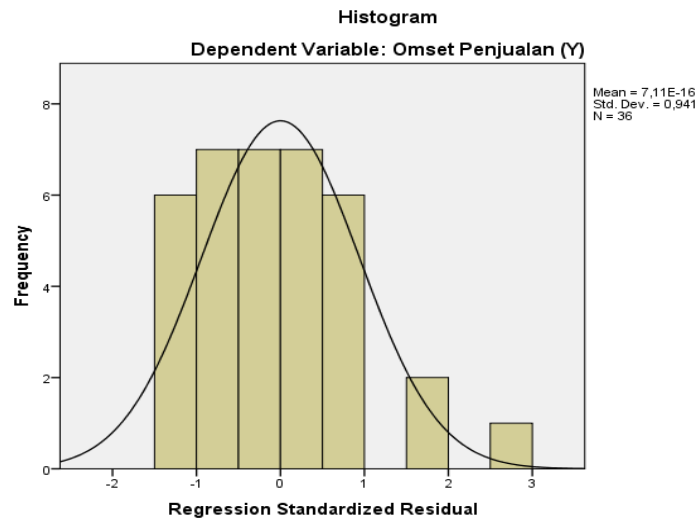


Figure 2. Normality Test Results with Histogram Test

Source: Own Data Processing (SPSS IBM version 22, 2024)

Figure 1 above shows a wavy curve, which means that the pattern corresponds to normal distribution.

#### Normal P-Plot Test

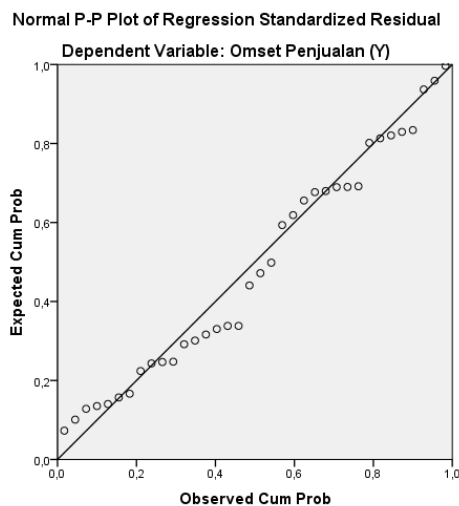


Figure 3. Normality Test Results with Normal P-Plot Test

Source: Own Data Processing (SPSS IBM version 22, 2024)

Figure 2 above shows the diagonal line along with points in the line area, so we can conclude that the data pattern is normally distributed.

Table 4. Categorization of Digital Competency Assessment

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		36
Normal Parameters <sup>a,b</sup>	Mean	,0000000
	Std. Deviation	1021723,51148929
Most Extreme Differences	Absolute	,144
	Positive	,144
	Negative	-,061
Test Statistic		,144
Asymp. Sig. (2-tailed)		,058 <sup>c</sup>
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Source: data processed by myself (SPSS IBM version 22, 2024)

If the result of Asymp. Sig. > 0.05, then it is assumed that there is a normal distribution of residuals, and vice versa. Based on the normality test produced by the Kolmogorov-Smirnov method, the result is 0.058, which indicates that the residuals are normally distributed.

### Multicollinearity Test

Table 5. Multicollinearity Test Results

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Std Coef	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	24992517,848	6599472,960		3,787	,001		
	Raw Material Cost (X1)	,543	,221	,273	2,455	,020	,571	1,751
	Direct Labor Cost (X2)	,396	,566	,079	,700	,489	,550	1,818
	Overhead Cost (X3)	5,024	,875	,772	5,744	,000	,391	2,558
	Operating Expenses (X4)	-14,303	4,149	-,362	-3,447	,002	,640	1,561

a. Dependent Variable: Sales Turnover (Y)

Source: data processed by myself (SPSS IBM version 22, 2024)

In Table 5 above, it can be seen that Raw Material Cost has a VIF of 1.751 and a *tolerance* value of 0.571. Meanwhile, Direct Labor Cost shows a VIF of 1.818 and a *tolerance* value of 0.550. Overhead Costs recorded a VIF value of 2.558 and a *tolerance* value of 0.391. The Operating Costs have a VIF of 1.561 and a *tolerance* value of 0.640. From these observations, it can be concluded that all variables do not experience multicollinearity, because each variable has a VIF< of 10 and a *tolerance* value> of 0.1.

### Heteroscedasticity Test

In Figure 4, it can be seen that some points are not evenly distributed and show an unclear pattern, and are located below the number 0 on the Y axis. These conditions indicate that the regression model used does not face heteroscedasticity problems. To strengthen the test results, additional tests were carried out using the Glejser test.

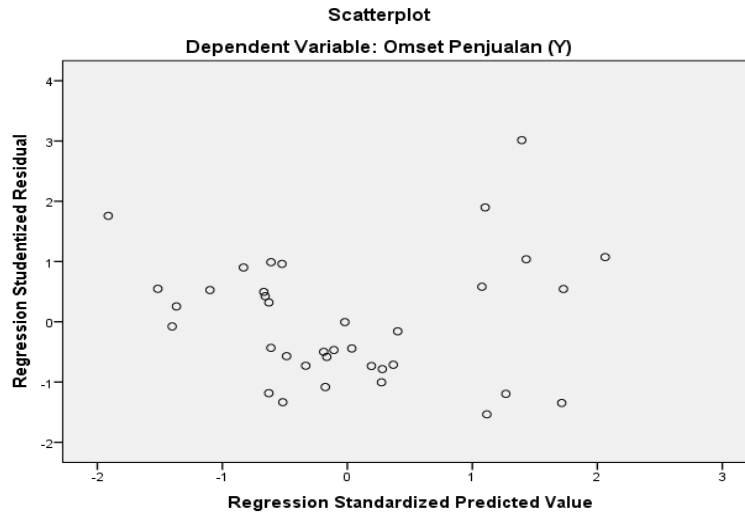


Figure 4. Heteroscedasticity Test Results

Source: data processed by myself (SPSS IBM version 22, 2024)

Table 6. Glejser Heteroscedasticity Test Results

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5514059,702	3257825,283		1,693	,101
	Raw Material Cost (X1)	-,035	,109	-,067	-,319	,752
	Direct Labor Cost (X2)	-,168	,279	-,129	-,600	,553
	Overhead Cost (X3)	,999	,432	,590	2,313	,028
	Operating Expenses (X4)	-3,632	2,048	-,354	-1,773	,086

a. Dependent Variable: ABS RES

Source: data processed by myself (SPSS IBM version 22, 2024)

In Table 6, it can be seen that the signal value for the raw material cost variable is  $0.752 > 0.05$ . Similarly, direct labor cost shows a value of  $0.553 > 0.05$  and operating cost  $0.086 > 0.05$ . However, overhead costs have a value of  $0.028 < 0.05$ . Thus, it is concluded that raw material costs, direct labor costs, and operating costs do not show heteroscedasticity issues. The case with indirect costs shows heteroscedasticity.

### Hypothesis Test

#### T test

Table 7. T Test Results

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Std Coef	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	24992517,848	6599472,960		3,787	,001		
	Raw Material Cost (X1)	,543	,221	,273	2,455	,020	,571	1,751
	Direct Labor Cost (X2)	,396	,566	,079	,700	,489	,550	1,818
	Overhead Cost (X3)	5,024	,875	,772	5,744	,000	,391	2,558
	Operating Expenses (X4)	-14,303	4,149	-,362	-3,447	,002	,640	1,561

a. Dependent Variable: Sales Turnover (Y)

Source: data processed by myself (SPSS IBM version 22, 2024)

$$t_{table} = [\alpha; (df = n - k)] = t_{table} = [5\%; (df = 36 - 5)] = t_{table} = [0.05; 31] = 2.03951$$

The t-test results of raw material costs, overhead costs and operating costs obtained significant values  $< 0.05$  and  $t_{count} > t_{table}$  and significant values of direct labor costs  $> 0.05$  and  $t_{count} < t_{table}$ . So this hypothesis suggests that raw material costs, overhead costs, and operating costs have a real impact on part-time sales volume. On the other hand, direct labor cost does not show any significant impact on the sales volume.

### F test

Table 8. F Test Results

ANOVA <sup>a</sup>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	130483292868005,230	4	32620823217001,310	27,677	,000 <sup>b</sup>
	Residuals	36537162687550,350	31	1178618151211,302		
	Total	16702045555555,600	35			
a. Dependent Variable: Sales Turnover (Y)						
b. Predictors: (Constant), Operating Costs (X4), Raw Material Costs (X1), Direct Labor Costs (X2), Overhead Costs X3)						

Source: data processed by myself (SPSS IBM version 22, 2024)

$$F_{table} = [DF_1 = k - 1; DF_2 = n - k] = F_{table} = [DF_1 = 5 - 1; DF_2 = 36 - 5]$$

$$F_{table} = [4; 31] = F_{table} = 2.68$$

From Table 4.8 above, it is concluded that all independent variables have a real impact on the dependent variable, namely sales turnover. This statement is evident from the resulting significant gain of  $0.000 < 0.05$  and  $F_{count} \text{ at } 27.677 > 2.68$ .

### Multiple Linear Regression Analysis

Table 9. Multiple Linear Regression Analysis Results

Coefficients <sup>a</sup>			
Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	24992517,848	6599472,960
	Raw Material Cost (X1)	,543	,221
	Direct Labor Cost (X2)	,396	,566
	Overhead Cost (X3)	5,024	,875
	Operating Expenses (X4)	-14,303	4,149
a. Dependent Variable: Sales Turnover (Y)			

Source: data processed by myself (SPSS IBM version 22, 2024)

The following is an explanation based on the multiple linear regression equation produced The constant coefficient (a) of 24,992,517.848 indicates that if all independent variables are zero (constant), then the value of the dependent variable is 24,992,517.848. The X1 coefficient of 0.543 indicates that each increase in X1 will cause variable Y to increase by 0.543, and vice versa. The X2 coefficient of 0.396 indicates that each increase in X2 will cause variable Y to increase by 0.396, and vice versa. The X3 coefficient of 5.024 indicates that any increase in X3 will cause variable Y to increase by 5.024, and vice versa. The coefficient X4 of -14.303 indicates that any increase in X4 will cause variable Y to decrease by -14.303, and vice versa.

## Coefficient of Determination

Table 10. Coefficient of Determination

Model Summary <sup>b</sup>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,884 <sup>a</sup>	,781	,753	1085641,815
a. Predictors: (Constant), Operating Costs (X4), Raw Material Costs (X1), Direct Labor Costs (X2), Overhead Costs X3)				
b. Dependent Variable: Sales Turnover (Y)				

Source: data processed by myself (SPSS IBM version 22, 2024)

From the table presented, the result of  $R^{(2)}$  (*Adjust R Square*) is 0.753. This indicates that 75.3% of the variability in sales revenue is well explained by all variables. Meanwhile, there are other factors that influence as much as 24.7% that are not included in the study conducted.

From the resulting t test analysis, the cost of raw materials in the coefficient table shows a significant figure of  $0.020 < 0.05$  and a  $t_{count}$  value of  $2.455 > 2.03951$ . The resulting research indicates that sales volume at the Upik Family Chips Factory is significantly influenced by raw material costs. Thus, an increase in raw material costs tends to cause a decrease in sales revenue, and based on theory. This finding is in line with the findings of (Juwita & Rizcha Puspita, 2021) which states that sales revenue is determined based on raw material costs. The resulting t-test shows that raw material costs can have a real impact on net profit and reveals that raw material prices partially affect sales revenue. As such, the findings reinforce the gains from previous studies. In the context of production, when raw materials are not available, production is forced to stop. Changes in raw material prices, whether decreasing or increasing, will affect the company's sales.

From the resulting t test, direct labor costs in the coefficient table produce significance at  $0.489 > 0.05$  and the  $t_{count}$  value is  $0.700 < 2.03951$ . So, it is concluded that individually direct labor costs (X2) have no effect on the sales volume of the Upik Family Chips Factory. This finding is in line with the study produced by (Oktaviani et al., 2023) which shows that there is no real effect of direct labor costs on sales activity. Nevertheless, given the economic impact, direct labor costs should still be included in the model. Mulyadi (2005) explains that elements of production costs, such as raw material costs, direct labor costs, and factory overhead costs have a real impact on profitability. Therefore, for management to determine whether a product is capable of generating gross profit or may incur losses, it is imperative for them to have access to information regarding the production costs incurred during the product manufacturing process.

From the resulting t test, overhead costs shown in the coefficient table, obtained significance at  $0.000 < 0.05$  and a  $t_{count}$  value of  $5.744 > 2.03951$ . From these data, it can be concluded that indirect costs (X3) have a partially significant effect on the revenue of the Upik Family Chips Factory. The resulting research has similarities with the findings of Hernawati et al. (2022) that overhead costs do affect sales revenue.

From the results of the t test on operating costs in the coefficient table shows the acquisition of significance at  $0.002 < 0.05$  and the  $t_{count}$  value is  $3.447 > 2.03951$ . Thus, it can be concluded that individually operating costs (X<sub>4</sub>) also affect the sales revenue of Upik Family Chips Factory. This finding is in line with the theory presented by Jophie (2008), that low operational expenditures will lead to higher profits. In other words, there is an inconsistency between operational costs and profits (Jophie, 2008).

The F test analysis carried out through the help of SPSS IBM version 22 shows that all independent variables simultaneously influence the dependent variable. The resulting research recorded an Fcount of= 27.667 and a significant level of 0.000. This finding proves that raw material costs, direct labor costs, indirect costs, and operating costs simultaneously affect sales volume. The resulting research is in line with the findings conducted by Resdiana, E. (2022) which confirms that these costs can significantly affect sales turnover.

## Conclusion

The result of R<sup>2</sup> (Adjust R Square) is 0.753, meaning that 75.3% of the variability of income can be explained well by all independent variables. Meanwhile, there are other variables that also influence as much as 24.7% which are not part of the variables in the study conducted. Meanwhile, the variables of raw material cost, labor cost, overhead cost, and operating cost are proven to have a significant influence on sales revenue. Thus, the hypothesis in the F-test has been proven in the research conducted. The variables of raw material costs, overhead costs, and operating costs partially show a significant influence on sales, while direct labor costs do not have a significant impact on sales. Therefore, the T-test hypothesis is not supported in this study.

Factory owners need to recalculate the cost of producing goods by considering all expenses related to production activities. Through these efforts, the owner can reduce production expenses that do not directly affect sales results, thereby achieving higher sales levels. Mrs. Upik's Chips business needs to compile a detailed production record report and comply with cost accounting standards. Thus, they can monitor production volume, obtain accurate sales result data, and know the net profit generated in a period. The resulting findings have a fundamental position in ensuring the next stage before decision making, including setting a competitive selling price. For future research, it is recommended that in addition to considering raw material costs, we should also take into account direct labor costs, indirect costs, and operating costs as independent variables. It is also expected to involve other variables that are interrelated and have a more significant impact on sales. In addition, the information obtained by current researchers regarding operational cost reports is still limited. Therefore, future researchers are expected to be able to further clarify the components contained in the operating cost report.

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