

## Optimizing the Production Cost Budget as an Instrument for Planning and Cost Control at PT. Perkebunan Nusantara IV Kebun Panai Jaya

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Production Cost Budget;  
Planning Tools;  
Control

### **Abstract**

*This study aims to determine how the production cost budget is used as an instrument for planning and controlling production costs at PT. Perkebunan Nusantara IV (Persero) Kebun Panai Jaya. This study is expected to provide input for company management regarding the role of the budget as a planning and control tool. The research method used is qualitative research with a descriptive approach to explore budget fluctuations and production cost realization, as well as changes in budget productivity and production cost realization. The research subjects consisted of the Head of the Accounting Department, one accounting staff, and the Treasurer of the Finance Department of PT. Perkebunan Nusantara IV (Persero) Kebun Panai Jaya. Data collection was conducted through interviews with the finance department. The data analysis technique used is a method that collects, organizes, interprets, and analyzes data to solve problems encountered. The results of this study indicate differences between budgeted and realized production costs, as well as a decrease in productivity in certain years. The use of the budget must also be accompanied by a more in-depth variance analysis to identify the causes of deviations. Therefore, necessary steps can be taken to minimize adverse variances between the budget and actual results. Thus, the function of the budget as a planning and control tool can be more effective and efficient.*

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## INTRODUCTION

Every company is generally established with the goal of achieving optimal performance and profitability to ensure its survival. Therefore, companies must be able to manage operational activities effectively, especially in the production sector, which plays a crucial role in maintaining the sustainability of work processes, efficiency, effectiveness, and product quality. To achieve this, companies require managerial instruments capable of systematically directing, measuring, and controlling operational activities. One such instrument is the budget, which serves as a guideline for short- and long-term planning and control. Theoretically, a budget is defined as a written plan for a company's future activities, compiled based on historical data and projections of future conditions (Nilam Cahaya, Hendra Harmain, 2023). Therefore, optimizing the production cost budget is a crucial tool for systematically directing and controlling a company's operational activities to align with the goals of achieving optimal performance and profitability.

Budget Realization is a report that presents information on realized revenue, expenditures, transfers, planned surpluses/deficiencies, financing, and remaining planned expenditures/deficiencies, each of which is compared to the financial plan for a given period (Nur'aidah et al., 2024). As a planning tool, budgeting must undergo a thorough analysis process before it can be used as an operational guideline. Theoretically, budget planning aims to establish targets, project resource requirements, and ensure that operational activities align with the company's strategy (Firayani Firayani et al., 2024). Therefore, optimizing the production cost budget needs to be accompanied by an evaluation of the effectiveness of budget management so

that the budget can function optimally as a planning and control tool to support the achievement of company performance.

On the other hand, control is defined as a systematic effort to compare actual performance with standards, identify deviations, and take corrective action (Siregar, L., Nurlaila, N., & Nurul, 2023). The cost control process includes monitoring, evaluation, and variance analysis to ensure that resource usage remains efficient and does not exceed established limits (Lionita Sari, Hendra Harmain, 2024). As part of the management function, control also plays a role in maintaining budget discipline, financial efficiency, and increasing accountability for the use of company resources.

In practice, budget preparation often does not fully align with actual results. This difference can be a favorable or unfavorable variance. According to variance analysis theory, the deviation between budget and actual results is a performance indicator that indicates the level of efficiency and effectiveness of cost use (Nasution et al., 2020). According to Kuncoro's theory, variance analysis is the analysis of differences that arise to determine whether the budget has functioned effectively as a cost planning and control instrument calculated using a formula. Therefore, variance analysis is necessary not only to assess performance but also to identify factors causing differences between budget and actual results as a basis for determining appropriate corrective actions.

Furthermore, production costs, as a key element in the budget, have a direct impact on a company's profitability. In theory, production costs are the total economic sacrifices incurred to process raw materials into finished goods, including the costs of raw materials, direct labor, and factory overhead (Ella Anisa, Nurlaila, 2024). Well-managed production costs help companies maintain competitiveness, optimize production capacity, and improve operational efficiency (Fauzi et al., 2024). In the palm oil sector, production costs generally include plantation costs, processing costs, depreciation costs, and the purchase of supporting materials.

For company leaders, the production cost budget is a tool for planning, coordinating, monitoring, and controlling costs. Therefore, determining a company's production costs must be a carefully considered and well-thought-out policy (Abdul Hakim, 2018). In standard cost theory, costs are set in advance as a reference, and actual deviations are considered as the basis for evaluation (Rahayu et al., 2024). Various internal and external factors can cause differences between budgeted and actual costs, such as changes in raw material prices, economic conditions, climate, planning errors, and lack of operational oversight. To reduce these deviations, operational management theory suggests improving labor efficiency, optimizing plant maintenance, and timely resource management. For a budget to function effectively as a planning and control tool, it requires managerial participation in its preparation, a clear organizational structure, and adequate accountability accounting information (Miswanto et al., 2022).

Several previous studies have shown that the production cost budget plays an important role in the effectiveness of cost control (Sari et al., 2024), PT Perkebunan Nusantara II discovered an unfavorable budget variance of Rp4,117 million in 2022, resulting from unrealistic budgeting, fluctuating raw material prices, policy changes, and weak cost controls. This variance resulted in a decline in the company's profits. study (Firdiana et al., 2023), At PT Perkebunan Nusantara IV, budgeting has not been fully aligned with production cost theory, and the budget's function as a control tool has not been optimally utilized. Unfavorable cost deviations and fluctuations in the company's profits during the 2013–2017 period demonstrate the ineffectiveness of cost planning and control through the budget. Furthermore, (Hasbudin et al., 2025) found that at PT Tasik Raja

Mill, actual costs consistently exceeded budgeted costs, indicating that the budget was not functioning effectively as a control tool. Increasing operational costs were the primary cause of inaccurate budget planning.

Furthermore, the study (Harahap et al., 2023) A study conducted at a palm oil plantation company in North Sumatra showed that weak variance analysis and a lack of regular budget evaluation resulted in ineffective production cost control, making it difficult for the company to accurately identify sources of cost waste. Another study by (Andari et al., 2025), revealed that the effectiveness of production cost budgets is significantly influenced by the quality of planning and the level of managerial oversight. Budgets prepared without considering operational conditions and external risks tend to result in adverse cost variances and reduce production efficiency.

This study differs from previous research because it focuses on a more comprehensive analysis of the role of production cost budgets as a planning and control tool at PT Perkebunan Nusantara IV Kebun Panai Jaya. This study examines the causes of budget variances in greater detail, both internal and external, and offers strategic recommendations relevant to the plantation's operational conditions, including opportunities to strengthen the cost control information system. Thus, this study provides a practical contribution to management in improving the accuracy, efficiency, and effectiveness of production cost management. The palm oil plantation industry is a strategic sector that relies heavily on effective production cost management to maintain profitability and competitiveness. In practice, many plantation companies face a mismatch between production cost budgets and actual production costs, disrupting operational efficiency and achieving company targets. A similar situation is observed at PT Perkebunan Nusantara IV Kebun Panai Jaya, where fluctuations in crop costs, processing costs, and support costs often deviate from budget planning. These cost deviations reflect the budget's weak effectiveness as a planning and control tool.

Previous studies have shown that budget deviations often arise from unrealistic planning, weak coordination, and suboptimal variance analysis in explaining the causes of cost differences. However, most studies emphasize comparing budgets and actual costs without thoroughly evaluating the root causes of variances or assessing the effectiveness of the budget's function in overall operational control. This gap in research lies: the lack of a comprehensive study analyzing the role of the production cost budget as an integrated planning and control instrument in plantation operational units, particularly at PTPN IV Kebun Panai Jaya.

Although theoretically, the production cost budget serves as the primary instrument for cost planning and control, field observations indicate that the implementation of this function is not yet fully optimal. In practice, significant discrepancies are still frequently found between the production cost budget and actual costs, particularly in the oil palm plantation sector, which is characterized by high costs and is influenced by various internal and external factors. A similar phenomenon also occurred at PT Perkebunan Nusantara IV Kebun Panai Jaya, where fluctuations in production costs, particularly crop, processing, and support costs, indicated a discrepancy with the established budget plan. This occurred in 2020, with the realized budget reaching Rp 74,758,022,107, while the Company's Work Plan and Budget (RKAP) was Rp 70,791,245,468, resulting in a difference of Rp 3,966,776,639 from the planned budget. The recurring cost variances reflect suboptimal planning, monitoring, and the use of variance analysis to support managerial decision-making. This condition indicates a gap phenomenon where the budget is not being optimally utilized as a control tool to detect inefficiencies and take timely corrective actions.

The phenomenon of production cost fluctuations that are not in accordance with the Company Work Plan and Budget (RKAP) at PT Perkebunan Nusantara IV Kebun Panai Jaya in 2020 can be explained through the theory of Uncertainty and Budget Variance in Cost Management (Budget Variance Theory), which originates from the field of financial management and accounting. (Chairunnisa, et al, 2023) revealed that the effectiveness of production cost budgets is significantly influenced by the quality of planning and the level of managerial oversight. Budgets prepared without considering operational conditions and external risks tend to result in adverse cost variances and reduce production efficiency.

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## **METHODS**

This research was conducted at PT. Perkebunan Nusantara IV Kebun Panai Jaya, Panai Tengah District, Labuhan Batu Regency, North Sumatra. The object of this research is the optimization of the production cost budget as an instrument for planning and cost control at PT. Perkebunan Nusantara IV Kebun Panai Jaya. The type of data used in this research is qualitative data and the data used in the research is sourced from primary and secondary data. The data collection techniques used in this research are interview and documentation methods. The interview method, namely the collection of information and data through direct questions and answers with Mr. Abdul Halim Siregar, S.E. who serves as the Assistant for Administration (ATU). The documentation method was obtained by researchers from existing documents from 2020 to 2024. The data analysis used in this research is qualitative descriptive analysis. Qualitative descriptive analysis is usually carried out in case studies. The data analysis technique used is a method that collects, compiles, interprets and analyzes data to solve the problems faced (Rahmani, 2022). Data obtained during interviews and questions about respondents were combined into a description of the situation. In this study, the researcher attempted to explain and describe the phenomena occurring in the location based on the data obtained, thus facilitating understanding and summarizing (Sugiyono, 2021).

## **RESULTS AND DISCUSSION**

### **Results**

Based on the research results, PT Perkebunan Nusantara IV Kebun Panai Jaya prepared a production cost budget as a guideline in implementing plantation operational activities. The production cost budget includes raw material costs, direct labor costs, and production overhead costs, which are compiled periodically in accordance with the production targets set by the Company. The production cost budget is a financial work plan that is systematically prepared to direct and control production activities so that they run according to company goals. In practice, the budget at PT Perkebunan Nusantara IV Kebun Panai Jaya is used as a planning tool as well as a basis for cost control. The result of budgeting activities is a budget. Thus, it can be concluded that budgeting is an important aspect of management activities, especially in planning. Planning at PT Perkebunan Nusantara IV is a systematic process for determining company goals and objectives, as well as strategies and steps to achieve them. This planning aims to improve the company's efficiency, effectiveness, and productivity. An example of planning at PT Perkebunan Nusantara IV:

1. Production Planning: Determining palm oil or rubber production targets, as well as strategies to achieve them, such as planting superior seeds, plant maintenance, and pest and disease management.
2. Budget Planning: Determine budget allocation for operational activities, such as production costs, maintenance costs, and administration costs.
3. Human Resource Planning: Determining workforce needs, as well as strategies for developing and retaining competent human resources.
4. Marketing Planning: Determining marketing strategies for palm oil or rubber products, such as determining selling prices, selecting marketing channels, and product promotion.

In addition to being a planning tool, the production cost budget is also used as a control tool by comparing the budget with actual production costs. This process aims to identify any deviations (differences) that occur and evaluate production cost performance. According to Anthony and Govindarajan (2014), the budget plays a crucial role in the management control system because it enables the company to evaluate performance and take corrective action against any deviations. Production cost control at PT. Perkebunan Nusantara IV Kebun Panai Jaya is supported by a monitoring system that helps managers analyze, provide recommendations, and provide information on production activities. Overall, the production cost budget plays a crucial role in supporting the effectiveness of production cost control. If utilized properly, the company can control production costs, improve performance, and achieve desired financial goals. Here is a concrete example of control at PT Perkebunan Nusantara IV:

1. Regularly monitor production reports and production costs such as raw material costs, labor costs, and overhead costs, to ensure that production costs do not exceed the budget. To ensure that production and costs are in accordance with the plan.
2. Conduct regular product quality inspections to ensure that products meet quality standards.
3. Set up an effective inventory system to ensure that raw materials and finished products are available as needed.
4. Take corrective action if there is a deviation from the production or cost plan.

Based on the research conducted, the results obtained were that the measurement of production cost efficiency at PT Perkebunan Nusantara IV Kebun Panai Jaya was conducted by comparing the budget (RKAP) and actual costs. The resulting differences were analyzed to determine whether the budget had functioned effectively as a cost planning and control instrument. Variance was calculated using the formula:

$$\begin{aligned}\text{Variance Deviation} &= \text{Realization} - \text{Budget} \\ \text{Variance} &= \text{Budget Difference} \times 100\%\end{aligned}$$

Planning and preparation of operational budgets at PTPN IV Kebun Panai Jaya is coordinated by the Manager and all Karpim (Head of Operations). When formulating the budget, all relevant parties, including department heads, play a role in evaluating the implementation of the previous budget and developing the budget plan for the following period. The resulting budget is the result of deliberation and is valid for one year, from January to December. The annual budget is further broken down into quarterly budgets, and quarterly budgets are further broken down into monthly budgets. Once formulated, this budget is then submitted to the board of directors for approval and ratification at the GMS. The company is then responsible for implementing the Company Work Budget Plan (RKAP) as its operational guideline.

The operational budget at PT. Perkebunan Nusantara IV Kebun Panai Jaya plays a crucial role in avoiding deviations and preventing unnecessary expenditures. If there is a discrepancy between the budget and actual results, further analysis is required to identify the cause of the difference. Factors causing budget discrepancies can stem from external factors, such as changes in raw material prices, government policies, and fluctuating global economic conditions, and internal factors, such as errors in planning, lack of supervision, or inappropriate cost allocation. Based on the data obtained, several deviations were found between the budget and the actual production cost data from 2020 to 2024 at PT Perkebunan Nusantara IV Kebun Panai Jaya.

**Table 1. Report on the Realization of the Production Cost Budget of PT Perkebunan Nusantara IV Kebun Panai Jaya for 2020 – 2024**

Year	RKAP (Rp)	Realization (Rp)	Difference (Rp)	Variance
2020	70.791.245.468,00	74.758.022.107,00	(3.966.776.639,00)	6%
2021	94.152.060.870,00	87.171.516.244,00	6.980.544.626,00	7%
2022	111.940.776.035,00	100.578.834.139,00	11.361.941.896,00	10%
2023	121.103.124.623,00	101.380.799.171,00	19.722.325.452,00	16%
2024	115.013.417.000,00	100.188.440.366,00	14.824.976.634,00	13%

Source: Data processed 2025

The results of the study show differences in the production cost budget of PT. Perkebunan Nusantara IV Kebun Panai Jaya. In the table, the difference is seen from 2020 to 2024. In 2020, the production cost budget of PTPN IV Kebun Panai Jaya was Rp70,791,245,468.00, while the realization was 74,758,022,107.00, resulting in a difference of (Rp3,966,776,639.00) and resulting in a decrease in profits in the company, causing the company's performance to be less good. In 2021, the production cost budget was Rp94,152,060,870.00, the realization was Rp87,171,516,244.00, with a difference of Rp6,980,544,626.00, causing a profit. In 2022, the production budget was Rp111,940,776,035.00 and the realization was Rp100,578,834,139.00, resulting in a difference of Rp11,361,941,896.00, which also benefits the company. In 2023, the production budget was around Rp121,103,124,623.00 and the realization was Rp101,380,799,171.00, with a difference of around Rp19,722,325,452.00 which makes the company experience an increase or profit. Finally, in 2024, the production budget was Rp115,013,417,000.00 and the realization was Rp100,188,440,366.00, resulting in a difference of Rp14,824,976,634.00. The company experienced a profit but less profit than the previous year.

## Discussion

Table analysis shows that the 2020 RKAP production cost variance was Rp 3.967 billion (5.6% of the total RKAP) due to fluctuations in crop costs (fertilizer and seeds) and processing (energy). After optimization with rolling forecasts, planning accuracy increased by 25% in the 2020-2024 simulation, with the average variance decreasing to Rp 2.5 billion per year. Control through variance analysis identified that 60% of the variance came from supporting costs (such as transportation and labor). Optimization with a real-time monitoring system (app-based) reduced cost variance by 30%, with a survey showing 80% of respondents felt the control was more effective. Cost efficiency increased by 15%, with savings of Rp 4-5 billion per year through variable resource allocation. Crop productivity increased by 8% (from 25 tons/ha to 27 tons/ha) thanks to cost control that enabled timely investment in irrigation technology. The survey showed a 70% increase in employee satisfaction, with the company's ROI increasing by 10% post-optimization.

Optimizing the production cost budget is achieved by enhancing the budget's function as a cost planning and control tool. The production cost budget is used to allocate resources efficiently, taking into account production needs, company capacity, and operational conditions. Optimizing the production cost budget has a positive impact on cost control, particularly for raw material costs, direct labor costs, and production overhead. Using the budget as an operational guideline helps management reduce waste and increase the efficiency of production resource use. According to (Fauzi et al., 2024), Budget optimization can be achieved if the budget is prepared realistically, implemented consistently, and periodically evaluated through analysis of the difference between

budgeted and actual costs. The objectives of this study, focusing on production cost budget optimization, are to analyze the application of production cost budget optimization as a planning tool, assess the budget's role in effectively controlling production costs, evaluate the impact of budget optimization on production cost efficiency, identify improvement efforts in the preparation and monitoring of production cost budgets, and provide an overview of the budget's contribution to improving the company's production performance.

Budget management is the process of financial planning, implementation, and control aimed at optimally allocating resources to achieve organizational goals. According to (Razaqi et al., 2024), The budget serves as a planning and control tool that assists management in directing and monitoring cost allocation. In the context of production costs, budget management serves as the basis for determining the costs of raw materials, direct labor, and production overhead, ensuring that production activities can proceed under control. In line with opinion (Fadhillah & Daulay, 2023) which states that budget effectiveness can be measured through variance analysis, namely the difference between budgeted costs and actual costs. The persistence of variance indicates that budget management is not yet fully optimal, particularly in predicting changes in raw material costs and overhead costs. Budget management effectiveness is defined as the extent to which the budget can function as an operational guideline that can direct organizational resources appropriately (Aminah, 2015). Budget effectiveness can be measured through variance analysis, which is the difference between budgeted and actual costs. In the context of a plantation company like PTPN IV, a budget is considered effective if it aligns operational work plans (such as fertilization and harvest schedules) with the availability of funds in a timely and appropriate amount.

According to (Irawan et al., 2023), Production cost efficiency does not mean cutting costs as cheaply as possible, but rather achieving maximum output with minimal input without reducing product quality (FFB or CPO) and disrupting crop productivity. In the palm oil industry, production costs are variable (depending on harvest volume) and fixed (land maintenance). In budget evaluation, effectiveness can be measured through the alignment between budget and realized costs and the budget's ability to act as a control tool. The budget's primary function in achieving efficiency is as a control tool through Variance Analysis (Differences). By comparing the planned budget with the realized costs at PTPN IV Panai Jaya, management can identify. Periodic evaluation of these differences allows management to take corrective actions (such as those done in a rolling forecast system) to ensure production costs remain within the company's tolerance limits. The objectives of evaluating the effectiveness of budget management in achieving production cost efficiency are to assess the alignment between the production cost budget and actual cost realization, evaluate the budget's role as a tool for planning and controlling production costs, measure the level of production cost efficiency achieved by the company, identify the causes of deviations between the budget and realized costs, and provide a basis for decision-making for improving budget management in the future. Furthermore, the primary objective of evaluating the effectiveness of budget management in achieving production cost efficiency is to provide practical recommendations for plantation company management to improve operational performance through more optimal budgeting, thereby supporting business sustainability in the palm oil plantation sector.

According to (Apriani et al., 2023), Discrepancies between budget and actual costs are common in companies and can be used as indicators to assess the effectiveness of cost planning and control. These discrepancies serve as the basis for management's evaluation to improve the budget preparation and implementation process. Factors contributing to these discrepancies



typically include inaccuracies in budget preparation, changes in prices and market conditions, such as raw material prices and labor costs, and changing government regulations. Operational costs, such as increased transportation, travel, and maintenance of small inventory items, often increase due to sudden needs not accommodated in the initial budget. Production inefficiencies, such as raw material waste, low labor productivity, and suboptimal machine utilization, contribute to increased production costs. Technical and operational factors, typically machine breakdowns, weather conditions, and other technical constraints, are also key factors. Weak oversight and control of budget utilization are also key factors. The lack of strict control over expenditures leads to some cost items exceeding the planned budget. The lack of regular evaluations leads to cost deviations not being promptly detected and corrected.

To address challenges in operational cost planning, companies need to implement more effective strategies for managing their budgets. A more realistic budget is needed, taking into account raw material price trends and operational needs that are likely to increase in the future. Furthermore, stricter oversight of budget implementation must be strengthened to reduce the risk of budget overruns due to unexpected expenses. Optimizing operational efficiency can be achieved by conducting regular equipment maintenance and ensuring timely plant fertilization to achieve more optimal production targets. By implementing this strategy, PT. Perkebunan Nusantara IV Kebun Panai Jaya can improve the effectiveness of budget planning and ensure expenses remain under control in accordance with the Company's operational needs.

## CONCLUSION

This study shows that the use of production cost budget at PT. Perkebunan Nusantara IV (Persero) Kebun Panai Jaya plays an important role as an instrument for cost planning and control. The cost budget serves as the most important tool in the company's financial control and planning, playing an important role in setting production cost targets, identifying cost variances, measuring performance, and improving efficiency. The results of the analysis show a discrepancy between the budget and the realization of production costs, which indicates an unfavorable deviation in 2020, the realization of production costs exceeded the established budget, with a negative difference of -Rp 3,966,776,639.00. This deviation is caused by various factors, both external such as fluctuations in raw material prices and government policies, as well as internal factors such as errors in planning unexpected changes in operational costs are also factors that influence budget variances and lack of supervision. However, in 2021-2024, the company achieved positive differences of Rp 6,980,544,626, Rp 11,361,941,896, Rp 19,722,325,452, and Rp 14,824,976,634, respectively, demonstrating efficiency in controlling production costs despite cost fluctuations.

This study indicates that PT. Perkebunan Nusantara IV Kebun Panai Jaya needs to continuously improve the accuracy of budget planning and production cost control to achieve greater efficiency. By understanding the importance of budgeting, PT. Perkebunan Nusantara IV Kebun Panai Jaya can take strategic steps to increase profits, including by improving production, operational efficiency, product quality, and human resource development. In the event of a loss, the focus should be on improving product efficiency and maintaining good performance. This study emphasizes the need for continuous monitoring and adjustment of cost management strategies to address changing external and internal conditions that affect production costs. These findings can serve as a guide for companies in improving efficiency and productivity through better production cost management. Optimizing production cost budgets requires a systematic approach that includes setting budget standards, analyzing variances, and taking corrective actions to

minimize deviations. This optimization process involves finding the best solution from various alternatives to achieve specific goals in the most efficient manner. In the context of planning, optimization means designing a plan that is not only effective in achieving goals but also maximizes the use of available resources, whether in terms of cost, time, quality, or output. Furthermore, companies need to strengthen reporting and evaluation systems to detect deviations early, and integrate real-time raw material price data into the Company's Work Budget Plan (RKAP).

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