

OPTIMIZING PRODUCTION DECISIONS THROUGH DIFFERENTIAL COST ANALYSIS: A CASE STUDY OF MAKE-OR- BUY STRATEGY IN MANUFACTURING

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Abstract

Increasing competition in the digital printing industry requires companies to optimize production decisions while maintaining cost efficiency and profitability. Although make-or-buy decisions are common in managerial practice, many small and medium-sized manufacturing firms still rely on managerial judgment rather than systematic cost analysis, creating the need for more objective decision-support approaches. This study aims to evaluate the application of differential cost analysis in determining the most economically advantageous production alternative at CV Haza Sarana Kreasi. A descriptive qualitative case study approach was employed using primary data collected through interviews and direct observation. The analysis was based on production cost data, including direct material costs, direct labor costs, manufacturing overhead, external procurement prices, production volume, defective products, and selling prices. Differential cost analysis and profitability analysis were used to compare internal production with external procurement. The findings reveal that the internal production cost was Rp 12,500 per meter, which was lower than the external procurement cost of Rp 13,500 per meter, resulting in a cost advantage of Rp 1,000 per meter. Furthermore, internal production generated a slightly higher net daily profit (Rp 407,500) than external procurement (Rp 405,000), despite losses caused by defective products. These results indicate that internal production is the more economically beneficial alternative for the company. The study demonstrates that differential cost analysis provides an effective managerial accounting tool for supporting make-or-buy decisions by identifying relevant costs and improving production efficiency. The findings offer practical guidance for manufacturing firms seeking to optimize production strategies and contribute to the growing body of knowledge on the application of differential cost analysis in managerial decision-making.

Keywords: Differential Cost Analysis, Make-or-Buy Decision, Managerial Accounting, Production Cost, Production Management.



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INTRODUCTION

In the current digital era, the rapid expansion of business activities has intensified competition across various industries, including the digital printing sector. One example is CV Haza Sarana Kreasi, a digital printing company established in 2011 by Budi Warsono and Novita Handayani. The company was founded to address increasing market demand for high-quality printing products at competitive prices. To remain competitive, the company must continuously improve operational speed, accuracy, and cost efficiency while maintaining superior visual quality. CV Haza Sarana Kreasi provides a wide range of printing and design services, including book printing, brochures, banners, posters, stickers, and other customized printing products. Over the years, the company has demonstrated its ability to adapt to technological advancements and evolving customer preferences, enabling it to sustain its competitiveness in a dynamic business environment.

In today's highly competitive business landscape, effective cost management has become a critical factor in achieving operational efficiency and maintaining organizational competitiveness. Companies are required to make strategic managerial decisions that optimize resource utilization while ensuring product quality and customer satisfaction. For digital printing businesses such as CV Haza Sarana Kreasi, one of the most significant strategic decisions concerns whether specific production activities should be performed internally or outsourced to external suppliers. This make-or-buy decision has substantial financial and operational implications, making comprehensive cost analysis essential for selecting the most beneficial alternative.

From a managerial accounting perspective, procurement decisions should be supported by an evaluation of relevant costs associated with each available alternative. Differential cost analysis is a widely recognized decision-making tool that compares the costs incurred under competing alternatives, thereby enabling managers to identify the option that generates the greatest economic benefit. Differential cost refers to costs that change under different decision alternatives or remain relevant to a particular decision context (Hariyani, 2018). Consequently, applying differential cost analysis is essential for CV Haza Sarana Kreasi before determining its production procurement strategy. Such analysis provides management with a comprehensive understanding of the cost consequences associated with each alternative and supports the selection of decisions that are consistent with the company's operational objectives and long-term strategic goals.

LITERATURE REVIEW

Differential Cost Analysis

Differential cost refers to the difference in costs incurred between two or more alternative courses of action. These costs are considered relevant because they vary depending on the managerial decision being evaluated (Hariyani, 2018). Unlike historical or sunk costs, differential costs provide decision-makers with information that directly influences future economic outcomes. Consequently, differential cost analysis has

become an essential tool in managerial accounting for evaluating alternatives and supporting rational business decisions.

In practice, differential cost analysis is frequently applied in various managerial decision-making contexts, including accepting or rejecting special orders, replacing production equipment, discontinuing product lines, determining optimal product mixes, and evaluating make-or-buy decisions (Sri Mulyani, 2017). The primary objective of this analysis is to identify the alternative that provides the greatest economic benefit by comparing only the relevant costs associated with each available option. Therefore, managers are encouraged to focus on future costs that differ across alternatives while excluding irrelevant costs that remain unchanged regardless of the decision.

According to (Syaqinah et al., n.d.), differential cost analysis assists companies in selecting the most efficient alternative by comparing the costs of internal production with those of external procurement. Through this comparison, management can evaluate whether manufacturing a product internally or purchasing it from an external supplier generates superior financial performance while maintaining operational effectiveness.

The effectiveness of differential cost analysis largely depends on the accurate identification of relevant production cost components. Generally, differential costs consist of three major elements: direct material costs, direct labor costs, and manufacturing overhead costs. Direct material costs represent the expenditures incurred for raw materials that become an integral part of the finished product. Direct labor costs include wages paid to employees who are directly involved in the production process. Manufacturing overhead comprises indirect production costs, such as factory utilities, equipment depreciation, maintenance expenses, and other supporting costs necessary to facilitate production activities. Together, these components provide a comprehensive basis for evaluating the financial consequences of alternative production decisions.

Managerial Decision-Making in Make-or-Buy Decisions

Decision-making is one of the most critical functions of management because it determines the allocation of organizational resources and directly influences operational efficiency and long-term competitiveness. In managerial accounting, make-or-buy decisions involve evaluating whether a product or component should be manufactured internally or procured from an external supplier. This decision requires managers to consider both quantitative and qualitative factors to ensure that the selected alternative aligns with the organization's strategic objectives.

According to (Hariyani, 2018), several important considerations should be evaluated before deciding whether to produce internally or purchase from an external supplier. First, management should assess the availability of idle production capacity. This assessment includes determining whether existing human resources, production equipment, and machinery possess sufficient unused capacity to manufacture the required products without disrupting current operations. When idle capacity exists, internal production may become a more cost-effective alternative because fixed resources can be utilized more efficiently.

Second, the company's production capability should be carefully evaluated. This includes assessing whether employees possess the necessary technical skills and competencies to produce products that meet established quality standards, as well as determining whether available machinery and production facilities are capable of supporting efficient manufacturing processes. Insufficient technical capability may increase production costs and reduce operational efficiency, thereby making external procurement a more favorable option.

Third, management should evaluate the availability of products with comparable quality in the external market. If suppliers can provide products that meet the company's quality requirements at competitive prices, purchasing from external vendors may reduce production costs and improve operational flexibility. Conversely, if comparable products are unavailable or fail to satisfy quality expectations, internal production may represent the more appropriate strategic alternative despite potentially higher resource commitments.

Overall, make-or-buy decisions should not rely solely on cost comparisons. Managers must integrate differential cost analysis with considerations related to production capacity, product quality, supplier reliability, and operational capabilities to ensure that the selected alternative contributes to both short-term profitability and long-term organizational sustainability.

RESEARCH METHOD

This study employed a descriptive qualitative approach using a case study design at CV Haza Sarana Kreasi, a company operating in the digital printing industry. The case study approach was selected to provide an in-depth understanding of the company's production decision-making process, particularly in evaluating the financial implications of producing products internally versus purchasing them from external suppliers. The study focused on examining the application of differential cost analysis as a managerial accounting tool for supporting make-or-buy decisions.

Primary data were collected directly from the company through semi-structured interviews with management and direct observations of the production process. These data were subsequently analyzed by comparing the differential costs and net profits generated under two alternative production strategies: internal production (make) and external procurement (buy). The primary objective of this research was to evaluate the cost differences between these alternatives and to identify the option that provides greater economic benefits based on differential cost analysis.

Data Sources

The study utilized primary data obtained directly from CV Haza Sarana Kreasi. The collected data included information on direct material costs, direct labor costs, manufacturing overhead costs, purchase prices offered by external suppliers, daily production capacity, the number of defective products, and product selling prices. These

data served as the basis for calculating production costs, differential costs, and the profitability associated with each production alternative.

Data Analysis Technique

The data were analyzed using the differential cost analysis method, which compares the relevant costs associated with internal production and external procurement to determine the most economically advantageous alternative. This approach enables management to evaluate the financial consequences of each option and supports objective decision-making based on relevant cost information.

The analytical procedures consisted of the following steps:

1. Calculating the total internal production cost per meter of banner by summing direct material costs, direct labor costs, and manufacturing overhead costs.
2. Calculating the procurement cost per meter when purchasing the product from an external supplier.
3. Determining the differential cost using the following equation:
$$\text{Differential Cost} = \text{Internal Production Cost} - \text{External Purchase Cost}$$
4. Comparing the net profit generated under each alternative by considering production costs, selling prices, production volume, and defective products.
5. Evaluating the results to identify the production alternative that provides the greatest financial advantage and supports efficient managerial decision-making for the company.

RESULTS AND DISCUSSION

Differential Cost Analysis

The differential cost analysis was conducted to compare the financial implications of two production alternatives available to CV Haza Sarana Kreasi: internal production (make) and external procurement (buy). The comparison focused on identifying the alternative that minimizes production costs while maximizing profitability.

Table 1. Comparison of Production Costs

Cost Component	Internal Production	External Procurement
Direct Material Cost	Rp 9,500	–
Direct Labor and Manufacturing Overhead	Rp 3,000	–
Total Cost per Meter	Rp 12,500	Rp 13,500

Based on Table 1, the total internal production cost was Rp 12,500 per meter, consisting of direct material costs amounting to Rp 9,500 and direct labor and manufacturing overhead costs totaling Rp 3,000. In comparison, the purchase price offered by external suppliers was Rp 13,500 per meter. This indicates that producing internally is more cost-efficient than purchasing the product from external suppliers.

The differential cost was calculated using the following formula:

Differential Cost = Internal Production Cost - External Purchase Cost
Differential Cost = Rp 12,500 - Rp 13,500 = -Rp 1,000

The analysis indicates a cost difference of Rp 1,000 per meter in favor of internal production. In other words, producing the product internally reduces production costs by Rp 1,000 per meter compared with purchasing the product from an external supplier. Therefore, based on differential cost considerations, internal production represents the more economically advantageous alternative for improving the company's cost efficiency.

Profitability Analysis

To further evaluate the financial consequences of the two production alternatives, a profitability analysis was performed by comparing daily revenues, production or procurement costs, and net profit generated under each scenario.

Table 2. Comparison of Daily Profit

Description	Internal Production	External Procurement
Total Production	90 meters	90 meters
Selling Price per Meter	Rp 18,000	Rp 18,000
Revenue	Rp 1,620,000	Rp 1,620,000
Production/Purchase Cost	Rp 1,125,000	Rp 1,215,000
Gross Profit	Rp 495,000	Rp 405,000
Defective Products (7 meters)	-Rp 87,500	–
Net Daily Profit	Rp 407,500	Rp 405,000

As presented in Table 2, both production alternatives generated the same daily revenue of Rp 1,620,000, reflecting identical production volumes and selling prices. However, differences in production costs resulted in different profitability levels.

For the internal production alternative, the company incurred production costs of Rp 1,125,000, generating a gross profit of Rp 495,000. After accounting for losses arising from seven meters of defective products, amounting to Rp 87,500, the company achieved a net daily profit of Rp 407,500.

Under the external procurement alternative, the company purchased products from suppliers, resulting in a gross profit of Rp 405,000. Because no production losses from defective products were incurred, the net daily profit remained Rp 405,000.

Although internal production involves the risk of defective products, the results demonstrate that it still generates a slightly higher net daily profit than external procurement. The difference of Rp 2,500 per day indicates that the financial benefits obtained from lower production costs outweigh the losses associated with defective products. Consequently, these findings suggest that internal production is the preferred alternative, provided that the company continues to improve production efficiency, strengthen quality control, and minimize production defects.

Discussion

This study aimed to evaluate the application of differential cost analysis in supporting make-or-buy decisions at CV Haza Sarana Kreasi by comparing the financial implications of internal production and external procurement. The findings demonstrate that differential cost analysis provides a reliable basis for managerial decision-making, as

it enables management to identify the production alternative that generates greater economic benefits while maintaining operational efficiency.

The differential cost analysis revealed that the internal production cost was Rp 12,500 per meter, whereas the purchase price offered by external suppliers was Rp 13,500 per meter, resulting in a cost advantage of Rp 1,000 per meter for internal production. This finding indicates that manufacturing products internally is more economical than purchasing them from external suppliers. From a managerial accounting perspective, this result confirms that only relevant costs should be considered when evaluating alternative courses of action. Differential cost analysis emphasizes future costs that differ between competing alternatives, allowing management to focus on costs that directly influence decision outcomes rather than on historical or unavoidable expenditures. Therefore, the findings support the argument proposed by Hariyani (2018) that differential costs constitute relevant information for managerial decision-making because they vary according to the alternatives being considered.

The results also reinforce the practical application of differential cost analysis in make-or-buy decisions. According to Sri Mulyani (2017), differential cost analysis is commonly employed when organizations must determine whether products should be manufactured internally or obtained from external suppliers. In the present study, comparing the two alternatives clearly demonstrated that internal production generated lower unit costs while maintaining the same selling price and production volume. Consequently, the company was able to improve cost efficiency without compromising revenue generation. This finding highlights the importance of systematic cost evaluation before implementing strategic production decisions, particularly in industries characterized by intense competition and increasing pressure to reduce operational costs.

Another important finding concerns the relationship between production costs and profitability. Although both alternatives generated identical daily revenues, differences in production costs produced different levels of profitability. Internal production generated a gross profit of Rp 495,000, exceeding the Rp 405,000 achieved through external procurement. Even after accounting for losses resulting from seven meters of defective products, internal production still generated a slightly higher net daily profit (Rp 407,500) than external procurement (Rp 405,000). These findings suggest that the financial benefits obtained through lower production costs were sufficient to offset the losses associated with defective products. Therefore, the study demonstrates that cost efficiency has a greater influence on overall profitability than the relatively small losses arising from production defects.

These findings are consistent with the perspective of Syaquinah et al. (n.d.), who argue that differential cost analysis assists companies in identifying the most efficient production alternative by comparing the costs of internal manufacturing with external procurement. The present study extends this perspective by demonstrating that differential cost analysis not only reduces production costs but also contributes to improved profitability. Consequently, the analysis serves as an effective managerial

accounting tool for evaluating strategic production decisions based on measurable financial outcomes.

Despite the financial superiority of internal production, the findings also indicate that operational efficiency should not be evaluated solely from a cost perspective. The occurrence of defective products reduced the company's net profit, indicating that production quality remains an important determinant of financial performance. If the number of defective products increases, the economic advantage of internal production may gradually diminish. Therefore, management should complement differential cost analysis with effective quality control practices, preventive maintenance, employee training, and continuous process improvement. These operational improvements would enable the company to maximize the economic benefits of internal production while minimizing avoidable production losses.

From a managerial perspective, the findings provide practical implications for production planning and resource allocation at CV Haza Sarana Kreasi. Since the company possesses sufficient production capability to manufacture products at lower costs than external suppliers, internal production should remain the preferred strategic alternative. Nevertheless, this decision should be supported by continuous monitoring of raw material costs, labor productivity, manufacturing overhead, supplier pricing, and production quality. Changes in any of these factors may alter the differential cost structure and influence future make-or-buy decisions. Therefore, differential cost analysis should not be viewed as a one-time calculation but rather as a continuous decision-support tool that enables management to respond effectively to changing business conditions.

Overall, this study answers the research question by demonstrating that differential cost analysis provides an effective basis for evaluating make-or-buy decisions at CV Haza Sarana Kreasi. The empirical evidence shows that internal production is financially more advantageous than external procurement because it offers lower production costs and slightly higher net profitability. Accordingly, the company should prioritize internal production while continuously improving operational efficiency and product quality to sustain its competitive advantage and enhance long-term financial performance.

CONCLUSION

This study examined the application of differential cost analysis in supporting make-or-buy decisions at CV Haza Sarana Kreasi by comparing the financial implications of internal production and external procurement. The findings demonstrate that differential cost analysis is an effective managerial accounting tool for evaluating production alternatives based on relevant cost information.

The analysis revealed that the internal production cost amounted to Rp 12,500 per meter, which was lower than the external procurement cost of Rp 13,500 per meter, resulting in a differential cost advantage of Rp 1,000 per meter. Furthermore, although internal production incurred losses due to defective products, it still generated a slightly higher net daily profit (Rp 407,500) than external procurement (Rp 405,000). These

findings indicate that the cost savings achieved through internal production outweigh the financial impact of production defects, making internal production the more economically beneficial alternative.

The study concludes that differential cost analysis provides a rational and reliable basis for make-or-buy decisions by enabling management to compare relevant costs associated with alternative production strategies. For CV Haza Sarana Kreasi, internal production represents the preferred option because it improves cost efficiency while generating higher profitability. Nevertheless, sustaining this advantage requires continuous efforts to enhance production efficiency, strengthen quality control, and minimize defective products to maximize long-term financial performance.

Suggestions for Future Research

This study was conducted as a single case study in one digital printing company; therefore, the findings may not be directly generalizable to other industries or organizational settings. Future research is encouraged to involve multiple companies or different manufacturing sectors to enhance the external validity of the findings and provide broader empirical evidence regarding the application of differential cost analysis in make-or-buy decisions.

In addition, future studies may incorporate other managerial accounting approaches, such as activity-based costing (ABC), cost-volume-profit (CVP) analysis, or target costing, to compare their effectiveness with differential cost analysis in supporting production decision-making. Researchers may also integrate non-financial factors, including supplier reliability, production flexibility, product quality, lead time, and operational risk, to develop a more comprehensive decision-making framework.

Finally, future research could employ quantitative or mixed-method approaches to examine the relationship between differential cost analysis, production efficiency, and organizational performance across a larger sample of manufacturing firms. Such studies would provide stronger empirical evidence regarding the strategic role of differential cost analysis in enhancing managerial decision-making and sustaining competitive advantage.

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