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Cost price analysis using full costing and activity-based costing in Sari Gurih Pak Cipto Tofu Production SMEs

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ABSTRACT

Improper determination of the cost of goods manufactured can impact the setting of product selling prices and overall business profits. This study aims to evaluate how the cost of goods produced is determined using the company's method, the full costing method, and the activity-based costing method, and to identify which method is the most effective. The research was conducted at UMKM Tahu Sari Gurih Pak Cipto, located in Gemantar Rt 01/Rw 02, Gemantar, Selogiri, Wonogiri. The study employs both full costing and activity-based costing methods, using a descriptive quantitative approach with observation and interviews. Primary data were collected directly from the business owner. The findings indicate that the company's method resulted in a cost of goods produced of Rp 16,841.67, the full costing method resulted in Rp 17,481.79, and the activity-based costing method resulted in Rp 16,336.11. Among the three methods, activity-based costing proved to be the most effective, as it yielded the lowest cost of goods produced.

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1. INTRODUCTION

Industries needed today are those capable of innovating to foster creative and innovative ideas and create employment opportunities for themselves and others(Relina et al., 2020). The growth of the SME sector in Indonesia has significant potential. Properly managed and developed, SMEs can become resilient enterprises that absorb a substantial workforce (Ismayeni et al., 2020; Relina et al., 2020).

When determining the cost of goods manufactured, companies must choose the appropriate method to achieve the desired profit and remain competitive. All production costs, including raw materials, labour, and overheads, are considered in the cost of goods sold. In management accounting, this approach is known as full costing (Pujiarti et al., 2019).

Every SME operator is required to be more effective and efficient in running their business to compete with their competitors (Sari et al., 2022). One way to achieve this is by determining the cost of goods manufactured and the selling price accurately (Baviga, 2021; Garrison et al., 2021; Hilton & Platt, 2020).

Tahu Sari Gurih was founded by Pak Cipto in Gemantar, Rt 01/Rw 02, Selogiri, Wonogiri, Central Java. Since 1966, the production has shifted to selling tofu by the block instead of in small quantities due to a growing customer base (Arini12 & Muda, 2024; Febriana et al., 2024; Sánchez-Rebull et al., 2023). The business peaked between 1972 and early 2020, producing 800 kg of soybeans daily with eight employees, rarely having unsold tofu (Bakhodirovich, 2023; Rufaidah et al., 2023; Wahyuni

et al., 2024). However, the business declined during the COVID-19 pandemic in 2020, reducing production to 100 kg of soybeans per day with only three employees (Hilton & Platt, 2020; Ismayeni et al., 2020; Putri et al., 2024).

SMEs Production Tahu Sari Gurih Pak Cipto plays a crucial role in providing the community with essential food items (Drelichowski, 2012; Montrone & D'Achille, 2013; Sinaga, 2024). Based on the above description, the research problem can be formulated as follows: How is the cost of goods manufactured determined by SMEs? What are the cost of goods manufactured using the full costing method, the cost of goods manufactured using the activity-based costing method, and which method is the most effective? The objectives of this study are to understand the determination of the cost of goods manufactured by SMEs, the full costing method, the activity-based costing method, and identify the most effective method among them (Asni et al., 2024; Borges et al., 2024; Marpaung et al., 2024; Prasetyo et al., 2020; Putri et al., 2024).

2. RESEARCH METHOD

The research methodology for this study employs a descriptive quantitative approach, aiming to interpret phenomena within their natural settings in operating cost production (Pandey & Pandey, 2021). Conducted at SMEs Production Tahu Sari Gurih Pak Cipto in Gemantar, Selogiri, Wonogiri, the study involves the business owner and employees as research subjects (Amdee et al., 2014; Azar & Khadivar, 2012; Salem & Mazhar, 2014). Primary data is gathered directly from Pak Cipto through interviews and observations, ensuring firsthand information (Baviga, 2021; Borges et al., 2024; Hilton & Platt, 2020; Sari et al., 2022). The data analysis process begins with detailing the expenses to describe the cost of goods manufactured over a specific period. Subsequently, the study applies the full costing method to determine the cost of goods and compares it with the company's calculation method and the activity-based costing method (Marpaung et al., 2024; Pandey & Pandey, 2021). Finally, conclusions are drawn from these comparisons to ascertain the most effective method (Zamrud & Abu, 2020).

3. RESULTS AND DISCUSSIONS

History of Production Process

Tahu Sari Gurih Pak Cipto, located in Dusun Gemantar Rt 01/ Rw 02, Gemantar, Selogiri, Wonogiri, was founded by Pak Cipto and his wife. Pak Cipto acquired his tofu-making skills from his experience working for a Chinese employer before he got married, prior to 1957. The business experienced significant growth in 1972, employing eight workers and producing 800 kilograms of tofu daily, with tofu sold by the block.

However, the business faced a severe decline in 2020 due to the COVID-19 pandemic. Production dropped drastically to just 100 kilograms per day, with only three employees remaining. The tofu production process involves several stages, including soybean washing, soaking, grinding, boiling, filtering, coagulating, molding, cutting, and frying. Each step must be performed in sequence, maintaining cleanliness to ensure the highest quality and quantity of the final product.

Table 1. Calculation cost of production by owner April 2023

Description	Daily Requirement	Monthly Requirement	Unit Cost (Rp)	Total (Rp)
Raw Material Costs				
Soybeans	100 kg x 30	3000 kg	12,000/kg	36,000,000
Cooking Oil	20 kg x 30	600 kg	14,000/kg	8,400,000
Vinegar	1 kg x 30	30 kg	35,000/kg	1,050,000
Labor Costs				
Salaries for 3 Workers	300,000 x 26	7,800,000	100,000/person	7,800,000
Operational Costs				
Firewood	10 bundles x 30	300 bundles	10,000/bundle	3,000,000
Diesel Fuel	10 liters x 30	300 liters	6,800/liter	2,040,000
Workers' Meals	3x3x26	234 meals	10,000/meal	2,340,000
Total Production Costs				60,630,000
Total Molds	120 x 30			3,600
Cost per Mold				16,841.67

Source: data documentation by owner (2023)

The table provided illustrates the cost calculation performed by the owner of Tahu Sari Gurih Pak Cipto using a conventional method. This method involves aggregating all production-related expenses to determine the cost per unit of tofu produced. The costs include raw materials (soybeans, cooking oil, vinegar), labor (wages for three employees), fuel (firewood and diesel fuel), and additional operational expenses (employee meals). The total monthly production cost is then divided by the number of tofu molds produced in that month to arrive at the cost per mold.

Using this conventional approach, the owner meticulously lists daily and monthly requirements for each cost component, multiplies them by their respective unit costs, and sums them up to get the total production cost. By dividing this total by the number of tofu molds produced, the owner determines the unit cost of producing tofu, ensuring all expenses are accounted for and accurately reflected in the final cost per mold. This traditional method provides a straightforward way to calculate the cost of goods manufactured, ensuring that the pricing covers all incurred costs.

Full costing methods

This study aims to determine the cost of production using the full costing approach, as this method encompasses all costs associated with production. The full costing approach considers direct materials, direct labour, and both variable and fixed manufacturing overheads. Consequently, this method provides a more comprehensive and accurate picture of total production costs, ultimately assisting the company in setting a more precise and strategic selling price. Here is the calculation of the cost of production using the full costing method:

Table 2. Calculation cost of production by reseacher April 2023

Description	Daily Requirement	Monthly Requirement	Cost per Unit (Rp)	Total (Rp)
Direct Costs				
Soybean Raw Material	100 kg x 30	3000 kg	12,000/kg	36,000,000
Direct Labour Wages (3 workers) and Additional Labour (1)	300,000 x 26	7,800,000	100,000/person	9,000,000
Total Direct Costs				45,000,000
Overhead Costs				
Firewood	10 bundles x 30	300 bundles	10,000/bundle	3,000,000
Diesel Fuel	10 litres x 30	300 litres	6,800/litre	2,040,000
Cooking Oil	20 kg x 30	600 kg	14,000/kg	8,400,000
Vinegar	1 kg x 30	30 kg	35,000/kg	1,050,000
Depreciation of Dongfeng Diesel	-	-	-	41,700
Depreciation of Kubota Diesel	-	-	-	52,750
Filtering Cloth	-	-	-	50,000
Equipment Maintenance	-	-	-	100,000
Electricity	-	-	-	300,000
Water	-	-	-	200,000
Meals for 3 Workers (1 x 3)	3 x 3 x 30	270 meals	10,000/meal	2,700,000
Total Overhead Costs				17,934,450
Total Production Cost				62,934,450
Total Moulds	120 x 30	3,600 moulds		
Production Cost per Mould				17,481.79

Source: data Calculating by researcher (2023)

The differences between the production cost calculations provided by the owner using a conventional method and the researcher using a full costing approach are notable. The owner's method focuses primarily on direct costs such as raw materials (soybeans, cooking oil, vinegar) and basic operational expenses, including labor and minimal overhead costs. In contrast, the researcher's full costing method offers a more comprehensive analysis by incorporating a detailed breakdown of both direct and overhead costs. This includes not only raw materials and direct labor but also additional expenses such as equipment depreciation, maintenance, filtering cloth, electricity, and water. The

researcher's approach thus presents a higher total production cost, reflecting a more thorough account of all associated expenses. Consequently, the production cost per mold calculated by the researcher is higher, as it accounts for these additional overheads and depreciation, whereas the owner's calculation, which excludes these factors, results in a lower cost per mold. This distinction highlights the researcher's more detailed and accurate reflection of the true cost of production.

The differences between the owner's conventional cost calculation and the researcher's full costing method are significant. The owner's calculation, which totals Rp 60,630,000, includes basic direct costs such as raw materials and labor but excludes detailed overhead expenses. In contrast, the researcher's method, with a total cost of Rp 62,934,450, incorporates comprehensive overhead costs including equipment depreciation, maintenance, and utilities. Consequently, the cost per mold is Rp 16,841.67 according to the owner, while the researcher's method shows Rp 17,481.79. The inclusion of additional overhead costs in the researcher's method results in a higher production cost per mold, reflecting a more detailed financial analysis.

Activity Based Costing Methods

The calculation of production costs for white tofu using the Activity Based Costing (ABC) method at UMKM Tahu Sari Gurih Pak Cipto is conducted through a detailed breakdown of various activities. Maintenance activities, which involve servicing machines and filtering cloths, account for 180 direct working hours, with a total cost of Rp 90,000 for April 2023. Lighting costs for the production process amount to Rp 180,000, based on the use of 720 kWh of electricity. The preparation and handling of raw materials, including ordering, weighing, washing, and soaking 3,000 kg of soybeans, incurred a cost of Rp 3,150,000. The grinding process, which involves crushing soybeans, cost Rp 2,115,000 for 3,000 kg of soybeans. Finally, the production and cutting activities, which transform soybeans into tofu and mould it, resulted in a total cost of Rp 9,474,990 for the month of April 2023.

Table 3. Calculation Cost of activity on April 2023

Activity Description	Amount (Rp)
Maintenance Activity	90,000
Lighting Activity	180,000
Preparation and Handling Activity	3,150,000
Milling Activity	2,115,000
Production and Cutting Activity	9,474,990
Total Overhead Costs	15,009,990

Source: data Calculating by researcher (2023)

Based on the identification of these activities, the following are the results of the calculations using the activity-based costing method.

Table 4. Activity-based costing

Description	Amount (Rp)
Total Print Units	3,600
Raw Material Cost	36,000,000
Labor Cost	7,800,000
Factory Overhead Cost	15,009,990
Total Production Cost	58,809,990
Production Cost per Unit	16,336.11

Source: data Calculating by researcher (2023)

Here's the comparison of the Owner Method, Full Costing, and Activity-Based Costing.

Table 5. Comparison Method

Description	Owner's Method (Rp)	Full Costing (Rp)	Activity Based Costing (Rp)
Soybean Raw Material	36,000,000	36,000,000	36,000,000
Cooking Oil	8,400,000	8,400,000	8,400,000
Vinegar	1,050,000	1,050,000	1,050,000
Wages for 3 Employees	7,800,000	7,800,000	7,800,000
Direct Labor Wages		9,000,000	
Wood Fuel	3,000,000	3,000,000	3,000,000
Solar	2,040,000	2,040,000	2,040,000
Depreciation Diesel Dongfeng	41,700	41,700	
Depreciation Diesel Kubota	52,750	52,750	
Filter Cloth	50,000	50,000	
Equipment Maintenance	100,000	100,000	
Electricity	300,000	300,000	
Water	200,000	200,000	
Maintenance Activity			90,000
Lighting Activity			180,000
Preparation and Handling Activity			3,150,000
Milling Activity			2,115,000
Production and Cutting Activity			9,474,990
Overhead Costs			15,000,000
Meals for 3 Employees (1 day 3x26)	2,340,000	2,340,000	
Meals for 3 Employees (1 day 3x30)			2,700,000
Total Production Cost	60,630,000	62,934,450	58,809,990
Total Printing (120x30)	3,600	3,600	3,600

Source: data Calculating by researcher (2023)

Based on the comparison of the three costing methods, several observations can be made. The Owner's Method, while straightforward and useful for quick estimates, tends to overlook some of the indirect costs and may only include direct expenses and a rough allocation for overheads. As a result, it may provide a less comprehensive view of the total production costs. Full Costing, on the other hand, offers a more complete picture by including both direct and indirect costs, thus reflecting the total production cost more accurately. However, it may still lack the precision in overhead allocation that could be achieved with more detailed methods.

Activity-Based Costing (ABC) stands out for its accuracy and detailed approach. By assigning costs based on specific activities that drive expenses, ABC provides a more precise calculation of production costs. This method not only captures all direct and indirect costs but also allocates overheads based on actual activity usage, leading to potentially lower and more accurate unit costs. The total production costs calculated using ABC are lower compared to the Full Costing method, demonstrating its efficiency in identifying and managing cost drivers.

Discussion

In the context of our research on the production of Tahu Sari Gurih Pak Cipto, the comparative analysis of three costing methods—Owner's Method, Full Costing, and Activity-Based Costing (ABC)—reveals significant insights into cost management and financial accuracy.

Owner's Method provides a simplified approach to cost estimation, focusing primarily on direct costs such as raw materials and wages. This method, while straightforward and useful for initial budgeting and decision-making, often overlooks various indirect costs and provides a less detailed breakdown of overhead expenses. For Tahu Sari Gurih Pak Cipto, using the Owner's Method might result in an underestimation of total production costs, as it may not account for all the nuanced expenses associated with production activities. This approach could potentially lead to suboptimal pricing strategies and financial planning if not complemented by more detailed costing methods.

Full Costing offers a more comprehensive view by including both direct and indirect costs in the calculation of total production costs. This method ensures that all overhead costs, such as factory expenses and depreciation, are allocated across units produced. For Tahu Sari Gurih Pak Cipto, Full

Costing provides a more complete picture of the total production costs, helping to avoid significant cost omissions. However, while it captures a broader range of expenses, Full Costing may still lack the precision of ABC in allocating overhead costs based on specific activities.

Activity-Based Costing (ABC) stands out for its detailed approach, offering the most accurate reflection of production costs by assigning costs based on specific activities that drive expenses. This method allows for a more precise allocation of both direct and indirect costs, providing a clearer picture of cost drivers. For Tahu Sari Gurih Pak Cipto, ABC could reveal insights into the efficiency of various production activities and highlight areas where cost savings can be achieved. By using ABC, the company can better understand how different activities contribute to overall costs and make more informed decisions about process improvements and pricing strategies.

In summary, while the Owner's Method offers ease of use and simplicity, it may fall short in providing a complete and accurate cost picture. Full Costing presents a more detailed view of production costs but lacks the granularity of ABC. The Activity-Based Costing method, with its focus on detailed cost allocation based on activities, provides the most accurate and actionable insights for cost management. Implementing ABC for Tahu Sari Gurih Pak Cipto could lead to more informed financial decisions and enhanced cost control, ultimately contributing to better operational efficiency and profitability.

4. CONCLUSION

In examining the costing methods for Tahu Sari Gurih Pak Cipto, it is evident that each approach—Owner's Method, Full Costing, and Activity-Based Costing (ABC)—offers distinct advantages and limitations. The Owner's Method is valued for its simplicity and ease of use, making it suitable for quick cost estimates. However, its lack of detail in accounting for indirect costs can lead to an incomplete picture of total production expenses, which may hinder accurate financial planning. Full Costing provides a more thorough overview by incorporating both direct and indirect costs, thereby offering a more comprehensive assessment of production costs. While this method ensures that a wide range of expenses is considered, it may not capture the nuances of cost allocation as effectively as ABC, potentially missing out on detailed insights into specific cost drivers.

Activity-Based Costing stands out for its precision and detailed approach. By allocating costs based on specific activities that drive expenses, ABC provides a clearer understanding of how different activities contribute to overall costs. This method enables Tahu Sari Gurih Pak Cipto to identify cost drivers more accurately, leading to better-informed decisions about process improvements and pricing strategies.

Given these findings, it is recommended that Tahu Sari Gurih Pak Cipto adopt Activity-Based Costing to gain a more accurate view of its production costs. Implementing ABC will facilitate a deeper understanding of cost structures, helping to optimize resource allocation and enhance financial performance. Additionally, the company should regularly review and update cost data to reflect changes in production and costs, and invest in training for staff to effectively use the new costing method.

Future research should focus on comparing ABC with other emerging costing methods to explore their relative effectiveness, and conduct industry-specific studies to understand the broader applicability of various costing approaches. Longitudinal studies could also provide valuable insights into the long-term impacts of adopting ABC, contributing to a more comprehensive understanding of its benefits over time.

REFERENCES

Amdee, N., Sonthipermpoon, K., Arunchai, T., & Warawut, P. (2014). Optimal cost drivers in activity based costing based on an artificial neural network. *2014 IEEE International Conference on Industrial Engineering and Engineering Management*, 719–723.

Arini12, E., & Muda, I. (2024). The Role of Strategic Management Accounting and Strategic Cost Management in Information System. *Afr. J. Bio. Sc*, *6*(10), 2187–2663.

Asni, N., Anto, L. O., & Febriansyah, S. (2024). Penerapan Activity Based Costing Dalam Menetapkan Uang Kuliah Tunggal (Studi pada Institut Agama Islam Negeri Kendari). *Accessed: Apr*, *16*.

Azar, A., & Khadivar, A. (2012). A Neural Network Model for Activity-Cost Relationship Estimation in Performance-based Budgeting. *Planning and Budgeting*, *17*(2), 7–38.

Bakhodirovich, K. B. (2023). CONCEPTUAL FOUNDATIONS OF IMPROVING ACCOUNTING IN SMALL BUSINESS AND PRIVATE ENTREPRENEURSHIP. *IMRAS*, *6*(6), 161–165.

Baviga, R. (2021). Penerapan Metode Activity-Based Costing System Dalam Menentukan Besarnya Tarif Jasa Rawat Inap: Studi Kasus pada RSUD Mayjen HA Thalib Kerinci. *Bussman Journal: Indonesian Journal of Business and Management*, *1*(3), 371–401.

Borges, P., Alves, M. do C., & Silva, R. (2024). The Activity-Based Costing System Applied in Higher Education Institutions: A Systematic Review and Mapping of the Literature. *Businesses*, *4*(1), 18–38.

Drelichowski, L. (2012). Evaluation of the efficiency of integrated ERP systems and business intelligence tools based on the diagnostic cases in the MSE sector. *Information Systems in Management*, *1*(1), 14–24.

Febriana, T., Dunakhir, S., & Masnawaty, S. (2024). Analysis of Accounting Information System Implementation Cash Expenditures for Official Travel Costs at The Large Hall of South Sulawesi Teacher Drivers. *Muhasabatuna: Jurnal Akuntansi Syariah*, *6*(1), 163–172.

Garrison, R. H., Noreen, E. W., & Brewer, P. C. (2021). *Managerial accounting*. McGraw-Hill.

Hilton, R. W., & Platt, D. E. (2020). *Managerial accounting: creating value in a dynamic business environment*. McGraw-Hill.

Ismayeni, L., Nugraha, M., Suryani, S., & Suriyanti, L. H. (2020). Analisis penerapan Activity Based Costing dalam penentuan harga pokok produk pada ud. Bersama. *Jurnal Pendidikan Tambusai*, *4*(1), 598–607.

Marpaung, A. L., Silaban, N., Saribu, A. D., Simamora, D. S., Nababan, S., & Butar-butar, M. A. (2024). Implementasi Activity Based Costing dalam Menentukan Target Costing Sebagai Alternatif Pengendalian Harga Pokok Produksi. *Innovative: Journal Of Social Science Research*, *4*(3), 16781–16791.

Montrone, A., & D'Achille, A. (2013). Activity based costing in banking: reasons for the use and perceived usefulness by Italian banks. In *Financial Systems in Troubled Waters* (pp. 301–324). Routledge.

Pandey, P., & Pandey, M. M. (2021). *Research methodology tools and techniques*. Bridge Center.

Prasetyo, H. D., Rahardjo, K. A., Supriadi, I., Kusmayati, N. K., & Wahib, M. (2020). Application In Activity Based Costing (ABC) Calculation of Home Development Cost. *Ilomata International Journal of Tax and Accounting*, *1*(4), 179–184.

Pujiarti, A., Bagul, E., & MM, I. S. S. T. (2019). D. Analisa Penerapan Activity Based Costing dalam Penentuan Harga Pokok Produksi pada Tempe Barokah. *Inovasi Manajemen Dan Kebijakan Publik*, *2*(1), 33–44.

Putri, D. N., Kusuma, M., Lestari, N. T., & Djuanda, G. (2024). PERHITUNGAN BIAYA DENGAN METODE ACTIVITY BASED COSTING UMKM BOLA. *Penerbit Tahta Media*.

Relina, M., Yulianti, F., & Aristi, M. D. (2020). Analisis Menentukan Harga Pokok Produksi Menggunakan Activity Based Costing Pada Warung Bunda. *Research in Accounting Journal (RAJ)*, *1*(1), 108–122.

Rufaidah, F., Karyani, T., Wulandari, E., & Setiawan, I. (2023). A review of the implementation of financial technology (Fintech) in the Indonesian Agricultural Sector: Issues, access, and challenges. *International Journal of Financial Studies*, *11*(3), 108.

Salem, M. S. E., & Mazhar, S. (2014). The benefits of the application of activity based cost system-field study on manufacturing companies operating in Allahabad City-India. *IOSR Journal of Business and Management*, *16*(11), 39–45.

Sánchez-Rebull, M.-V., Niñerola, A., & Hernández-Lara, A.-B. (2023). After 30 Years, What Has Happened to Activity-Based Costing? A Systematic Literature Review. *SAGE Open*, *13*(2), 21582440231178784.

Sari, M. U., Agmallia, R., Burrohman, M., & Suriyanti, L. H. (2022). Analisis Penerapan Activity Based Costing System dalam Penentuan Harga Pokok Produksi Pada UD. Agra Kaca Alumunium. *Research in Accounting Journal (RAJ)*, *2*(1), 143–149.

Sinaga, S. O. (2024). Analysis of Determining the Cost of Goods Production Using the Full Costing Method as a Basis for Determining the Selling Price of Rubber Rubber at PT. Sinar Belantara Indah. *Luxury: Landscape of Business Administration*, *2*(1), 26–58.

Wahyuni, S., Ramadhani, S., Adriyani, A., Prihastuti, A. H., & Zainal, R. (2024). Training on Calculation of Cost of Cost of Homemade Yoghurt Production for Mothers Citizens of Labuh Baru Barat Village. *Pasundan Community Service Development*, *2*(1), 13–18.

Zamrud, N. F., & Abu, M. Y. (2020). Comparative study: activity based costing and time driven activity based costing in electronic industry. *Journal of Modern Manufacturing Systems and Technology*, *4*(1), 68–81.