

REVISITING TRADITIONAL COSTING IN AGRICULTURE: A COMPARATIVE ANALYSIS OF ABC AND CONVENTIONAL METHODS

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Abstract: *This study aims to analyze the application of the Activity-Based Costing (ABC) method in calculating the cost of production for leading agricultural commodities in Ketapang Regency and to evaluate the effectiveness of its use through the Google Spreadsheet application. Using a qualitative descriptive approach, data were obtained through interviews, observations, and documentation involving farmers who still use traditional cost-recording systems. The findings reveal that the ABC method provides more accurate cost information compared to the single-rate system, as it considers the varying intensity of production activities such as planting, spraying, and watering. The comparison results indicate cost distortions in the traditional method, manifested as overcost and undercost, which may affect pricing and profitability. The implementation of the ABC method integrated with Google Spreadsheet has been proven to enhance efficiency, transparency, and ease of cost analysis for farmers. This study contributes to strengthening digital-based Islamic management accounting practices that are practical and applicable to the agricultural sector in rural areas.*

Keywords: *Activity-Based Costing; cost of production; cost efficiency; Islamic management accounting; Google Spreadsheet*

Abstrak: Penelitian ini bertujuan untuk menganalisis penerapan metode Activity-Based Costing (ABC) dalam perhitungan biaya produksi komoditas pertanian utama di Kabupaten Ketapang serta mengevaluasi efektivitas penggunaannya melalui aplikasi Google Spreadsheet. Dengan pendekatan deskriptif kualitatif, data diperoleh melalui wawancara, observasi, dan dokumentasi yang melibatkan petani yang masih menggunakan sistem pencatatan biaya tradisional. Hasil penelitian menunjukkan bahwa metode ABC memberikan informasi biaya yang lebih akurat dibandingkan sistem tarif tunggal, karena mempertimbangkan intensitas yang bervariasi dari aktivitas produksi seperti penanaman, penyemprotan, dan penyiraman. Hasil perbandingan menunjukkan distorsi biaya dalam metode tradisional, yang manifestasinya berupa overcost dan undercost, yang dapat mempengaruhi penetapan harga dan keuntungan. Implementasi metode ABC yang terintegrasi dengan Google Spreadsheet telah terbukti meningkatkan efisiensi, transparansi, dan kemudahan analisis biaya bagi petani. Studi ini berkontribusi dalam memperkuat praktik akuntansi manajemen Islam berbasis digital yang praktis dan dapat diterapkan di sektor pertanian di daerah pedesaan.

Kata Kunci: Activity-Based Costing; biaya produksi; efisiensi biaya; akuntansi manajemen Islam; Google Spreadsheet

PENDAHULUAN

The agricultural sector serves as the backbone of Ketapang Regency's economy in West Kalimantan, featuring several distinctive flagship products such as petai (stink beans), jengkol, and durian. These commodities have strong demand in both local and national markets. However, despite its great potential, the agricultural sector in Ketapang continues to face challenges in achieving optimal cost management. The lack of efficient accounting systems has led to uncontrolled increases in operational costs, ultimately reducing the profitability of farmers and agribusiness operators. According to the Central Statistics Agency (BPS) of West Kalimantan (2023), the number of agricultural business units has decreased by 17.16% over the past decade.

The agricultural census conducted every ten years in West Kalimantan shows a significant change in the number of agricultural enterprises. In 2023, the total number of agricultural businesses recorded was 730,595 units, a decline of 17.16% compared to 881,984 units in 2013. This decrease, particularly a 17.22% decline in individual farming enterprises (UTP), can be attributed to several factors, one of which is the limited managerial capability in running agricultural businesses effectively. Based on a preliminary survey conducted by the researcher in Ketapang, 65% of farmers record their agricultural costs regularly, while 35% do not record them at all. Furthermore, 75% of farmers still record their costs manually (handwritten), with only a small fraction experimenting with alternative methods. This phenomenon indicates that while farmers in Ketapang are aware of the importance of cost efficiency and better farm management, they remain constrained by limited technological literacy and access to modern accounting tools.

This finding highlights that digitalization of cost recording has not yet developed

optimally, leading to low accuracy in production cost data. This aligns with [Hardi and Manduapessy \(2023\)](#), who argue that limitations in resources, skills, and capabilities significantly hinder business performance. Similarly, [Loo et al. \(2023\)](#) emphasizes that one of the main challenges faced by small enterprises is the low utilization of technology, encompassing aspects such as facilities, financial resources, managerial capacity, and technical skills. Moreover, the lack of well-structured financial recordkeeping systems also hampers effective business management. These limitations can be mitigated by enhancing operational cost efficiency and establishing appropriate pricing strategies. This is supported by [Dewi \(2023\)](#), who found that improving cost efficiency in farming operations positively influences income growth, while accurate pricing decisions contribute significantly to revenue levels.

These aspects are closely related to management accounting in agriculture, which plays a crucial role in identifying and categorizing costs associated with production activities. Through management accounting, managers can better understand various cost components—both fixed and variable—allowing them to monitor and adjust expenses according to changing conditions. Moreover, accounting information serves as a solid foundation for strategic decisions, including resource allocation, business expansion, product diversification, and pricing adjustments.

One effective management accounting method for achieving more accurate cost allocation is the Activity-Based Costing (ABC) method. This approach provides a more comprehensive understanding of cost distribution within an organization. In an increasingly competitive and dynamic business environment, companies require a more precise cost measurement system to support effective decision-making. Therefore, the ABC method

addresses the limitations of traditional costing systems, which often fail to accurately represent production costs ([Nugraha 2019](#)) dan ([Agustina 2017](#)). The ABC method enhances cost transparency by considering each activity undertaken in the production process ([Yahya et al. 2024](#)). Many enterprises struggle to determine production costs accurately due to operational complexity. ABC provides a solution by analyzing costs based on specific activities and allocating them to products or services according to their level of activity consumption. Beyond improving cost accuracy, this method also enhances overall operational efficiency ([Choiri 2022](#)).

From an Islamic perspective, sound financial management is part of Sharia principles. The Qur'an provides clear guidance on financial recordkeeping in Surah Al-Baqarah [2]: 282, which states: "O you who believe, when you contract a debt for a fixed period, write it down..." This verse emphasizes the importance of clear and accurate documentation in all business transactions, including agricultural activities. By applying management accounting systems aligned with Sharia principles, farmers and agribusiness actors can optimize cost management, improve efficiency, and achieve sustainable economic outcomes.

Several Sharia contracts (*akad*)—such as *salam*, *musyarakah*, and *mudharabah*—are relevant in agricultural financing. This study explores how management accounting systems can be integrated with these contracts in farm management. [Widiana and Annisa \(2017\)](#) highlight the significance of implementing *salam* financing in the agricultural sector through Islamic financial institutions in Indonesia. They concluded that optimizing *salam* financing can positively impact farmers, particularly in terms of providing capital for agricultural development. Unlike previous studies that focused solely on cost recording, this research applies the Activity-Based Costing (ABC) method in conjunction with Sharia contracts such as *salam*, *mudharabah*, and *musyarakah* in agricultural management.

Additionally, this study develops a spreadsheet-based application that is simple and user-friendly, enabling farmers to record costs efficiently without requiring advanced accounting software. This innovation bridges the technological gap among farmers unfamiliar with complex digital accounting systems, allowing direct adoption in day-to-day agricultural operations. Therefore, this research aims to analyze the implementation of the Activity-Based Costing (ABC) method in agricultural cost management in Ketapang and to examine how integrating Sharia-based contracts—including *murabahah*, *mudharabah*, and *musyarakah*—can enhance efficiency and sustainability in Islamic agriculture. The proposed spreadsheet-based system is designed to assist farmer groups in easily applying the ABC method to improve cost accuracy, transparency, and decision-making in agricultural production management.

METHOD

The research was conducted systematically, beginning with problem identification, literature review, field data collection, and the application and testing of the ABC method using Google Spreadsheet. Data were analyzed using thematic analysis through three main stages: data reduction, categorization, and interpretation. Data validity was ensured through source triangulation and member checking to maintain result accuracy. Through this approach, the study not only describes the advantages of the ABC method in enhancing the accuracy of production cost calculations but also demonstrates how Google Spreadsheet-based digitalization can improve efficiency and transparency in cost accounting systems for small enterprises.

This study employs a qualitative descriptive approach to gain an in-depth understanding of the implementation of the Activity-Based Costing (ABC) method in calculating the cost of production and evaluating its effectiveness through the use of Google

Spreadsheet. This approach was chosen because it allows for a comprehensive exploration of the processes, challenges, and benefits of applying the ABC method from the perspective of business actors. The research subjects consist of farmer groups or small business owners who still use traditional methods to calculate production costs and are willing to transition to an ABC-based system. Data were collected through in-depth interviews, direct observation of production processes, and documentation of financial reports. The combination of primary and secondary data provides an empirical overview of changes in cost calculation systems before and after the implementation of the ABC method.

RESULTS

Calculation of Cost of Goods Manufactured Using the Traditional System

The single rate method is a simple approach to allocating production costs, in which all expenses incurred during a given period are combined and evenly distributed based on total output volume. While easy to apply, this method lacks accuracy because it does not account for differences in activity intensity among products. In the first stage, all production costs are accumulated without distinguishing between activities and are charged based on the total number of units produced. Subsequently, in the second stage, the total cost is divided among each product—jengkol, matoa, durian, and petai—according to their respective production volumes, without considering variations in resource consumption. The following table presents the calculation of the Cost of Goods Manufactured using the Traditional Method.

Based on the calculation table above, the traditional method produces different Cost of Goods Manufactured (COGM) values for each commodity. For durian, the total production cost amounts to Rp 51,225,000 with an output of 40,000 units, resulting in a unit cost of Rp 1,281. The largest expenses come from employee wages (Rp 24,000,000) and land acquisition (Rp

8,250,000), indicating that durian is relatively efficient within the traditional cost structure. For jengkol, the total production cost is Rp 72,935,000 with an output of 50,000 units, producing a unit cost of Rp 1,459—higher than that of durian and petai. This increase is mainly due to the high cost of seeds (Rp 24,960,000) and labor (Rp 24,000,000), suggesting that jengkol consumes more input resources.

Meanwhile, petai has a total production cost of Rp 51,225,300 for 40,000 units, resulting in the same unit cost as durian—Rp 1,281. Its cost structure is similar, with labor costs as the largest component, although the seed cost is lower (Rp 6,000,300). In contrast, matoa records the highest total production cost at Rp 80,780,556 for 40,000 units, leading to a unit cost of Rp 2,020. The primary reason for this high cost is the expensive seed cost (Rp 35,555,556), which is significantly greater than that of other commodities. Overall, the traditional method suggests that durian and petai are the most cost-efficient commodities, jengkol incurs higher costs due to expensive seeds, and matoa is the least efficient because of its heavy input expenses. However, since the traditional method allocates costs evenly, it may not accurately reflect the actual consumption of production activities.

Cost of Goods Manufactured Using the Activity-Based Costing (ABC) System

The initial stage of the Activity-Based Costing (ABC) method involves tracing costs from resources to the activities that consume them. Three main activities influencing production costs are planting, spraying and fertilizing, and watering. Costs are classified into direct materials (BBB), direct labor (BTKL), and overhead (BOP), with each activity having its respective cost driver: the number of seeds planted, the frequency of fertilization, and the number of watering sessions. Similar costs are then grouped into homogeneous cost pools, and a pool rate is calculated as the basis for allocating activity costs.

Tabel 1 Calculation of Cost of Goods Manufactured Using the Traditional System

No	Description	Durian (Rp)	Jengkol (Rp)	Petai (Rp)	Matoa (Rp)
A. Agricultural Production Input Costs					
1	Seeds	6,000,000	24,960,000	6,00,300	35,555,556
2	Organic Fertilizer	2,400,000	2,400,000	2,400,000	2,400,000
3	Insecticide	750,000	750,000	750,000	750,000
4	Water	150,000	150,000	150,000	150,000
5	Polybag	2,250,000	3,000,000	2,250,000	2,250,000
6	Soil	8,250,000	10,250,000	8,250,000	8,250,000
B. Direct Labor Costs					
1	Employee Wages	24,000,000	24,000,000	24,000,000	24,000,000
C. Farm Overhead Costs (BOP)					
1	Farming Equipment Supplies	3,375,000	3,375,000	3,375,000	3,375,000
2	Equipment Depreciation	300,000	300,000	300,000	300,000
3	Distribution Transportation	3,750,000	3,750,000	3,750,000	3,750,000
Total Production Cost (HPP)		51,225,000	72,935,000	51,225,300	80,780,556
Total Units Produced		40,000	50,000	40,000	40,000
Cost per Unit (Rp)		1,281	1,459	1,281	2,020

Source: Processed Data (2025)

In the second stage, the pool rates are assigned to each product based on their respective cost drivers. Overhead costs are allocated to jengkol, durian, petai, and matoa according to their actual consumption of activities. This process produces a more accurate calculation of the cost of goods manufactured and better reflects the real use of resources in each production activity.

Based on the table 2 of calculation of the Cost of Goods Manufactured (COGM), it can be explained that durian is the most cost-efficient commodity, with a unit cost of Rp 1,089. This efficiency is primarily due to its high production volume of 40,000 units,. This finding indicates that durian has strong potential to become a leading commodity, as it provides a relatively higher profit margin compared to other products.

In contrast, Its total production cost reaches Rp 127,985,000—the highest among the four commodities—mainly driven by expensive seeds and high labor costs for planting, spraying, and watering. Although its production volume is the largest (50,000 units), the intensive use of labor makes jengkol the least efficient product. This condition requires a specific cost-control strategy to maintain a competitive selling price in the market.

Meanwhile, matoa incurs a total production cost of Rp 67,950,556 with a unit cost of Rp 1,699. Its relatively high cost is primarily influenced by the substantial seed expense, amounting to Rp 35,555,556. Although matoa's labor costs are not as high as jengkol's, the significant seed cost keeps its overall unit cost elevated. Therefore, improving efficiency in seed

procurement management is essential. Overall, the results indicate that durian is the most efficient commodity, jengkol the least efficient, while petai and matoa fall within the moderate category. These findings provide valuable insights for farmers in designing production strategies and determining selling prices to ensure more sustainable and profitable agricultural operations.

Comparison Between the Traditional System and the Activity-Based Costing (ABC) System in Determining the Cost of Goods Manufacture

The comparison of the Cost of Goods Manufactured between the traditional costing system and the Activity-Based Costing (ABC) system is presented in Table 3 as follows. For the durian commodity, the traditional method produces a cost of Rp 1,280.63 per unit, while the ABC method yields a lower cost of Rp 1,088.88 per unit. The difference of Rp 191.75 indicates an overcost, meaning that the traditional method overestimates the actual production cost compared to the ABC calculation. This situation could make the selling price of durian less competitive if the traditional method alone is used.

Tabel 2. Goods Manufactured Using the Activity-Based Costing (ABC) System

No	Description	Durian (Rp)	Jengkol (Rp)	Petai (Rp)	Matoa (Rp)
A. Agricultural Production Input Costs					
1	Seeds	6,000,000	24,960,000	6,00,300	35,555,556
2	Organic Fertilizer	2,400,000	2,400,000	2,400,000	2,400,000
3	Insecticide	750,000	750,000	750,000	750,000
4	Water	150,000	150,000	150,000	150,000
5	Polybag	2,250,000	3,000,000	2,250,000	2,250,000
6	Soil	8,250,000	10,250,000	8,250,000	8,250,000
	Subtotal A	19,800,000	41,510,000	19,800,300	49,355,556
B. Direct Labor Costs by Activity					
1	Planting	7,680,000	38,400,000	15,360,000	5,120,000
2	Spraying and Fertilizing	3,600,000	14,400,000	3,600,000	3,600,000
3	Watering	4,800,000	24,000,000	6,400,000	3,200,000
	Subtotal B	16,080,000	76,800,000	25,360,000	11,920,000
C. Farm Overhead Costs (BOP)					
1	Farming Equipment Activities	3,375,000	3,375,000	3,375,000	3,375,000
2	Depreciation Activities	300,000	300,000	300,000	300,000
3	Distribution Activities	4,000,000	6,000,000	2,000,000	3,000,000
	Total Production Cost (HPP)	43,555,000	127,985,000	50,835,300	67,950,556
	Total Units Produced	40,000	50,000	40,000	40,000
	Cost per Unit (Rp)	1,089	2,560	1,271	1,699

Source: Source: Processed Data (2025)

The jengkol commodity shows a contrasting result. The unit cost under the traditional method is Rp 1,458.70, whereas the ABC method records Rp 2,559.70. The negative difference of Rp 1,101.00 indicates an undercost, meaning that the traditional method underestimates the actual cost calculated by the ABC system. This poses a risk to farmers, as the selling price determined using the traditional method might be too low to cover the real production costs. For the petai commodity, the traditional method results in a cost of Rp 1,280.63 per unit, while the ABC method gives Rp 1,270.88. The small difference of Rp 9.75 shows a minor overcost, suggesting that the impact between the two methods is relatively insignificant for pricing decisions.

Meanwhile, for matoa, the traditional method indicates a cost of Rp 2,019.51 per unit, compared to Rp 1,698.76 under the ABC method. The difference of Rp 320.75 signifies an overcost, meaning that the traditional method tends to overstate production costs relative to the ABC results. This could cause matoa's selling price to be higher than it should be, reducing its market competitiveness. Overall, these results confirm that the traditional costing method has the potential to cause cost distortions, both in the form of overcost and undercost. In contrast, the Activity-Based Costing (ABC) method provides a more accurate and realistic representation of actual production activities and resource consumption, making it a more appropriate basis for determining the cost of goods manufactured.

Comparison of Sales of Leading Agricultural Product

The comparison of product sales using two costing methods—the Traditional System and the Activity-Based Costing (ABC) System—is presented in Table 4 below. Table 4 illustrates a comparison of selling prices and annual sales values calculated using two approaches—the Traditional Method and the Activity-Based Costing (ABC) Method—for four main commodities: durian, jengkol, petai, and matoa. For durian, the selling price under the traditional method is Rp 7,684 per unit, while the ABC method yields a lower price of Rp 6,533 per unit. The annual sales value based on the traditional method amounts to Rp 307,350,000, whereas the ABC method records Rp 261,330,000. The difference of Rp 46,020,000 indicates an overcost situation, meaning the traditional method tends to overstate costs, resulting in higher selling prices and sales values compared to actual figures based on ABC calculations.

In contrast, jengkol shows a significant difference between the two methods. The selling price under the traditional method is Rp 8,752 per unit, while the ABC method increases it sharply to Rp 15,358 per unit. Consequently, annual sales calculated by the traditional method reach Rp 437,610,000, whereas the ABC method produces Rp 767,910,000. The negative difference of Rp 330,300,000 indicates an undercost condition in the traditional method, where the selling price is set too low relative to the actual cost, posing a substantial risk of financial loss for farmers if pricing relies solely on the traditional approach.

Table 3. Comparison Between the Traditional System and the Activity-Based-Costing (ABC) Costing

Product	Traditional (Rp/Unit)	ABC (Rp/Unit)	Difference (Rp)	Note
Durian	1,280.63	1,088.88	191.75	Overcost
Jengkol	1,458.70	2,559.70	-1,101.00	Undercost
Petai	1,280.63	1,270.88	9.75	Overcost
Matoa	2,019.51	1,698.76	320.75	Overcost

Source: Processed Data (2025)

Table 4. Comparison of Sales of Leading Agricultural Product

Product	Selling Price (Traditional) (Rp)	Selling Price ABC (Rp)	Annual Sales (Traditional) (Rp)	Annual (ABC) (Rp)	Difference
Durian	7,684	6,533	307,350,000	261,330,000	46,020,000
Jengkol	8,752	15,358	437,610,000	767,910,000	(330,300,000)
Petai	7,684	7,625	307,351,800	305,011,800	2,340,000
Matoa	12,117	10,193	484,683,336	407,703,336	76,980,000

Source: Processed Data (2025)

For petai, the selling price under the traditional method is Rp 7,684 per unit, slightly higher than the ABC-based price of Rp 7,625. The annual sales value calculated by the traditional method is Rp 307,351,800, compared to Rp 305,011,800 under the ABC method. The small difference of Rp 2,340,000 shows that the variation between the two methods is minimal and does not significantly affect pricing decisions.

Meanwhile, for matoa, the traditional method estimates a selling price of Rp 12,117 per unit, while the ABC method gives a lower price of Rp 10,193. The annual sales value using the traditional approach reaches Rp 484,683,336, compared to Rp 407,703,336 under the ABC method. The difference of Rp 76,980,000 reveals that the traditional method produces higher selling prices than the actual condition, potentially reducing product competitiveness in the market. Overall, the results show that the traditional method tends to produce price distortions, either in the form of overcost (durian, petai, and matoa) or undercost (jengkol). In contrast, the Activity-Based Costing (ABC) method provides a more accurate and realistic reflection of production costs and selling prices, offering a stronger foundation for pricing strategies and profit planning in agricultural enterprises.

CONCLUSION

This study concludes that the application of the Activity-Based Costing (ABC) method produces a more accurate calculation of production costs compared to the traditional

method. By tracing costs based on specific activities, the ABC approach better reflects actual resource consumption and reduces cost distortions commonly found in single-rate systems. The integration of ABC calculations with Google Spreadsheet simplifies the processes of recording, analyzing, and reporting costs in an efficient, practical, and transparent manner for farmers. The findings imply that the ABC approach serves as a practical solution to improve cost accounting efficiency and accuracy in small-scale agricultural enterprises, while simultaneously promoting digital transformation aligned with the principles of accountability and fairness in Islamic management accounting.

However, this study has several limitations. First, the research adopts a qualitative descriptive approach with a limited number of respondents, which may restrict the generalizability of the findings to broader agricultural contexts. Second, the implementation of the ABC method is tested only on selected commodities within a specific region, so the results may differ when applied to other agricultural sectors or geographical areas with different cost structures and production characteristics. Third, the use of Google Spreadsheet, while practical, still depends on the users' level of digital literacy, which varies among farmers and may affect the consistency of implementation.

Based on these limitations, future research is recommended to expand the scope by involving a larger sample size and applying mixed-method or quantitative approaches to enhance the robustness of findings. Further

studies may also explore the application of the ABC method in different agricultural commodities or regions to compare cost structures more comprehensively. In addition, future research can develop more advanced digital tools or mobile-based applications to

improve accessibility and usability for farmers with varying levels of technological capability. Integrating ABC with broader financial decision-making models or Islamic financing schemes could also provide deeper insights into sustainable agricultural management.

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