

Optimizing Raw Material Inventory Management in UMKM: A Case Study of Boga Raso Restaurant, Dago Branch, Using Activity Based Costing (ABC) Method

Tirani Hikmah Nur Ulfah

Magister Management, Universitas Widyatama, Bandung, Indonesia

**Corresponding author: tirani.hikmah@gmail.com*

ABSTRACT

Boga Raso Restaurant is one of the famous Micro, Small, and Medium Enterprises (MSMEs) in Bandung specializing in various Padang cuisine dishes. Boga Raso Restaurant has 6 branches spread across the city of Bandung, with this study focusing on the Dago branch. In its daily operations, the restaurant manages raw materials such as various types of meat, fish, seafood, staples, spices, and vegetables. Effective inventory management is crucial to ensure efficient storage and maintain the freshness and quality of these raw materials until they are used. This study aims to evaluate inventory management using the Activity Based Costing (ABC) method. This method categorizes raw material inventory into three categories based on annual usage in production processes in monetary terms, using the Pareto principle. According to the data processed for 35 raw material items, it is found that Category A consists of 8 items requiring high attention in procurement, percentage for 22.86% of raw materials with a fund absorption value of 78.7% from the total raw material capital of IDR 1,226,400,000. Category B requires moderate control, comprising 8 items percentage for 22.86% of raw materials with a fund absorption value of 16.7% from the total raw material capital of IDR 240,600,000. Category C requires simple control, consisting of 19 items percentage for 54.28% of raw materials with a fund absorption value of 4.6% from the total raw material capital of IDR 91,950,000.

Keywords: *Inventory Management, Activity Based Costing (ABC), raw materials, Activity Based Costing (ABC), Raw Material.*

1. INTRODUCTION

Efficient and effective raw material inventory management is crucial for Boga Raso Restaurant, Dago Branch, a renowned Micro, Small, and Medium Enterprises (MSMEs) in Bandung. The restaurant faces challenges in maintaining the availability of raw materials necessary for various traditional Padang dishes served daily at its branch. Managing raw material inventory well is essential to ensure that ingredients are fresh and of high quality when used in the production process. In this context, this study focuses on evaluating inventory management using the Activity Based Costing (ABC) method. This method categorizes raw materials into three categories based on annual usage and economic value, thereby identifying materials requiring high attention, moderate control, and simple monitoring. The research reveals that certain raw material items significantly impact inventory fund absorption, underscoring the importance of effective inventory management in optimizing the use of raw material capital. Understanding the strategic categories and values of each raw material type is expected to enhance operational efficiency and mitigate inventory management risks for Boga Raso Restaurant, Dago Branch.

Controlling material inventory is very crucial because it covers 20% to 40% of a company's total assets, especially in the manufacturing sector. Choosing the right method for procuring materials is important to ensure availability according to the type and quantity required. Errors in inventory control can cause material shortages or excesses which have the potential to increase storage costs (Azzhara & Sutrisno 2023). One of the important points for the life of a company, whether it is a trading company or a company manufacturing, namely with optimal inventory management. If

inventory is well controlled, then stability will be achieved in the productivity of a company (Agung, 2023).

Inventory management has an important role in classifying consumable inventory items to set priorities based on the characteristics of each item. This grouping allows companies to organize and control inventory effectively, ensuring that the most vital or frequently used items are available in sufficient quantities and on time. Without optimal inventory control, even the best purchasing procedures can result in losses for the company, such as unnecessary storage costs or stock shortages that hinder production.

Therefore, it is important to implement proper inventory control techniques. In this way, companies can optimize the process of purchasing, using and dispensing inventory. These techniques also help in estimating the right time to re-procure inventory items, thereby minimizing the risk of stock shortages and ensuring smooth operations and better customer satisfaction.

This research was conducted at Boga Raso Restaurant, Dago branch, located at Jl Dipati Ukur No. 122 C, Coblong District, Bandung City, West Java 40132. Here is some inventory data of goods available at Boga Raso Restaurant:

Table 1. Inventory Data of Goods At Boga Raso Restaurant

No	Items	UoM	Quantity/Year	Price
1	Rice	Kg	18.600	Rp 16,000
2	Oil	Kg	2.400	Rp 32,000
3	Sugar	Kg	150	Rp 18,000
4	Salt	Kg	75	Rp 5,000
5	Seasoning	Kg	750	Rp 1,000
6	Beef	Kg	1.500	Rp 180,000
7	Chicken	Kg	10.500	Rp 40,000
8	Eggs	Kg	750	Rp 30,000
9	Beef Lung	Kg	150	Rp 70,000
10	Liver and Gizzard	Kg	300	Rp 30,000
11	Mackerel	Kg	900	Rp 35,000
12	Nile Tilapia	Kg	900	Rp 35,000
13	Pangasius	Kg	900	Rp 35,000
14	Tendon	Kg	150	Rp 140,000
15	Squid	Kg	900	Rp 37,000
16	Shrimp	Kg	150	Rp 80,000
17	Skipjack Tuna	Kg	900	Rp 35,000
18	Onion	Kg	300	Rp 35,000
19	Garlic	Kg	300	Rp 30,000
20	Red Chili	Kg	1.500	Rp 26,000
21	Curly Red Chili	Kg	1.500	Rp 26,000
22	Green Chili	Kg	1.500	Rp 28,000
23	Red Tomato	Kg	1.500	Rp 28,000
24	Green Tomato	Kg	1.500	Rp 14,000
25	Cardamom	Kg	30	Rp 80,000
26	Turmeric	Kg	150	Rp 10,000
27	Galangal	Kg	150	Rp 8,000
28	Ginger	Kg	150	Rp 16,000

No	Items	UoM	Quantity/Year	Price
29	Cloves	Kg	75	Rp 25,000
30	Lemongrass	Kg	75	Rp 20,000
31	Bay Leaves	Kg	75	Rp 5,000
32	Turmeric Leaves	Kg	75	Rp 5,000
33	Star Anise	Kg	30	Rp 100,000
34	Coconut Milk	Kg	2.100	Rp 18,000
35	Candlenut	Kg	30	Rp 50,000

2. METHODS

ABC Analysis is a method that can be used for implementing inventory control based on the Pareto principle. ABC Analysis divides inventory into three groups based on annual volume in monetary terms. With this method, items are classified into three main categories: Category A (80%-20%). Category A absorbs 80% of the total inventory budget and comprises approximately 20% of all items managed. Category A items require high attention in procurement due to their high cost, and intensive monitoring is necessary. Category B (15%-30%), for Category B, it absorbs around 15% of the total inventory budget (after Category A) and constitutes about 30% of all managed items. Moderate control techniques are applied to Category B items. Category C (5%-50%), Category C absorbs approximately 5% of the inventory budget (excluding Categories A and B) and comprises about 50% of the item types. Control techniques applied to Category C items are simple, with occasional inspections (Fitria, 2023).

General inventory is defined as the stock of raw materials needed to support the production process or meet consumer demand. These goods are stored and prepared by the company so they are ready for use in the production process or for sale to consumers. In other words, inventory is important in maintaining the company's smooth operations and ensuring product availability to meet market needs.

Inventory of goods must be controlled by creating classifications to determine the importance level of each product. The use of the ABC Class-Based analysis method helps identify products with high demand and absorb the most costs for prioritization. Utilizing the ABC Class-Based analysis method improves inventory control by focusing on the control level of each classified group of inventory items (Agus, 2023).

In this research, we apply the case study method with a quantitative descriptive analysis approach. The type of research used is descriptive analysis research. Through descriptive research analysis, researchers can present situations or events systematically, factually and accurately based on fact (Dinah & Dyah, 2023). The data collection was carried out through observation, interviews, documentation and literature study. We apply quantitative descriptive techniques to measure sales volume and analyze price percentages, as well as carry out ABC analysis to gain a deeper understanding (Fitria, 2023). The inventory control procedure using the ABC approach can be executed through the following steps:

- a) Collecting price and usage quantity data for each item over a specific period (in this study, one year).
- b) Multiplying the price of each item by its annual usage quantity.
- c) Calculating the percentage of total fund absorption for each item.
- d) Sorting the data based on the percentage of fund absorption in descending order.
- e) Computing cumulative values and their respective percentages.
- f) Classifying inventory into groups A, B, and C.
- g) Providing recommendations for inventory control.

3. RESULTS AND DISCUSSION

The formula for finding the ABC method is by multiplying the numbers inventory with the value or price per unit of existing goods, from the formula bellow we can find out the results from using the ABC method.

- Calculate the amount of Funds Absorbed Value (Mi), by multiplying the quantity used for each item of goods per year by the unit price of the goods.

$$\text{Fund Absorption Value} = \text{Quantity Per Year} \times \text{Price Per Unit}$$

Table 2. Calculation of Fund Absorption Value

No	Items	UoM	Quantity/Year	Price	Fund Absorption Value	Fund Absorption Percentage
1	Rice	Kg	18,600	Rp 16,000	Rp 297,600,000	19.1%
2	Oil	Kg	2,400	Rp 32,000	Rp 76,800,000	4.9%
3	Sugar	Kg	150	Rp 18,000	Rp 2,700,000	0.2%
4	Salt	Kg	75	Rp 5,000	Rp 375,000	0.0%
5	Seasoning	Kg	750	Rp 1,000	Rp 750,000	0.0%
6	Beef	Kg	1,500	Rp 180,000	Rp 270,000,000	17.3%
7	Chicken	Kg	10,500	Rp 40,000	Rp 420,000,000	26.9%
8	Eggs	Kg	750	Rp 30,000	Rp 22,500,000	1.4%
9	Beef Lung	Kg	150	Rp 70,000	Rp 10,500,000	0.7%
10	Liver and Gizzard	Kg	300	Rp 30,000	Rp 9,000,000	0.6%
11	Mackerel	Kg	900	Rp 35,000	Rp 31,500,000	2.0%
12	Nile Tilapia	Kg	900	Rp 35,000	Rp 31,500,000	2.0%
13	Pangasius	Kg	900	Rp 35,000	Rp 31,500,000	2.0%
14	Tendon	Kg	150	Rp 140,000	Rp 21,000,000	1.3%
15	Squid	Kg	900	Rp 37,000	Rp 33,300,000	2.1%
16	Shrimp	Kg	150	Rp 80,000	Rp 12,000,000	0.8%
17	Skipjack Tuna	Kg	900	Rp 35,000	Rp 31,500,000	2.0%
18	Onion	Kg	300	Rp 35,000	Rp 10,500,000	0.7%
19	Garlic	Kg	300	Rp 30,000	Rp 9,000,000	0.6%
20	Red Chili	Kg	1,500	Rp 26,000	Rp 39,000,000	2.5%
21	Curly Red Chili	Kg	1,500	Rp 26,000	Rp 39,000,000	2.5%
22	Green Chili	Kg	1,500	Rp 28,000	Rp 42,000,000	2.7%
23	Red Tomato	Kg	1,500	Rp 28,000	Rp 42,000,000	2.7%

No	Items	UoM	Quantity/Year	Price	Fund Absorption Value	Fund Absorption Percentage
24	Green Tomato	Kg	1,500	Rp 14,000	Rp 21,000,000	1.3%
25	Cardamom	Kg	30	Rp 80,000	Rp 2,400,000	0.2%
26	Turmeric	Kg	150	Rp 10,000	Rp 1,500,000	0.1%
27	Galangal	Kg	150	Rp 8,000	Rp 1,200,000	0.1%
28	Ginger	Kg	150	Rp 16,000	Rp 2,400,000	0.2%
29	Cloves	Kg	75	Rp 25,000	Rp 1,875,000	0.1%
30	Lemongrass	Kg	75	Rp 20,000	Rp 1,500,000	0.1%
31	Bay Leaves	Kg	75	Rp 5,000	Rp 375,000	0.0%
32	Turmeric Leaves	Kg	75	Rp 5,000	Rp 375,000	0.0%
33	Star Anise	Kg	30	Rp 100,000	Rp 3,000,000	0.2%
34	Coconut Milk	Kg	2,100	Rp 18,000	Rp 37,800,000	2.4%
35	Candlenut	Kg	30	Rp 50,000	Rp 1,500,000	0.1%
Total					Rp 1,558,950,000	100%

From Table 2 Calculation of Fund Absorption Value, the total value of fund absorption for all types of goods is (M) Rp. 1.558.950.000 expressed in the amount of absorption of funds for all types of goods ($\sum M_i$) mathematically it can be stated:

$$M = \sum M_i$$

- Sort the data from the percentage value of annual fund absorption from the highest value to the lowest value.
- Calculate the percentage of the cumulative value of the types of goods
- Classify according to method A, B, C

Table 3. The order of Fund Absorption Percentage Values from the Highest Value and the Cumulative Percentage of Fund Absorption

No	Items	UoM	Quantity /Year	Price	Fund Absorption Value	Fund absorption percentage	Cumulative percentage of Fund absorption	Category
7	Chicken	Kg	10,500	Rp 40,000	Rp 420,000,000	26.9%	26.9%	A
1	Rice	Kg	18,600	Rp 16,000	Rp 297,600,000	19.1%	46.0%	A
6	Beef	Kg	1,500	Rp 180,000	Rp 270,000,000	17.3%	63.4%	A

No	Items	UoM	Quantity /Year	Price	Fund Absorption Value	Fund absorption percentage	Cumulative percentage of Fund absorption	Category
2	Oil	Kg	2,400	Rp 32,000	Rp 76,800,000	4.9%	68.3%	A
22	Green Chili	Kg	1,500	Rp 28,000	Rp 42,000,000	2.7%	71.0%	A
23	Red Tomato	Kg	1,500	Rp 28,000	Rp 42,000,000	2.7%	73.7%	A
20	Red Chili	Kg	1,500	Rp 26,000	Rp 39,000,000	2.5%	76.2%	A
21	Curly Red Chili	Kg	1,500	Rp 26,000	Rp 39,000,000	2.5%	78.7%	A
34	Coconut Milk	Kg	2,100	Rp 18,000	Rp 37,800,000	2.4%	81.1%	B
15	Squid	Kg	900	Rp 37,000	Rp 33,300,000	2.1%	83.2%	B
11	Mackerel	Kg	900	Rp 35,000	Rp 31,500,000	2.0%	85.2%	B
12	Nile Tilapia	Kg	900	Rp 35,000	Rp 31,500,000	2.0%	87.3%	B
13	Pangasius	Kg	900	Rp 35,000	Rp 31,500,000	2.0%	89.3%	B
17	Skipjack Tuna	Kg	900	Rp 35,000	Rp 31,500,000	2.0%	91.3%	B
8	Eggs	Kg	750	Rp 30,000	Rp 22,500,000	1.4%	92.8%	B
14	Tendon	Kg	150	Rp 140,000	Rp 21,000,000	1.3%	94.1%	B
24	Green Tomato	Kg	1,500	Rp 14,000	Rp 21,000,000	1.3%	95.4%	C
16	Shrimp	Kg	150	Rp 80,000	Rp 12,000,000	0.8%	96.2%	C
9	Beef Lung	Kg	150	Rp 70,000	Rp 10,500,000	0.7%	96.9%	C
18	Onion	Kg	300	Rp 35,000	Rp 10,500,000	0.7%	97.6%	C
10	Liver and Gizzard	Kg	300	Rp 30,000	Rp 9,000,000	0.6%	98.1%	C
19	Garlic	Kg	300	Rp 30,000	Rp 9,000,000	0.6%	98.7%	C
33	Star Anise	Kg	30	Rp 100,000	Rp 3,000,000	0.2%	98.9%	C
3	Sugar	Kg	150	Rp 18,000	Rp 2,700,000	0.2%	99.1%	C
25	Cardamom	Kg	30	Rp 80,000	Rp 2,400,000	0.2%	99.2%	C
28	Ginger	Kg	150	Rp 16,000	Rp 2,400,000	0.2%	99.4%	C
29	Cloves	Kg	75	Rp 25,000	Rp 1,875,000	0.1%	99.5%	C
26	Turmeric	Kg	150	Rp 10,000	Rp 1,500,000	0.1%	99.6%	C

No	Items	UoM	Quantity /Year	Price	Fund Absorption Value	Fund absorption percentage	Cumulative percentage of Fund absorption	Category
30	Lemongrass	Kg	75	Rp 20,000	Rp 1,500,000	0.1%	99.7%	C
35	Candlenut	Kg	30	Rp 50,000	Rp 1,500,000	0.1%	99.8%	C
27	Galangal	Kg	150	Rp 8,000	Rp 1,200,000	0.1%	99.9%	C
5	Seasoning	Kg	750	Rp 1,000	Rp 750,000	0.0%	99.9%	C
4	Salt	Kg	75	Rp 5,000	Rp 375,000	0.0%	100%	C
31	Bay Leaves	Kg	75	Rp 5,000	Rp 375,000	0.0%	100%	C
32	Turmeric Leaves	Kg	75	Rp 5,000	Rp 375,000	0.0%	100%	C
Total					Rp 1,558,950,000	100%		

After applying the ABC method to inventory calculations at the Boga Raso Restaurant, the analysis results show that:

Table 4. Classification of Inventory Management at Boga Raso Restaurants using the ABC Method

Category	Items	Absorption percentage fund(%)
A	7,1,6,2,22,23,20,21	78.70%
B	34,15,11,12,13,17,8,14	16.70%
C	24,16,9,18,10,19,33,3,25,28,29,26,30,35,27,5,4,31,32	4.60%

Based on Table 4, the Classification of Inventory Management at Boga Raso Restaurants using the ABC Method, the results are as follows: Category A includes items such as Chicken, Rice, Beef, Oil, Green Chili, Red Tomato, Red Chili, and Curly Red Chili, which absorb approximately 78.7% of the total inventory budget. Category B consists of Coconut Milk, Squid, Mackerel, Nile Tilapia, Pangasius, Skipjack Tuna, Eggs, and Tendon, absorbing 16.70% of the total inventory budget. Category C includes Green Tomato, Shrimp, Beef Lung, Shallots, Liver and Gizzard, Garlic, Star Anise, Sugar, Cardamom, Ginger, Cloves, Turmeric, Lemongrass, Candlenut, Galangal, Seasoning, Salt, Bay Leaves, and Turmeric Leaves, absorbing 4.60% of the total inventory budget.

Inventory control through the ABC (Activity Based Costing) method categorizes raw material items at Boga Raso Restaurant. Category A, comprising the largest fund absorption, consists of 8 items requiring high attention in procurement due to their high costs and intensive monitoring. Category B, with moderate fund absorption, includes 8 types of items managed with moderate control techniques. Category C, with the lowest fund absorption, consists of 19 types of items managed using simple control techniques, with occasional inspections.

4. CONCLUSION

1. Efficient inventory categorization is essential for inventory management to anticipate raw material shortages and ensure optimal customer service, thereby aiming to reduce inventory costs effectively.
2. Regular implementation of ABC analysis to categorize inventory items is crucial due to the substantial variety and quantity of goods at Boga Raso Restaurant. This categorization enables Boga Raso Restaurant to streamline inventory control efforts more effectively, focusing resources on critical inventory items.
3. In terms of inventory costs, implementing the ABC method is beneficial as it optimizes inventory expenses. Therefore, Boga Raso Restaurant is advised to adopt the ABC method to streamline inventory costs and minimize potential losses within the company.
4. Inventory items categorized as A should be closely monitored and given attention as part of inventory control practices. It is recommended to conduct frequent inventory checks for Category A items to ensure inventory records accuracy.

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