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Application of Economic Order Quantity (EOQ) and Economic Production Quantity (EPQ) Methods to Realize the Efficiency of Raw Material Inventory Costs

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Abstract: The research on the Fish Meatballs CV. Sinar Bahari Indonesia highlights that they currently order raw materials using traditional methods based on estimates, without employing the Economic Order Quantity (EOQ) or Economic Production Quantity (EPQ) methods. This leads to ineffective control of fish raw materials and high total inventory costs. Implementing the EOQ method can improve inventory cost management by saving on ordering, storage, and shortage costs. Similarly, applying the EPQ method can enhance production cost efficiency by optimizing the order quantity based on production needs. Using these methods can result in significant savings and more effective control of inventory costs for the company.

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INTRODUCTION

The economy in Indonesia today has experienced a lot of growth in all fields. Economic growth is closely related to several sectors including agriculture, tourism, forestry, fisheries, transportation, warehousing, trade, provision of accommodation, and food and beverage processing. In the third quarter of 2024, it grew by 5.82% supported by domestic demand for food products, making it one of the supports for economic growth in Indonesia. Many businesses innovate products to attract people's purchasing power, in an effort to meet the needs of their consumers, it is important for companies to ensure the availability of products that consumers are interested in according to the optimal amount and expected quality. It is necessary to apply a special method to achieve the optimal order level and minimize inventory costs or purchase costs. Suryani, V. N., Daniati, R. R., & Kustiningsih, N. (2022) The EOQ method aims to determine the economical quantity for each order. In general, all companies undergoing the production process must plan inventory to ensure the continuity of their production process. In a previous study, Ayu Dewi Larasati, et.al (2021) compared the results of this study, which found that not implementing safety stock poses the risk of raw material shortages, which in turn affects the smooth running of the production process. On the other hand, if a company ignores the reorder point, it will purchase raw materials in excess, which in turn will increase costs and affect the stability of the subsequent production process. However, this study did not calculate safety stock and reorder point. In contrast to the research conducted by Desi Mayasari (2022), which found that the application of EOQ was able to maximize expenditure on inventory, including ordering costs and storage

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costs, and that companies were also able to reduce total inventory costs in 2015, reaching Rp. 437,586,674. Unlike Mohammad Ulil Kirom's research, I Kadek Dwi Nuryana (2024) recommends an inventory control application, and the development of this application uses the Rapid Application Development (RAD) method. Ratningsih's (2021) research shows that inventory management can be carried out more efficiently through the application of the EOQ method, which has been proven to reduce the costs incurred.

The Economic Production Quantity (EPQ) method also considers the amount of finished goods inventory and the demand for those products. In addition, this method takes into account the amount of product preparation. Furthermore, in their research, Parta Telaumbanua, Jeliswan Berkat Iman Jaya Gea, and Yulisman Zega (2022) found that the application of the EPQ method involves a certain quantity of products that must be produced or ordered in batches to reduce total costs, including setup costs and inventory holding costs. Findings from research conducted by Gitta Evangelista, Yundari, and Meliana Pasaribu (2024) indicate that the management of fresh fruit bunch raw material stocks at PT. Mitra Inti Sejati Plantation (MISP) I Estate Bengkayang is more optimal with the application of the EOQ and EPQ methods. However, the location differs from the research to be reviewed.

Bakso Sinar Bahari is one of the well-known culinary brands in Indonesia, especially in the Bandung area, West Java. Bakso Sinar Bahari continues to innovate in developing its products and services. Bakso Sinar Bahari has grown rapidly to date and has several branches that are managed and has more than 500 meatball carts which makes this a motivation for CV. Sinar Bahari Indonesia to continue to provide the best quality for each of its customers with a structured and measurable production quantity. In producing ray bahari fish meatballs, it is necessary to have a production process to process fish into the expected product. Thus, the company needs to maintain the stability of the production process starting from raw materials to become a valuable finished product. One of the important aspects in the smooth production process is the management and control of raw materials. Therefore, the management of fish raw material inventory must be managed effectively to prevent excess or shortage of raw materials. The result of a shortage of raw materials can cause disruption to the production schedule. On the other hand, excess raw materials can lead to increased expenditure on storage costs and maintenance of raw materials. Taufiq Ulin Nuha (2023) shows that the application of this analytical method can significantly improve stock control, ensuring that companies can maintain sufficient stock volumes without incurring excessive expenses. This is essential for maintaining operational efficiency and meeting customer demand.

Through ordering, production, or procurement of raw materials, the researcher intends to assist the CV Sinar Bahari Indonesia company in analyzing the planning and control of raw material inventory which is expected to provide benefits to the company and apply the methods suggested by the researcher.

METHODS

According to Dony Saputra et al. (2023) in the book Operations Management (Innovation, Opportunities, and Challenges in Indonesia's Creative Economy), operational management is a complex process that not only involves the implementation of strategies to achieve operational objectives but also encompasses technical aspects

of efficient and effective production processes for various types of companies. For companies operating in the corporate management sector, operational management is considered more critical than merely achieving significant profits, as it also ensures the company's long-term viability (going concern).

The purpose of this research is to analyze the application of EOQ and EPQ in order to minimize costs, using one type of quantitative research method. Sample selection techniques are usually carried out through data collection with research instruments, with data analysis focusing on quantitative or statistical aspects. The main objective is to test a predetermined hypothesis. Nikmaturrahmah (2023) By applying the EOQ method, companies can also determine the optimal purchase quantity, the quantity of safety stock, and when orders should be placed so that companies can continue to produce smoothly to meet consumer demand without fear of running out of or having excess raw materials.

This method aims to calculate the economic value to simplify a phenomenon. The research objects used in this research are Economic Order Quantity and Economic Production Quantity. In this study, there is data to be processed in the form of raw material purchase data, raw material usage data, ordering costs, storage costs and raw material purchase frequency data. Observations have been made on February 1, 2025 by directly observing activities and conditions within the company. Researchers made direct observations at the CV Sinar Bahari Indonesia company located on Jl. Bojong Sayang, RT.001 / RW.004, Rancamanyar, Kec. Baleendah, Bandung Regency. The population in this study is the CV Sinar Bahari Indonesia production section and raw material inventory data at the CV Sinar Bahari Indonesia business. The selected sample is data - data on raw material purchases, raw material usage, ordering costs, telephone costs and raw material receipt unloading costs, distribution costs, procurement costs and storage costs in January - December 2024. The measuring instrument used in this research is an open questionnaire to obtain data or information regarding raw material inventory control at CV. Sinar Bahari Indonesia.

In analyzing the data, raw material processing is a very important factor for companies in order to maintain a smooth production process. Thus, raw materials are a very important element in every production process because these materials will be converted into finished products. In the context of the company, the raw material in question is the type of raw material in the form of marlin fish. According to Nusaibah, N., Maulid, D. Y., Fiyari, A. Y., & Kartika,K (2020) Marlin fish is a fishery export commodity with high economic value in Indonesia.

The analytical tool that supports descriptive analysis techniques is the Economic Order Quantity (EOQ) method. Research conducted by Theresiana Gunawan Onsu et al. (2024) also emphasizes the importance of the EOQ method in inventory analysis at PT. Motto Suralindo Chemika. Their research shows that by using EOQ, the company can save up to Rp. 22,813,186 or around 56.7% in inventory costs. They note that better inventory control can be achieved with this method compared to conventional methods. At the journal by Wa Asrida and Nicodemus Rahabeat (2022), inventory control is one of the structured and interrelated activities in the overall production process of a company, in accordance with a pre-established plan regarding timing, quantity, and cost.

In the journal Sandi Prima Naibaho, Siti Rahmah Sibuea, Bonar Harahap (2024), Economic Production Quantity (EPQ) or optimal production level is a certain amount of production produced while minimizing total storage costs, which include production setup costs and storage costs. Inventory in a company is directly related to the amount of

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production and the amount of market demand. Companies need to set policies to determine the volume of production adjusted to the level of market demand so that inventory can be managed at minimal cost. This problem can be solved by the Economic Production Quantity (EPQ) method.

RESULTS AND DISCUSSION

The topics discussed are related to the cost of fish raw material inventory from the results of this study. There are three aspects that will be discussed in accordance with the objectives of this study, the first is to analyze how the EOQ method can realize efficiency in raw material inventory costs. The second discussion is to analyze how the EPQ method can realize efficiency in raw material inventory costs. The third discussion is a comparison between the calculations carried out using the EOQ and EPQ methods with the calculations carried out by the company CV. Sinar Bahari Indonesia to achieve efficiency in raw material inventory costs. Zehan Maulana, Ade Momon Subagyo (2023) The main purpose of using the EOQ method is to obtain an economical amount when purchasing raw materials. This is done so that the company can carry out production consistently without experiencing excessive inventory, which would create uneconomical conditions.

The main raw material used in the process of making fish balls at CV Sinar Bahari Indonesia is tuna/marlin fish. The data collection results obtained from CV Sinar Bahari Indonesia which is located at Jl. Bojong Sayang, RT.001 / RW.004, Rancamanyar, Baleendah District, Bandung Regency, West Java are as follows:

Table 1. Total Purchase of Fish Raw Materials January - December 2024

	Month	Purchase (kg)	Purchase Price Of Raw Materials (Rp)	Demand	Distribution to Consumers (ball)
Rt	January	18.500	Rp. 740.000.000	17.007	5.669
	February	17.000	Rp. 680.000.000	15.629	5.210
	March	19.000	Rp. 760.000.000	16.671	5.557
	April	18.000	Rp. 720.000.000	16.570	5.523
	May	18.000	Rp. 720.000.000	16.570	5.523
	June	18.000	Rp. 720.000.000	16.570	5.523
	July	19.000	Rp. 760.000.000	16.335	5.445
	August	19.200	Rp. 768.000.000	16.503	5.501
	September	18.200	Rp. 728.000.000	15.898	5.299
	October	19.000	Rp. 760.000.000	16.335	5.445
	November	18.500	Rp. 740.000.000	15.730	5.243
	December	18.000	Rp. 720.000.000	16.066	5.355
	Total	220.400	Rp. 8.816.000.000	195.884	65.295
	Average	18.367		16.324	
	Standard Deviation			413,92	

Source*:* data that CV. Sinar Bahari Indonesia (2024)

Table 1 above shows the data on the total purchase of raw materials ordered in 2024, amounting to 220,400 kg, with a purchase price of 40,000 per kg. In a year, the company incurred raw material purchase costs of Rp. 8,816,000,000, distribution to consumers amounted to 65,295 fish meatball balls (1 ball weighing 3 kg). Therefore, the average raw material purchase is 18,367 kg.

Table 1. Fish Raw Material Prices for the 2024 Period

Type	Production Procurement Cost and Price Of Sinar Bahari Fish Meatballs	
	Production Procurement Cost	**Fish Meatballs Price**
Rudal meatballs	Rp. 8.133.840.000/year	Rp. 40.000/kg
Small meatballs	Rp. 3.349.600.000/year	Rp. 40.000/kg
Total	Rp. 11.483.440.000/year	
Average	Rp. 956.953.333/month	

Source*:* data that CV. Sinar Bahari Indonesia (2024)

Costs associated with ordering raw materials are costs incurred for the procurement process of ordering raw materials. Costs incurred in ordering raw materials at CV. Sinar Bahari Indonesia include loading and unloading costs and telephone costs. Details regarding the costs of ordering fish raw materials at CV. Sinar Bahari Indonesia can be seen in the table below.

Table 2. Ordering Costs for Fish Raw Materials January - December 2024

Type of Cost	Total Cost of One Order (Rp)
Warehouse loading and unloading	55.000
Telephone	4.500
Total cost	59.500
Ordering frequency	4 times
Total Cost x Ordering frequency	238.000/month

Source*:* data that CV. Sinar Bahari Indonesia (2024)

Storage costs are costs related to the storage of raw materials in the cooling machine / refrigerator. Raw material costs consist of depreciation costs, insurance costs and raw material maintenance costs. The raw material storage cost per kg set is 20% of the raw material price. The calculation of storage costs per kg is:
Storage cost = % storage cost x raw material price or (h x Cost)
Storage cost = 20% x 40.000
Storage cost = 8,000 / kg

p-ISSN: 2579-4892
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Table 3. Monthly Purchase, Demand, and Inventory Cost Data

	Month	Purchase (kg)	Demand	Setup Cost	Holding Cost
Rt	January	18.500	17.007	238.000	8.000
	February	17.000	15.629	238.000	8.000
	March	19.000	16.671	238.000	8.000
	April	18.000	16.570	238.000	8.000
	May	18.000	16.570	238.000	8.000
	June	18.000	16.570	238.000	8.000
	July	19.000	16.335	238.000	8.000
	August	19.200	16.503	238.000	8.000
	September	18.200	15.898	238.000	8.000
	October	19.000	16.335	238.000	8.000
	November	18.500	15.730	238.000	8.000
	December	18.000	16.066	238.000	8.000
	Total	220.400	195.884		
	Average	18.367	16.324		
	Standard Deviation		413,92		

Source*:* data that CV. Sinar Bahari Indonesia (2024)

Based on table 4 above, this data is used to analyze and plan an efficient raw material procurement and storage strategy using the EOQ method. The following is the calculation of raw material inventory using the Economic Order Quantity (EOQ) method and the frequency of ordering

$$\mathrm{EOQ} = \sqrt{\frac{2\ \mathrm{DS}}{\mathrm{H}}}$$

$\mathrm{EOQ}_{\mathrm{January}} = \sqrt{\frac{2\ (17.007)(238.000)}{8.000}}$ = 1006 kg /order

$\mathrm{F}_{\mathrm{January}} = \frac{\mathrm{D}}{\mathrm{EOQ}} = \frac{17.007}{1006}$ = 17 orders times

EOQ x F = 1006 x 17 = 17.102 / month

and the following months..

Based on the above calculations, monthly EOQ is obtained from demand, setup cost, holding cost and order frequency. Then, the EOQ results, demand and purchase data can be compared in the table below:

Table 4. Monthly Purchase, Demand, and Inventory Cost Data

Month	Purchase (kg)	Demand	Monthly EOQ
January	18.500	17.007	17.102
February	17.000	15.629	15.424
March	19.000	16.671	16.932
April	18.000	16.570	16.881
May	18.000	16.570	16.881
June	18.000	16.570	16.881
July	19.000	16.335	16.762
August	19.200	16.503	16.847
September	18.200	15.898	15.568
October	19.000	16.335	16.762
November	18.500	15.730	15.472
December	18.000	16.066	15.648
Total	220.400	195.884	197.160

Source*:* data that CV. Sinar Bahari Indonesia (2024)

Based on the calculation table 5, it can be seen that in January the demand required by consumers is only 17,007 kg, but the purchase is 18,500 kg, while in the optimal ordering CV. Sinar Bahari Indonesia only needs to order 17,102 kg through EOQ calculation, this will have an impact on stock buildup which is the result of increased storage costs, then in February the demand required by consumers is 15. 629 kg, the purchase in this month is 17,000 kg and the EOQ is 15,424, in February the EOQ is lower than the previous month's needs because of the safety stock in January which can increase the EOQ which is a small value of the distributed needs. From March - August EOQ is greater in value than demand and smaller than purchases, because EOQ keeps safety stock within reasonable limits compared to purchases that month, in anticipation of sudden production, and in September EOQ decreased due to the large amount of safety stock in the previous month and distributed as much as 15. 898 kg, in October EOQ was 16,762 kg but purchases reached 19,000 kg, in November EOQ fell to 15,742 kg short of distribution taken from the previous month's safety stock, and in the last month of December EOQ looked much different from demand because it utilized the remaining safety stock that had been anticipated in the previous months, so that in the coming year you can order or buy raw materials not much different from the distribution to consumers to avoid waste on ordering costs and storage costs.

The following is a graph of the raw material demand for CV. Sinar Bahari Indonesia which has been distributed for the period January - December 2024

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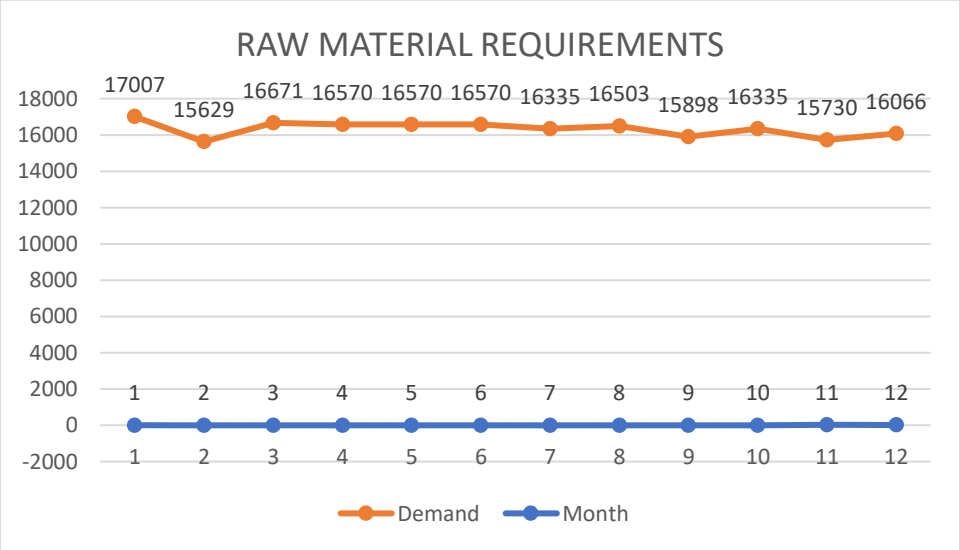

Figure 1. Raw material demand graph of CV. Sinar Bahari Indonesia
Source: data that CV. Sinar Bahari Indonesia (2024)

Based on the pattern or graph above in analyzing trends and patterns, there is a decrease from the first and second months and then an increase in the third month. Here you can see a small fluctuation at the beginning (spike - down - up). But in the middle of the fourth to sixth months the numbers stabilize, and at the end of the seventh to 12th months there are downward fluctuations, with a peak in the eighth month and a low point in the eleventh month, and a slight increase in the 12th month.

No consistently clear upward or downward trend, short up-and-down cycles of two to three months. Stability is seen in the middle of the period, then fluctuates again. Seasonality in demand is not evident.

Table 5. Monthly Production, Demand, and Inventory Cost Data

	Month	Demand	Production (kg)	Setup Cost	Holding Cost
Rt	January	17.007	18.360	238.000	8.000
	February	15.629	17.000	238.000	8.000
	March	16.671	18.360	238.000	8.000
	April	16.570	17.680	238.000	8.000
	May	16.570	17.680	238.000	8.000
	June	16.570	17.680	238.000	8.000
	July	16.335	18.360	238.000	8.000
	August	16.503	18.360	238.000	8.000
	September	15.898	17.680	238.000	8.000
	October	16.335	18.360	238.000	8.000
	November	15.730	17.680	238.000	8.000
	December	16.066	17.680	238.000	8.000
	Total	195.884	214.880		
	Average	16.324			
	Standard Deviation	413,92			

Source: data that CV. Sinar Bahari Indonesia (2024)

The following is the calculation of raw material inventory using the Economic Production Quantity (EPQ) method:

Calculate the optimal production level (Q_0) for each production round using the formula:

$$Q = \sqrt{\frac{2DS}{H\left(1-\frac{D}{P}\right)}}$$

$$Q_{January} = \sqrt{\frac{(2)(17.007)\ (238.000)}{8.000\left(1-\frac{17.007}{18.360}\right)}} = 273 \text{ kg}$$

$F_{January} = \frac{P}{EPQ} = \frac{18.360}{273} = 67$ production times

EPQ x F = 273 x 67 = 18.291 / month

and the following months..

Based on these calculations, monthly EPQ is obtained from demand, production, setup cost, holding cost and production frequency. Then, the EPQ results, demand and production data can be compared in the table below:

Table 6. Monthly Purchase, Demand, and Inventory Cost Data

Month	Demand	Production	EPQ/Month
January	17.007	18.360	18.291
February	15.629	17.000	16.988
March	16.671	18.360	18.422
April	16.570	17.680	16.679
May	16.570	17.680	16.679
June	16.570	17.680	16.679
July	16.335	18.360	18.312
August	16.503	18.360	18.270
September	15.898	17.680	17.613
October	16.335	18.360	18.312
November	15.730	17.680	17.655
December	16.066	17.680	17.700
Total	195.884	214.880	216.000

Source*:* secondary data analysis (2024)

Based on data 7 it can be seen that in January the demand required by consumers is only 17,007 kg, but the production is 18,360 kg, while in optimal production CV. Sinar Bahari Indonesia only needs to produce 18,291 kg through EPQ calculation, this will have an impact on stock buildup which is the result of increased storage costs, then in February the demand required by consumers is 15. 629 kg, production in this month is 17,000 kg and the EPQ is 15,424, in February the EPQ is lower than the previous month's demand because of the safety stock in January which can increase the EPQ which is smaller than the demand distributed. From March - August EPQ is greater in value than demand and smaller than production, because EPQ still keeps safety stock within reasonable limits compared to the month's purchase, in anticipation of sudden production, and in September EPQ decreased due to the large amount of safety stock in the previous month and distributed as much as 15,898 kg, in October EPQ was 18,312 kg but production reached 18,360 kg, in November EPQ dropped to 17,655 kg the lack of distribution was taken from the previous month's safety stock, and in the last month of December EPQ looks much different from demand because it utilizes the remaining safety stock in anticipation of the coming month, so that in the coming year CV. Sinar Bahari Indonesia has a measured stock for the distribution of raw materials to consumers.

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Comparison of the efficiency of raw material inventory costs before and after using the Economic Order Quantity (EOQ) method Based on table 3, The cost of ordering fish raw materials for one order is Rp. 59,500. During this time CV. Sinar Bahari Indonesia usually orders fish raw materials every 7 days, so the company orders soy raw materials 48 times a year.

Then the total cost of ordering in a year is as follows:

TIC = S x F

Where is the value

S = Rp. 59,500

F = 48 times

TIC = Rp. 59,500 x 48

TIC = Rp. 2,856,000

And it is known that the storage fee is Rp. 8,000. Then the total cost of storing fish raw materials at CV. Sinar Bahari Indonesia is:

TCC = H x average demand

TCC = H x $\bar{x}$

Where is the value:

H = Rp. 8,000

$\bar{x}$ = 16.324

Then,

TCC = Rp. 8,000 x 16,324

TCC = Rp. 130,592,000

Then, TIC according to the company CV. Sinar Bahari Indonesia as follows:

TIC = Total ordering cost + total storage cost

TIC = Rp. 2,856,0000 + Rp. 130,592,000

TIC = Rp. 133,448,000

Meanwhile, TIC according to the EOQ calculation uses the formula below:

TIC=((D)/Q S)+(Q/2 H)

TIC_january = (17,102)/1006 Rp.238,000) + (1006/2 Rp.8,000)

TIC_january = Rp. 8,070,000

Then the calculation is pasted in the following table

Table 7. Monthly Total Inventory Cost Result

Month	Demand	Setup Cost	Holding Cost	EOQ/order	TIC
January	17.007	238.000	8.000	1.006	8.070.000
February	15.629	238.000	8.000	964	7.664.000
March	16.671	238.000	8.000	996	8.030.000
April	16.570	238.000	8.000	993	8.018.000
May	16.570	238.000	8.000	993	8.018.000
June	16.570	238.000	8.000	993	8.018.000
July	16.335	238.000	8.000	986	7.990.000
August	16.503	238.000	8.000	991	8.010.000
September	15.898	238.000	8.000	973	7.700.000
October	16.335	238.000	8.000	986	7.990.000
November	15.730	238.000	8.000	967	7.676.000
December	16.066	238.000	8.000	978	7.720.000
Total	195.884				94.904.000

Source*:* secondary data analysis (2024)

Based on the data above, it can be concluded that the company's Total Inventory Cost (TIC) before using the EOQ method was IDR 133,448,000 per year. After optimization using the EOQ approach, the cost dropped to IDR 94.904.000. The difference in savings obtained is IDR 38,544,000, or equivalent to an efficiency level of 29% of the previous total inventory cost.

In the company's calculations, it is known that the ordering cost is 238,000 per month, the storage cost is 8,000 per kg of raw material and the total production for a year is 214,880 kg and the total demand is 195,884 kg, 3 milling machines 75,000 per day and BOP per year.

Where is the value
S = Rp. 59,500
F = 48 times
TIC = Rp. 59,500 x 48
TIC = Rp. 2,856,000

And it is known that the storage fee is Rp. 8,000. Then the total cost of storing fish raw materials at CV. Sinar Bahari Indonesia is:

TCC = H x average demand
TCC = H x $\bar{x}$
Where is the value:
H = Rp. 8,000
$\bar{x}$ = 16.324
Then,
TCC = Rp. 8,000 x 16,324
TCC = Rp. 130,592,000
TOC = Rp. 75,000 x 316 working days = Rp. 23,700,000,
BOP = Rp. 55,800,000
Then, TIC according to the company CV. Sinar Bahari Indonesia as follows:
TIC = Total ordering cost + total storage cost + TOC + BOP
TIC = Rp. 2,856,0000 + Rp. 130,592,000 +23,700,000 + 55,800,000
TIC = Rp. 212,948,000

In contrast to the calculations generated through EPQ, namely:

$TIC = S\,(D/Q_0) + (Q_0/2).(1-D/P) \cdot H$

TIC_January = (238,000) (17,007/273) + (273/2).(1-17,007/18,291) · (8,000)
TIC_January= Rp. 14,903,272
Then the calculation is pasted in the following table :

Table 8. Monthly Total Inventory Cost Result

Month	Demand	Setup Cost	Holding Cost	Production (kg)	EPQ/production	TIC
January	17.007	238.000	8.000	18.291	273	14.903.272
February	15.629	238.000	8.000	16.988	274	13.663.232
March	16.671	238.000	8.000	18.422	302	13.252.893
April	16.570	238.000	8.000	16.679	249	15.844.501
May	16.570	238.000	8.000	16.679	249	15.844.501
June	16.570	238.000	8.000	16.679	249	15.844.501
July	16.335	238.000	8.000	18.312	327	12.030.297
August	16.503	238.000	8.000	18.270	315	12.590.795
September	15.898	238.000	8.000	17.613	309	12.365.412
October	16.335	238.000	8.000	18.312	327	12.030.297
November	15.730	238.000	8.000	17.655	321	11.802.741
December	16.066	238.000	8.000	17.700	295	13.070.655
Total	195.884			216.000		163.243.098

Source*:* secondary data analysis

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Based on the data above, the company's Total Inventory Cost (TIC) before the application of the EPQ method was IDR 212,948,000. After optimization with the EPQ method, this cost was successfully reduced to Rp 163.243.098. Thus, there was a savings of Rp 49,704,902, which is equivalent to 23% efficiency from the initial inventory cost.

CONCLUSION

Based on the results of the research, data analysis, and discussion that has been presented regarding the application of the EOQ method and the EPQ method in producing Fish Meatballs CV. Sinar Bahari Indonesia, the researcher can draw conclusions, including Bakso Ikan Sinar Bahari in ordering raw materials in practice still uses traditional methods and is only based on estimates, has never used the Economic Order Quantity (EOQ) method. Thus, making the control of fish raw materials not optimal and resulting in high total inventory costs. If you apply the Economic Order Quantity (EOQ) method in inventory control, it can increase the effectiveness and efficiency of inventory costs, so that you can save on total inventory costs which include ordering costs, storage costs, and inventory shortage costs. Bakso Ikan Sinar Bahari in raw material production activities in practice still uses traditional methods and is only based on estimates, has never used the Economic Production Quantity (EPQ) method. Thus, making the control of fish raw materials not optimal and resulting in high total inventory costs. If you apply the Economic Production Quantity (EPQ) method in inventory control, it can increase the effectiveness and efficiency of inventory costs, so that you can save on total production costs, labor costs, and storage costs by determining the optimal order quantity according the needs of the raw material production round. The results obtained from ordering raw material inventory using the Economic Order Quantity (EOQ) method are able to determine the quantity per order, so as to obtain inventory cost efficiency from the company's Total Inventory Cost. The results obtained from the production process of raw material supplies using the Economic Production Quantity (EPQ) method are able to determine the optimal production quantity in the production round per month, thereby obtaining an efficient level of inventory costs from the company's Total Inventory Cost.

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