

Analysis of Raw Material Inventory in Poultry Feed Companies in Makassar City, Indonesia

Widya¹, Hastang^{2,*} and Aslina Asnawi³

¹Student, Animal Science and Technology Program, University of Hasanuddin, Makassar, Indonesia; ²Professor, Animal Science and Technology Program, University of Hasanuddin, Makassar, Indonesia; ³Professor, Animal Science and Technology Program, University of Hasanuddin, Makassar, Indonesia

*Corresponding author's e-mail: Hastang_uh@yahoo.co.id

This study analyzed the procurement of raw materials in a company PT.X at Makassar city, Indonesia in production activities. Production raw materials are imported from various places such as the provision of soybean meal, MBM, CGM, and DDGS. The purpose of this study is to determine the procurement management of soybean meal, MBM, CGM, DDGS raw materials in the manufacture of feed in the company. Raw material inventory management in each company is different, both in terms of the number of units of raw material inventory in the company, the time of use, and the amount of cost of purchasing these raw materials. The use of the EOQ method in calculating raw material inventory can help control costs incurred. The optimal amount of soybean meal raw material ordering is 4.426.773 kg with an order frequency of 10 times and a safety stock of 3.033.033 kg and a reorder point in 45 days. MBM ordering is 1.131.681 kg with an order frequency of 3 times and a safety stock of 258.333 kg and a reorder point in 91 days. Furthermore, the ordering CGM is 519.709 kg with an order frequency of 6 times and a safety stock of 233.333 kg and a reorder point in 52 days. The last raw material is DDGS as much as 1.569.749 kg with an order frequency of 9 times and a safety stock of 1.210.000 kg and a reorder point in 73 days. If this is done, the company will certainly benefit from cost efficiency. The results obtained were able to reduce company expenses by IDR 75,915,750,000 in one period.

Keywords: Feed company, inventory management, feed raw materials, economic order quantity, reorder point.

INTRODUCTION

The development of the livestock sub-sector aims to meet the increasing consumption needs of the community for livestock products such as the poultry industry which has strategic value, especially in providing animal protein (Sarno *et al.*, 2007). One of the businesses in supporting the livestock sub-sector is the business of making livestock rations. Feed companies conduct production activities to meet market needs (Kusuma, 2007; Amar and Pono, 2014). Procurement of production activities requires several components in the form of raw materials, labor costs and indirect production costs. Raw materials are the main component that makes up the finished product. Well-designed raw material inventory management can minimize total costs and improve service levels because by managing the right inventory, the company will achieve both at once (Roslin *et al.*, 2015; Swain *et al.*, 2018).

The company must carry out an optimal inventory of raw

materials, this is done so as not to cause high inventory costs (Rahmawati and Agung, 2016). The economic order quantity (EOQ) model has proven useful in optimizing resources and thus, minimizing associated costs (Ventura and Samuel, 2016; Mokhtari, 2018). Since the elaboration of the basic EOQ model in 1913 (Erlenkotter, 1989; Rezaei, 2014; Roslin *et al.*, 2015), many models that are modifications of this classic formula, have been developed. EOQ is considered in the literature as an important one and the EOQ model is recognized as a useful method for optimizing shipment sizes and inventory levels (Agarwal, 2014; Milewski, 2019; Shaikh *et al.*, 2019).

Some imported raw materials used in the manufacture of feed include soybean meal, MBM (*Meat and Bone Meal*), CGM (*Corn Gluten Meal*) and DDGS (*Distillers Dried Grains with Solubles*). The use of soybean meal raw materials derived from soybean seed processing waste is relatively low in Indonesia, which results in the fulfillment of soybean raw material needs by importing (Livestock, 2019). MBM raw



materials used in the manufacture of feed used in layer feed are obtained by import. In general, the composition of MBM in poultry feed is only 5% (Yuniartha, 2018). The other main product of corn besides starch is CGM, which is usually used as a source of animal feed protein. CGM is added as a raw material to increase protein content. *Distillers Dried Grains with Solubles* (DDGS) is a by-product of the corn-based ethanol distillation industry. DDGS can serve as a source of protein and energy that contains high nutrients such as protein, fat, vitamins, minerals, and starch. (Hertrampf and Pascual, 2000).

The raw material procurement mechanism needs to pay attention to several things including, the length of the ordering grace period so that it affects the raw material inventory period (Rezaei, 2016). In addition, the amount of raw material orders must be in the optimal amount to avoid shortages of raw materials or the risk of damage due to too much raw material and too long storage time (Sukhia et al., 2014). The impact when inventory is not optimal is that it will cause high inventory costs (Swain et al., 2018; Samal et al., 2022). Based on this condition, this journal analyzes raw material control in poultry feed companies in raw material inventory management.

MATERIALS AND METHODS

Sources of Data: This research was conducted for 2 months starting in April - May 2023. This research was conducted in one of the feed companies. Data was obtained from the purchasing and trading division of a poultry feed manufacturing company PT. X located in Makassar, Indonesia.

The data collection techniques used in this study are

1. Interviews, interviews are a way of collecting data by conducting direct questions and answers with the company in the company's purchasing and trading division.
2. Observation, observation is direct observation and recording in the field carefully and systematically.
3. Documentation, documentation is a data collection method that is carried out by taking data regarding raw material inventory in the company.

Data Analysis: The data analysis used in this research is the EOQ (*economic order quantity method*), EOQ (*economic order quantity*) is a method used to determine the amount of feed purchased at each order at the lowest cost. The data analysis process carried out by this research is as follows:

1. Determine the amount of ordering costs:

$$\frac{\text{Total order cost}}{\text{Order frequency}}$$
2. Determine the amount of storage costs:

$$\frac{\text{Total storage cost}}{\text{The amount required}}$$
3. EOQ Calculation: To be able to determine the optimal

number of orders or purchases each time there needs to be an economic optimal purchase quantity calculation or EOQ (*economic order quantity*). Each company takes into account the optimal amount of feed purchases. EOQ (*Economic Order Quantity*) calculations using the formula can also determine the frequency of purchases (Alfiah, 2011).

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

Description:

EOQ = Number of units per order (kg) S = Ordering Cost each time (Rp/order)

D = Usage or Total raw material requirements in one period
 H = Storage Cost expressed as a percentage of average inventory

Reorder Point Analysis: The reorder point can be determined by setting the usage during the lead time and adding the usage during a certain period as safety stock, using the formula:

Reorder point = usage during lead time (month) + safety stock (kg)

Usage during lead time = lead time x raw material usage

Safety Stock = number of standard deviations from the requirement level x 1.65

Standard deviation formula:

Where:

$$SD = \sqrt{\frac{\sum(x-y)^2}{n}}$$

SD = Standard deviation

X = actual usage; Y = forecasting / estimated usage

n = number (amount of data)

RESULTS

Company Raw Material Needs and Purchases: Planning the supply of feed raw materials by feed companies is carried out to facilitate the production process and protect the business of making poultry feed so that there is no shortage of raw materials that can hinder the production process. The company places orders based on the actual condition of the raw material inventory in the warehouse and forecasts the amount of feed needed by customers. The amount of raw material orders each month is done differently. The total inventory of raw materials during 2022 carried out by the company can be seen in Table 1.

Table 1. Total inventory of raw materials in 2022.

Raw Material Type	Initial Inventory (kg)	Procurement (kg)	Inventory Frequency /year (times)
Soybean Meal	8.000.000	36.000.000	4
MBM	300.000	3.900.000	4
CGM	3.370.000	3.750.000	4
DDGS	14.130.000	12.050.000	4

Source: Poultry feed companies, 2022



Procurement of raw materials by the company is carried out 4 times a year on an imported basis and simultaneously for all types of raw materials. Shipments made at once on all types of raw materials will have an impact on inventory costs and storage costs.

Soybean Meal: Soybean meal is one of the main raw materials in making animal feed after corn. The need for soybean meal for the animal feed industry in Indonesia is generally imported from four main countries, namely Argentina, Brazil, America and India (Aritonang et al., 2015). The company purchases and needs soybean meal as shown in Figure 1.

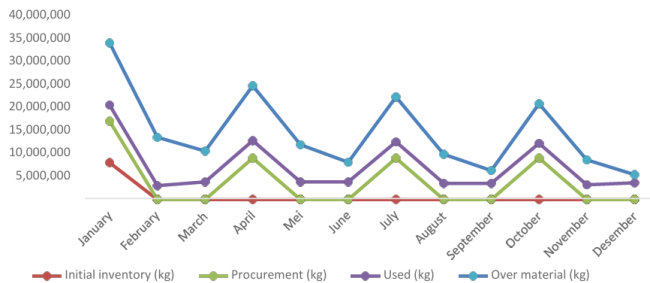


Figure 1. Soybean meal purchases and raw material requirements in 2022.

Figure 1 shows that the purchase of soybean meal by the company is done in too large quantities, this can be seen in the amount of initial inventory then the company makes a lot of procurements so that the accumulation of available raw materials becomes excessive. Meanwhile, the use of raw materials that are less than the company's inventory results in a lot of soybean meal becoming residual raw materials that are only stored in the warehouse (Samal et al., 2018).

MBM: MBM or commonly referred to as meat meal and bone meal has a high protein and calcium content. MBM has a crude protein content of more than 50%. MBM is usually made from waste products found in slaughterhouses such as offal, meat, fat and bones. In general, the composition of MBM in poultry feed is only 5% (Yuniartha, 2018). The supply of MBM raw materials can be seen in Figure 2.

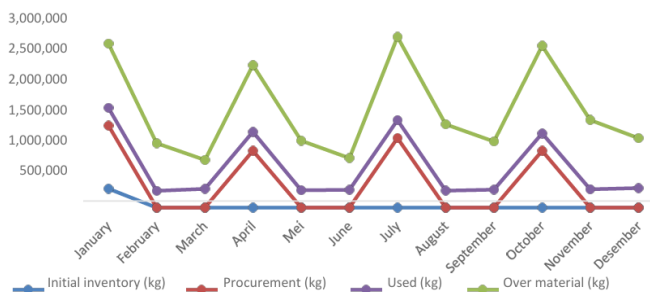


Figure 2. MBM Raw Material Purchases and Requirements in 2022.

In Figure 2, it is found that the company has made excessive purchases, this can be seen in the high amount of initial inventory and procurement. This considerable purchase only becomes residual material stored in the warehouse because the amount of MBM used is less than the amount of MBM that has been purchased. In optimizing inventory, it is very important to pay attention to the risk of storing raw materials for a long time so that there are no additional costs of loss (Samal et al., 2018).

CGM: CGM is usually used as a source of animal feed protein. In addition, CGM complementation also plays a role in providing natural color due to the yellow pigment contained in CGM. The number of CGM needs and purchases can be seen in Figure 3.

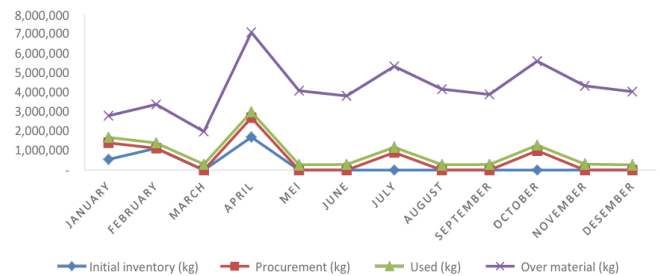


Figure 3. CGM Raw Material Purchases and Requirements in 2022.

Figure 3 shows that the company's warehouse has a large amount of MBM available. Then after that, the company purchases or procures in quantities almost equal to the amount of use, so that the total CGM available in the warehouse becomes very high compared to what will be used and only becomes residual material.

DDGS: DDGS is a by-product of the corn-based ethanol distillation industry and serves as a source of protein and energy (Tangendjaja and Wina, 2007). This raw material is commonly used in poultry feed, especially used as a component of animal feed because it contains high nutrients such as protein, fat, vitamins and minerals (Hertrampf and Pascual, 2000). DDGS purchases and needs in the company can be seen in Figure 4.

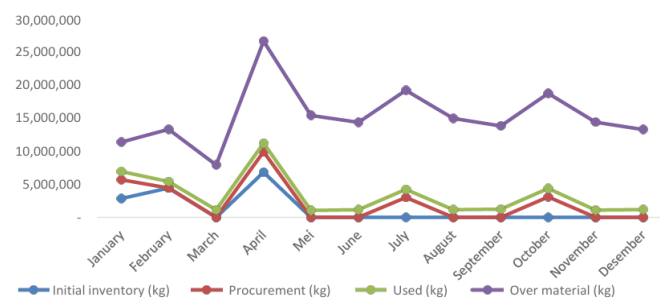


Figure 4. DDGS Raw Material Purchases and Needs in 2022.



In Figure 4, the results show that the initial inventory of DDGS is in large quantities. After that, the company made purchases or procurement in high quantities, this made the DDGS stock in the warehouse very large. However, this DDGS raw material is a lot of leftover material due to the use of DDGS which is far below the amount of raw materials available (Samal *et al.*, 2018).

In the four figures above, it shows that the company made too many purchases, this can be seen in the amount of initial inventory of the four raw materials which is quite high, then added to the purchase / procurement in even greater quantities. Meanwhile, the use of the four raw materials is far below the amount available so that it only becomes residual material in the warehouse. The right raw material procurement plan will reduce the risk of excess or shortage of raw material inventory (Liu *et al.*, 2016; Wanti *et al.*, 2019). Supplies of raw materials that exceed the company's needs will result in an increase in inventory costs (ordering costs and storage costs that must be borne by the company) (Yahya, 2018).

The inventory of feed raw materials in this company needs to be controlled to reduce costs incurred, because if no control is made, it will cause high storage costs and capital costs. In addition, there will be a risk of damage to raw materials due to the process of storing raw materials for too long. The problem of inaccurate production planning also causes problems with raw material control, where often the need for raw material inventory for production is *overloaded*, resulting in storage costs (Assauri, 2014).

Optimal Ordering Quantity of Poultry Feed Company: The number of orders can be optimized by paying attention to ordering costs and storage costs. Ordering costs are obtained directly from the company in total for one year, while storage costs are estimated based on the average storage of goods.

Ordering Cost: Ordering cost is the cost incurred due to ordering, calculated by multiplying the number of orders by the ordering cost per order. The components of ordering costs in poultry feed companies are telephone charges, shipping costs, and administrative costs. The components of ordering costs for all types of raw materials can be seen in Table 2.

Table 2. Components of Raw Material Ordering Cost.

Cost Type	Soybean (IDR /Order)	MBM (IDR /Order)	CGM (IDR /Order)	DDGS (IDR /Order)
Telephone costs	500.000	500.000	500.000	500.000
Shipping cost	150.000.000	60.000.00	50.000.000	50.000.000
Administration fee	1.000.000	1.000.000	1.000.000	1.000.000
Inventory tax cost	7.500.000	7.500.000	7.500.000	7.500.000
Total	159.000.000	69.000.000	59.000.000	59.000.000

Source: Poultry feed companies, 2022

Based on Table 1, it is found that the ordering costs of the four raw materials include telephone costs, shipping costs, and administrative costs of the same value. Procurement of each raw material is held at the same time so that the costs incurred each time the order is the same. This is what causes the higher the frequency of ordering, the higher the ordering cost (Maity *et al.*, 2021).

Storage Cost: Storage costs are costs incurred as a result of storing raw materials. The storage cost component consists of labor costs, damage costs, insurance costs, tax costs, storage equipment costs, and warehouse depreciation costs. The calculation of the storage cost components can be seen in Table 3.

Table 3. Raw Material Storage Cost.

Cost Component	Total Cost (IDR/month)	Total Cost (IDR/period)
Labor wages	20.000.000	240.000.000
Cost of damage	5.000.000	60.000.000
Insurance costs	10.000.000	120.000.000
Capital costs	61.062.083	732.745.000.000
Cost of storage equipment	2.500.000	30.000.000
Warehouse depreciation	500.000	6.000.000
Total	38.000.000	733.201.000.000

Source: Poultry feed companies, 2022

In Table 3, it can be seen that the storage costs incurred by the company amounted to IDR 576,000,000 in one period or one year with a frequency of ordering 4 times. Some of the cost components above illustrate that the biggest cost is labor wages. Labor wages at the company include wages for loading and unloading workers and guards in the warehouse, totaling five people. Labor wages in the company are quite large because payments are made to workers every month as long as raw materials are available in the warehouse.

Furthermore, the company budgets for insurance costs related to guaranteeing the safety of raw materials when damage occurs, this is very helpful with other parties bearing the risk of damage to raw materials (Samal *et al.*, 2018). In addition, tax costs are a fairly large cost, which is paid annually by the company. Of the many components of storage costs, warehouse depreciation costs are the lowest-value cost component (Trihudiyatmanto, 2017). In optimizing inventory levels, it is very important to pay attention to the risk of storing raw materials for a long time so that there are no additional loss costs (Kumar, 2016; Samal *et al.*, 2018).

Total Inventory Cost (TIC) Company Actual Method: The total cost of raw material inventory is the sum of ordering costs and storage costs. The total cost of inventory can be seen in Table 4.



Table 4. Total Inventory Cost of Actual Company.

Raw material type	Total inventory cost (IDR) /period
Soybean Meal	587.250.000.000
MBM	27.510.000.000
CGM	109.865.000.000
DDGS	175.075.000.000
Total	899.700.000.000

Source: Poultry feed companies, 2022

Table 3 shows that of the four raw materials, soybean meal has the highest inventory cost due to the high amount of material used. In addition, the price of soybean meal is relatively high compared to other raw materials, making the inventory cost for this raw material high. Furthermore, the inventory cost for DDGS raw materials is the highest after soybean meal, this is because the price of these raw materials is quite expensive with a large proportion as well.

Companies must apply the concept of inventory planning to maintain optimal and stable inventory (Rahmawati and Agung, 2016). Determining inventory is important for companies because inventory has an impact on profitability. Errors when determining the amount of stock of goods will affect the company's *bottom line*. So, companies are recommended to be able to determine the amount of stock of goods that is effective and economical so that the amount of stock purchases is also able to achieve minimum inventory costs. Optimizing inventory is not an easy thing because market demand is not fixed, which makes it difficult for companies to determine how much inventory to keep.

Inventory has several functions according to Stevenson and Chuong (2014), the most important of which are to meet forecasted customer demand, smooth production requirements, segregate operations, protect against stockouts, take advantage of order cycles, protect against price increases, enable operations, and to take advantage of quantity discounts.

Analysis with Economic Order Quantity (EOQ) Method:

Optimizing the inventory of all types of raw materials based on the EOQ method to minimize the total cost of ordering and storage. Storage costs will be large if the ordering frequency is low. Conversely, if the frequency of ordering orders is high or frequent, the ordering cost becomes large so the storage cost becomes small because the amount of inventory stored will decrease. Controlling raw material inventory with the EOQ method explains that companies can order raw materials in the optimal order quantity and order frequency with minimal inventory costs. This is supported by the opinion of Rangkuti (2004) which states that the EOQ method is a method used to determine the amount of raw material purchased at each order at the lowest cost (Rangkuti, 2004; Ventura and Samuel, 2016; Mokhtari, 2018). Calculation of feed raw material inventory control with the EOQ method can be seen in Table 5.

Table 5. EOQ and Ordering Frequency of Raw Materials in 2022.

Raw material type	EOQ (Kg)	Order frequency (times)
Soybean meal	4.426.773	10
MBM	1.131.681	3
CGM	519.709	6
DDGS	1.569.749	9

Source: Processed primary data, 2022.

The results of calculations using the EOQ method in Table 7 show that the optimal ordering amount of raw materials in soybean meal is 2,308,498 kg with an order frequency of 18 times. MBM raw material ordering amounted to 926,265 kg with a frequency of ordering 4 times. Ordering of CGM raw materials is 464,842 kg with a frequency of ordering 7 times and DDGS raw materials is 1,404,026 kg with a frequency of ordering 10 times.

The frequency of ordering is increased by reducing the number of raw materials, it is hoped that the ordering of raw materials can be properly controlled so that no excess raw materials are ordered (Aliyu *et al.*, 2018; Riza and Purba, 2018) so that the use of the EOQ method is useful in purchasing raw materials to reach the optimal ordering point (Wang and Ye, 2018). Ordering the total inventory costs that the company needs to incur when using the EOQ method can be seen in Table 6.

Table 6. Total Inventory of Feed Raw Materials by the Company EOQ Method in 2022.

Type of raw material	Total inventory cost (IDR)/period
Maybe soybeans	550.710.000.000
MBM	22.335.500.000
CGM	85.592.500.000
GGDS	165.146.250.000
Total	823.784.500.000

Source: Processed primary data, 2022.

Table 6 shows that the cost of raw material inventory for each raw material is very different. It can be seen that the cost of soybean meal inventory is the raw material with the highest inventory cost due to the high quantity of soybean meal used. Then there are DDGS and CGM as raw materials with high costs due to the high price of these raw materials. Meanwhile, MBM is a raw material whose inventory costs are fairly low compared to other raw materials due to the quantity of use and the low price of raw materials.

Calculate the cost of this inventory using the EOQ method so that the costs incurred are optimal. Keeping inventory appropriate is not an easy problem. When there is too much inventory, a large amount of cash is immobilized or in inventory assets, increasing inventory costs, and there is a possibility of damaged goods. However, when the quantity is too small, there is a possibility of stockouts can occur because the goods cannot be shipped immediately, and the



result of late delivery can be a loss (Pradana and Jakaria, 2020). Therefore, the EOQ method is used to determine the remaining inventory of raw materials, to minimize the cost of purchasing raw materials from suppliers based on data on the number of company production orders (Mokhtari, 2018). In addition, this method is certainly able to control the optimal amount of raw materials for companies to order from suppliers (Ventura and Samuel, 2016).

Comparison between Company Policy and EOQ: Method The EOQ optimization concept states that ordering costs will increase farm business expenses if the frequency of ordering increases more frequently. The results of the calculation of the optimization of inventory control of all raw materials between the EOQ (*Economic Order Quantity*) method and the farm company's inventory control policy on all types of imported poultry feed raw materials by the company, comparison of order frequency and order quantity can be seen in Table 7.

Table 7. Comparison of Ordering Frequency of EOQ Method and Company Method.

Raw material type	Order frequency (times)		Order quantity (Kg/order)	
	EOQ	Company	EOQ	Company
Soybean meal	10	4	4.426.773	9.000.000
MBM	3	4	1.131.681	840.000
CGM	6	4	519.709	860.000
DDGS	9	4	1.569.79	2.980.000

Source: Processed primary data, 2022.

Based on Table 7, there are differences in the frequency of ordering of the EOQ model and the number of orders made by the company. In soybean meal, it is recommended that the frequency of ordering be increased to 16 times with an order quantity of 2,580,980 kg/order, while the orders made by the company so far amounted to 4 times with a fairly large order quantity of 9,000,000 kg/order. This will cost the company because of the amount of capital spent with the amount of raw materials that are only stored in the warehouse. This also causes high storage costs in the form of insurance costs and damage costs.

In addition, the frequency of ordering MBM raw materials is the same as that of the company. This shows that specifically for MBM, the company needs to maintain the order frequency by slightly reducing the number of orders from 975,000 to 926,265 kg/order. Meanwhile, for CGM, it is necessary to increase the order frequency from 4 times to 7x, so that the number of orders that need to be made also decreases, namely 464,842 kg/order compared to what the company does at 937,000 kg/order. The last raw material, DDGS, is also recommended to increase the order frequency from the recommended four times to 10 times with the number of orders decreasing from 3,012,000 kg/order to 1,404,026 kg/order. This shows that if this is done, then this is a form of

mitigation against the opportunity for raw material damage caused during storage.

The difference in order frequency and order quantity between company policy and the EOQ method will certainly have an impact on the company's costs incurred by the company. The following is the difference in inventory costs between company policy and the EOQ method in Table 8.

Table 8. Difference in Inventory Costs of EOQ Method and Company Method.

Raw material type	Total inventory cost (IDR)		
	Company	EOQ	Difference
Soybean meal	587.250.000.000	550.710.000.000	36.540.000.000
MBM	27.510.000.000	22.335.500.000	5.174.500.000
CGM	109.865.000.000	85.592.500.000	24.272.500.000
DDGS	175.075.000.000	165.146.250.000	9.928.750.000
Total	899.700.000.000	823.784.250.000	75.915.750.000

Source: Poultry feed companies, 2022

Based on Table 8, the results obtained, and comparing the costs incurred between the use of the EOQ method and the company, it turns out that there is a difference in costs. The total cost of raw material inventory for the EOQ method is somewhat more economical than the total cost of inventory incurred by the company. There is a difference in the cost of soybean meal of IDR 36,540,000,000, MBM of IDR 5,174,500,000, CGM of IDR 24,272,500,000, and DDGS of IDR 9,928,750,000. Overall, the raw material inventory will have a cost efficiency of IDR 75,915,750,000. This will have a big impact on the company's finances, which have been experiencing large expenses. (Handoko, 1984; Swain et al., 2018; Rahmawati and Agung, 2016; Stevenson and Choung, 2014).

Safety Stock and Reorder Point: Taking into account the value of safety stock and reorder point is important in raw material inventory management. Raw material inventory will experience several obstacles including unexpected things such as natural disasters, damaged raw materials in transit, and others. However, this can be controlled properly if a good storage system is used. If there is a change in *safety stock* or *leadtime* due to the number of orders or unexpected things, the system can perform calculations from time to time automatically. The safety stock and reorder point values by feed companies can be seen in Table 9 as follows.

Table 9. Safety stock and Reorder Point of Raw Material Procurement.

Raw materials	Lead time (days)	Safety stock (kg)	Reorder point
Soybean meal	10-20	3,033,333	45 days
MBM	10	258,333	91 days
CGM	15	233,333	52 days
DDGS	10	1,210,000	73 days

Source: Processed primary data, 2022.



Based on table 9, the research results show that the safety stock that must be prepared by the company is 3,033,333, the amount obtained is quite low compared to the amount of safety stock by the company. The amount of stock stored by the company will have an impact on the frequency of costs incurred such as insurance costs and storage costs. Reorder point is important to anticipate the shortage of raw materials when needed. Determination of this reorder point needs to consider lead time (San-Jose *et al.*, 2009; San-Jose *et al.*, 2015). Companies can determine the number of orders for raw materials to suppliers and can find out the reorder point through EOQ optimization (Ventura and Samuel, 2016). Lead time is the waiting time required by the company in procuring raw materials from the time the raw materials are ordered until they arrive at the company (Singh *et al.*, 2018). The average lead time required by each raw material is calculated to be the same, namely 10 to 20 days.

Based on the results of the study, it is found that a company conducting efficient raw material inventory needs to consider the optimal order quantity called Economic Order Quantity (EOQ). This will have an impact on the amount of inventory costs which include ordering costs and storage costs. If this is done, the company will certainly benefit from cost efficiency.

DISCUSSION

Calculate the cost of this inventory using the EOQ method so that the costs incurred are optimal. Keeping inventory appropriate is not an easy problem. When there is too much inventory, a large amount of cash is immobilized or in inventory assets, increasing inventory costs, and there is a possibility of damaged goods. However, when the quantity is too small, there is a possibility of stockouts. (*stock out*) can occur because the goods cannot be shipped immediately, and the result of late delivery can be a loss (Pradana and Jakaria, 2020). Therefore, the EOQ method is used to determine the remaining inventory of raw materials, to minimize the cost of purchasing raw materials from suppliers based on data on the number of company production orders (Mokhtar, 2018). In addition, this method is certainly able to control the optimal amount of raw materials for companies to order from suppliers (Ventura and Samuel, 2016).

Companies can determine the number of orders for raw materials to suppliers and can find out the reorder point through EOQ optimization (Ventura and Samuel, 2016). Lead time is the waiting time required by the company in procuring raw materials from the time the raw materials are ordered until they arrive at the company (Singh, 2018). The average lead time required by each raw material is calculated to be the same, namely 10 to 20 days.

Based on the results of the study, it is found that a company conducting efficient raw material inventory needs to consider the optimal order quantity called Economic Order Quantity (EOQ). This will have an impact on the amount of inventory

costs which include ordering costs and storage costs. If this is done, the company will certainly benefit from cost efficiency.

Conclusion: The company's supply of raw materials has been carried out on an ongoing basis with excess orders, this can be seen from the large number of unused materials, resulting in high ordering and storage costs. Raw material inventory calculated using the EOQ method can result in cost savings compared to actual costs in the company. Calculations using the EOQ method, companies can find out the optimal amount that can be ordered of a raw material in a certain period and the costs that must be incurred. This means that raw material costs and their use can be controlled as well as possible. So companies can reduce the risk of damage during storage or shortages of raw materials during the production process. If this is implemented, the company can certainly gain benefits in the form of efficiency in raw material inventory costs amounting to IDR 75,915,750,000

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