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Efficiency of Raw Material Using the Economic Order Quantity Method

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Abstract

The purpose of this study is to examine more deeply about the use of methods quantiy Economic Order (EOQ) in the cantrol af raw materials companies Brownies Burn Lyn's. The result Showed the optimal inventory of raw materials flour using EOQ method is 2445kg with a frequency of purchase as 5 times, safety stock is 248kg and ROP done at the time the raw material warehouse at 338kg and TIC Rp 2.945.963.00 optimal supplies of sugar with EOG method is 2998 kg, with a frequency of purchive as 6 uimes safety stock is 330 kg and ROP should be done at the time the raw 450kg while the TKR Rp3,46l 934,00.The quantity of supplies raw material warehouse material with EOG method is more efficient than the company conventional method inventary optimal inventory and total cost savings can be Obtained by the method of EOO so the company can gain the maximum profit. For the furture Similar themes of research on the subject of using optimal inventory in micro and medium enterprises is expected to compare with methods of optimal order invetory in order to Obtain more effective and efficient result.

INTRODUCTION

A primary goal of the company has made a profit, in the process of achieving these objectives will be influenced by various factors, one factor that is smooth production (Fajrin, 2016). Family financial management is not based on the rules of financial management in general, but is based on the psychological state of management (Subiaktono, 2013). However, to achieve the company's goal is not easy, because to achieve the goal companies proficiency level is influenced by several factors, of which the company must have good management so that companies are able mengandalikan these factors to achieve corporate objectives. One of the factors influencing that the problem mainly menegenai smooth production enterprise inventory management. Based on the above concept, the quality of management is one of the key factors for the success of the company as the manufacturer or seller of services and can not be denied in today's business world (Hendrajaya, 2011). Appropriate inventory expressed (Sumayang, 2003) is an asset which includes goods - goods belonging to the company with the intent to sell within a period of normal business, or supply of goods - goods that are still in progress or finished process or raw material inventories to wait in the production process. The problem of production is a very important issue for the company because it will affect the size of profits from the company. If the production process runs smoothly, the purpose of the company will be easy to achieve, and vice versa when the company's production process does not go smoothly then the company's goals can not be achieved (Haming & Nurnajamuddin, 2007).

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A company has a goal for the prosperity of the owner in this case the shareholders by increasing the value of the company, managers can meet the expectations of its shareholders will be superior performance by creating strategies that valuable and difficult to imitate by competitors (Cahyaningdyah & Ressany, 2012). Smooth production process is influenced by the availability of raw materials for the production process the company at a cost - a cost that affect it, so that each company will try to achieve an optimal state to maximize profits or minimize the costs incurred in the production process (Karomah, 2016).

Optimization is a process to achieve the ideal or optimal results. Companies in business strives to achieve optimal profit for the survival of the company and the development of the company itself (Arifianti, 2013). With optimal inventory company will be able to determine how large the supply of raw materials in accordance with the needs of production companies, so there is no waste in the use of the cost of being able to balance the need for raw materials in accordance with the production needs of the company, in this case not too large amount of raw materials purchased or not too small. In conducting the funding decisions, companies also need to consider and analyze the combination of economical sources of funds to finance investment requirements and business activities (Ridloah, 2010).

Inventories of raw materials is an important factor in the company to support the production process (Taufiq & Slamet, 2014). Optimal inventory based (Slamet, 2007) can be achieved if it is able to balance multiple factors on the quantity of product, product durability, the length of the period of production, storage facilities and storage costs of supply, adequacy of capital, the need for time distribution, protection of the labor shortage, protection of the shortage of material prices and supplies as well as the risks that exist in stock. Optimal inventory will be able to streamline the company's expenses such as fees and storage costs of raw materials issued in connection with the activities of raw materials purchased storage cover maintenance costs, insurance costs, warehouse rental costs and fees in the event of damage to materials stored in a warehouse (Deitiana, 2011).

Amount or rate of the supplies needed by the company is different for every company, factory, depending on the volume of production, the type of plant, and processes (Indriyani & Slamet, 2015), to achieve the level of efficiency in the use of raw materials in stock, the company with good management should establish the optimal amount of inventory. Optimal inventory by Slamet (2007) will be achieved if it is able to balance multiple factors on the quantity of product, product durability, the length of the period of production, storage facilities and storage costs of inventory, capital adequacy, needs time distribution of protection regarding the shortage of direct materials and spare parts, the protection of the labor shortage, protection the equipment and materials price increases and risks in stock.

Inventories Raw materials of a company is one of the requirements necessary to carry out a process for the production of goods. According to Heizer and Barry (2010). If the raw materials are not available, the production process can not be done. Therefore it is necessary for the provision of raw materials by the company. The amount of raw material that is required of companies affected by the amount of production enterprises. While the magnitude of the company's production is influenced by the level of demand for a product produced by the company, so that in determining the supply company must always take into consideration the amount of raw materials used during the period (Nafarin 2008). Employees also will receive perceptions about the quality of service expected by the company, as well as support and appreciation from management to employees on their performance (Martono, Wulansari, Putri & Khoiruddin, 2016). In order for inventory costs to a minimum, then in a period of large amount of supply of raw materials should be in accordance with the amount of raw material consumption. The efficiency of raw material inventory is very important to minimize costs. If the excess inventory of raw materials or the costs at Overstock will appear higher (Zulfikarijah, 2005). Excess inventory of raw materials lead to higher costs in warehouse and storage materials will experience swelling of the production costs (Andini & Slamet, 2016).

Brownies factory Lyn's Grill is a company engaged in the food industry is making bread. The main raw material used in the production process which Dragon wheat flour, sugar and other adjuvants. At Brownies Factory Fuel Lyn's policy digunkan in the management of raw material inventory management is to set policy in the conventional purchase of raw materials, namely by doing The purchase of raw materials continuously without estimating needs. This policy was taken by the company in anticipation of the event of shortage of raw materials during the production process, but it is also used as a backup supply in case of delay in delivery or if the events - events that are unpredictable (force majeure)

that can stop the delivery of raw materials, so the company they can fulfill the responsibility for the production. The management system awards have become an important focal point in any organization as determinants of well-being and performance of employees is high (Martono, et al, 2018).

Wheat flour and sugar are the main raw materials used for the production process in the company, so the existence of these main raw materials is always a concern when compared to other auxiliary materials such as margarine, eggs, bread developers and others. When compared with other raw materials, wheat flour and sugar are the main raw materials, the amount of which is always excess when compared to the iron stockpile, so this research only focuses on the main raw materials, which are wheat flour and granulated sugar.

This was done in anticipation of shortages, delays in delivery or failure of delivery. Brownies factory's Grill Lyn's raw material inventory purchases with 2 hari.berikut waiting time table Raw Flour 2018. The study will be conducted by comparing the total cost of supplies (TIC) of the calculation method of EOQ with total inventory cost (TIC) of the method conventional. If the TIC using conventional methods is greater than the TIC EOQ method of inefficiency. This means that by using the conventional method in the company's raw material inventory control is inefficient or can not be optimal. Companies using the EOQ method for the raw material inventory control can save costs from the calculation of the difference between the conventional method and the method TIC EOQ. Conversely, if the TIC using conventional methods is lower than the EOQ method, it is not necessary for the application of EOQ method increasingly inefficient and cause waste (Slamet, 2007). The comparison will membuktikana whether the method of supply of raw materials used by the company is more efficient than using the EOQ method, or otherwise using the EOQ method supplies of the company will be more efficient than the method used by the company.

This research is a replication of other studies with different objects, so it can be seen that the application of the Economic Order Quantity Method is very suitable and effective or not in the calculation of raw material inventories. This research is expected to produce the concept of calculation regarding inventory management, especially the optimal supply of raw materials. For Lyn's Burn Brownies Factory, this research can be used as an evaluation material for managing raw material inventory that has been used by the company and can help provide information to create imp-

Table 1. Inventory Flour 2018

No.	Month	Stock Early (Kg)	Purchase (Kg)	Usage (Kg)	Stock End (Kg)	Stock Iron (Kg)	Inventories After Deduct Safety Stock (Kg)	Information
1	January	250	1295	1170	375	248	127	More
2	February	375	1045	1035	385	248	137	More
3	March	385	1125	1125	385	248	137	More
4	April	385	1085	1080	390	248	142	More
5	May	390	1085	1080	395	248	147	More
6	June	395	845	810	430	248	182	More
7	July	430	1165	1170	425	248	177	More
8	August	425	1125	1125	425	248	177	More
9	September	425	1085	1080	430	248	182	More
10	October	430	1205	1215	420	248	172	More
11	November	420	1125	1125	420	248	172	More
12	December	420	1075	1080	415	248	167	More
Total			13260	13095	4895		1919	
Per month			1105	1091.25				

Source: Data Factory Fuel Lyn's Brownies have been processed

roved company inventory management that leads to better company conditions.

From the data in table 1 it can be seen that the raw materials each month is always available in the factory for the production process. Every day the factory production process with total production obtained from the initial inventory (inventory end of the previous month) plus the purchase of raw materials. From the data in table 1 it can be seen that the plant requires raw materials amounting to 13 095 kg in one year the company require an average of 1091 kg in a month. With a lead time of two days to overcome the threat of delays in raw materials will be obtained supplies of iron by 248 kg, which is obtained from the calculation of the use of the large (raw material consumption maximum) minus the average - average consumption of raw materials for 12 weeks, and multiplied with the lead time which has been determined by the company. From the data in Table 1 are known almost every month the plant always has excess raw material inventory.

Based on exposure to the theory and the facts on the ground show gaps in using conventional inventory count. The conventional calculation method does not provide efficient results in applying the raw material inventory. Therefore, by using the method of Economic Order Quantity (EOQ) is able to make a calculation of raw material inventory to be more efficient and produce keuntugan more than the method used by companies. Economic order quantity (EOQ) is used for inventory control problem in which inventory carrying costs and the cost of the order is uncertain (Appado, 2016). Economic Order Quantity method is an appropriate model to be applied in the factory Brownies Lyn's Grill in determining the optimal inventory.

METHOD

The type of research used quantitative researchers are peneitian. By using the design in the form of search research. Search research as expressed (Anwar, 2012) is looking at the road that has been passed or discover what happened in the past, or in other words "track". In this study, the method used to mill Brownies Fuel Lyn 'is the Economic Order Quantity (EOQ) to measure the optimal inventory figures. This research was conducted at the company's factory Brownies Burn Lyn's located in Patemon, district. Gn. Pati, Semarang, Central Java 50 228.

The Lyn Burn Fuel Brownies Factory was founded by Ibu Budiarti Spd ,. in 1995. Initially this company did not have experts and used makeshift tools. At the first time of production, per day can only produce a limited range of 1-2 kg of flour / day, with perseverance and tenacity that always motivates the owner, this factory can expand its wings in the business world even reaching out to the city. Until now this company can grow and reap the success of all the efforts and efforts that have been carried out so that it can surpass the previous success.

The company is engaged in the business of production of bread with raw materials of flour and sugar. The variables studied include inventories of raw materials and the method of Economic Order Quantity. Variable based on exposure (Arikunto, 2006), Is a phenomenon that varies is the object of research. appropriate exposure (Arikunto, 2006) collecting data was observed variables to be studied by the method of interview, observation tests, questionnaires, etc. The method used in this research is descriptive method.

Descriptive methods based on exposure (Arikunto, 2006) is processing with statistical formulas that have been provided, either manually or by using the computer software. data analysis used to answer the problem of this study using Economic Order Quantity (EOQ). To get the amount of raw material purchases optimum every time a reservation at minimal cost by (Taufiq & Slamet, 2014) can be determined by the Economic Order Quantity (EOQ) and Reorder Point (ROP). EOQ calculation can be formulated as follows;

$$EOQ = \sqrt{(2.R.S)/(P.I)}$$

Where in :

R = The quantity needed for a certain period

S = The booking fee each time a message is called the procurement cost or ordering cost or setup cost.

P = Price of material per unit

I = Raw materials warehouse storage costs expressed as a percentage of average inventory value in the currency called the carrying cost or storage cost or holding cost.

PXI = The cost of raw materials per unit of storage.

Frequency of Purchase

Purchase frequency compatible with the exposure Deanta in Rifqi (2012: 40) can be formulated as follows:

$$I = D/EOQ$$

Where in :

I = Frequency of orders in one year

D = The amount of material requirements for a year

EOQ = Number of messages materials purchasing

Stocks Security (safety stock)

Safety stock in (Heizer & Barry, 2010) is minimum number of supplies that must be owned by the company to maintain the possibility of delays in the arrival of raw materials, so there is no stagnation. The amount of safety stock after the disclosed (Slamet, 2007) determined by the formula:

Safety Stock = (Maximum usage-average usage) x Lead time

Reorder point (reorder point)

In determining the reorder point should mempehatikan things like the use of materials for a period of time before the order came, the amount of safety stock. As it pertains to how the rest of the inventory contained in warehouse, there was a re-ordering. Formulations within the reorder point (Slamet, 2007) is as follows:

Reorder Point = (LD x AU) + SS Specification

Where in :

LD = Lead time or timeout

AU = Average unit or average usage during the waiting time

SS = Safety stock or safety stock

Total cost of inventory (Total Inventory Cost)

In calculating the total cost of inventory, aiming to prove that the presence of the number of purchases of raw materials are optimal, which is calculated by the method of EOQ will achieve total inventory cost of raw minimal (Fazel, 1997), Total Inventory Cost (TIC) as expressed(Zulfikarijah, 2005)can be formulated as follows:

$$TIC = \sqrt{2.D.S.h}$$

Where in :

D = The number of items in the unit needs

S = The booking fee each time a message

h = Storage costs

RESULTS AND DISCUSSIONS

Based on the research that has been done at the factory Brownies Burn Lyn's got that reservation flour raw material is not optimal. This is because the company sets the conventional method in organizing supplies of raw materials. The policy can not take into account the optimal purchase aimed at controlling raw materials appropriately.

The purchasing of raw materials by companies always experience keebihan in an amount not less, so that it will spend tersedi-ri. In the period studied, the company made a purchase as many as 12 times in one year in large numbers. Purchase of Raw Materials Brownies Fuel Flour mill Lyn's, can know the total amount of purchases during the year amounting to 13260kg with an average purchase 1105kg per month. Average user separately flour raw material used by the company in production can be known by 45kg.

Use of Raw Flour, obtained information on the number of raw material usage for one year amounted to 13095kg with an average usage per month worth of 1091kg. Booking fees Raw Materials Wheat Flour, it is known that the cost of each book company issued Rp 125,000.00 for unloading and shipping costs, while for the phone costs Rp 150,000.00. Cost of Raw Material Storage of Wheat Flour, known storage cost per unit of Rp 1204.00 which is obtained by dividing the total cost divided by the storage of wheat flour flour raw material inventory. Then the Economic Order Quantity (EOQ) for the raw material flour in the mill Brownies Burn Lyn's as follows:

EOQ = √(2RS/PL)

EOQ = √(2(13095 X 275000)/1205)

EOQ = √5976970,95

= 2444,78kg = rounded 2445kg

Frequency of Purchase= 5,35(Rounded up to 5 times)

Based on Table 2 the amount of raw material purchase wheat in 2018 using the company's policy for one booking of 1105kg with a frequency of 12kali. This policy is less effective when compared to using Economic Order Quantity (EOQ). If using EOQ method will produce a difference in the purchase / quantity of flour raw material of 1340kg and frequency of purchase as much as 7 times. With the presence of the calculation of the purchase of raw materials wheat

Table 2. Comparison of Quantity and Frequency of Purchase Wheat Flour between the Conventional Methods and Economic Order Quantity (EOQ) at Brownies Factory Fuel Lyn's 2018

Year	Company policy		Method EOQ		Difference	
	Purchase	Frequency	Purchase	Frequency	Quantity	Frequency
2018	1105kg	12	2445kg	5	1340kg	7

flour using Economic Order Quantity (EOQ) will gain optimal purchase (Andini, 2016).

Optimal inventory quantity will be reached at the point keseimbang between the cost of storage with the booking fee (Heizer & Barry, 2010), Burn Lyn's Brownies factory in conducting usahan should avoid delays in delivery of raw materials from wheat flour or threat of delivery failure by setting safety stock (safety stock). To menhitung safety stock required maximum consumption data within one year, then the average usage and lead time.

Table 1 is the use of Raw Flour can be seen that the use of a maximum of 1215kg and use the average is 1091 with a lead time of 2 days.

Safety Stock = (Max usage - usage on average) x LD
= (1215 - 1091) x 2
= 247,5kg

Safety stock of flour should always be on Bakr Lyn's Brownies factory in one month is 248 kg.

For the time reordering (reorder point) flour raw material using Economic Order Quantity (EOQ) needed for acceptance of orders of raw materials in a timely and appropriate. Reorder Point (ROP) is the time in which at some point had to be held back ordering raw material flour in the mill Burn Lyn's Brownies. Calculation of the reorder point as follows:

Reorder Point(ROP) = (LT x AU) + SS
= (2 x 45) + 248
= 338kg

The result of the calculation of safety stock and reorder point flour raw material at the factory Brownies Burn Lyn's using Economic Order Quaantity (EOQ), can be seen in Table 3 as follows:

Table 3 Results of Safety Stock and the Reorder Point Raw Flour

Year	Safety Stock	Reorder Point
2018	248kg	338kg

safety stock Companies must-have for raw materials amounted to 248kg of wheat flour. Then to reorder point when the raw material is wheat flour warehouse is worth 338kg. The total cost of inventories of raw materials wheat flour can be calculated using the formula Total Inventory Cost (TIC). Based on EOQ method, the calculation of the total cost of raw material inventory of the flour factory Fuel Lyn's Brownies are as follows:

TIC (EOQ) $= \sqrt{2.D.S.h}$

$= \sqrt{2x13095x275000x1205}$
= Rp2.945.963,00

Based on the calculation of Total Inventory Cost (TIC) raw material flour EOQ method is known that TIC flour raw materials in 2014 was Rp2.945.963,00.

For the calculation of the raw material flour TIC conducted Factory Fuel Lyn's Brownies using conventional methods can be seen as follows:

TIC = (Total cost of storage) + (P) (F)
= (500,000) + (275 000) (12)
= USD 3,800,000.00

Based on the calculation of Total Inventory Cost (TIC) flour raw material using conventional methods on the factory Brownies Burn Lyn's got that in 2018 the company issued TIC Rp 3,800,000.00

Comparison of Total Inventory Cost (TIC) raw material flour using conventional methods and using Economic Order Quantity (EOQ) can be seen in Table 4 as follows:

In Table 4 can be seen the difference between the Total Inventory Cost (TIC) flour raw material at the company between using conventional methods and policies when using Economic Order Quantity (EOQ). The difference when companies use EOQ method Rp 854,037.00

This indicates that the company policies regarding the total cost of inventory is not efficient in saving costs. Meanwhile, if using EOQ company may be able to improve efficiency of

Table 4. Comparison of Total Inventory Cost (TIC) Wheat Flour Raw Materials Using Conventional Methods and Methods Using the Economic Order Quantity (EOQ) at Brownies Factory Fuel Lyn's 2018

Year	TIC conventional methods	TIC EOQ	Change in cost
2018	USD 3,800,000.00	Rp2.945.963,00	Rp 854,037.00

Table 5. Comparison of Quantity Purchase of Stock Sugar Between Conventional Method Method Economic Order Quantity (EOQ) at factory Lyn's 2018 Fuel Brownies

Year	Company policy		method EOQ		Differ-ence	
	Purchase	Frequen-cy	Purchase	Frequen-cy	Quantity	Frequency
2018	1477kg	12	2998kg	6	1512kg	6

the total cost of raw material supplies flour to save Rp 854,037.00.

Based on the results of research conducted at the factory Brownies Burn Lyn's related to raw materials, there is information about the company in control of the raw material sugar is not optimal because they still use conventional methods in its calculations. Company made total purchases in one year's worth of 17725kg with an average purchase per month of 1477kg in the frequency of 12 times. Use of materials

raw in one year amounted to 17460kg with average usage per month at 1455kg. The cost for a message is USD 75,000.00 for the cost of shipping and unloading supplies and US $ 150,000.00 for the cost of the phone. Storage costs of raw materials Sugar Rp 450.000,00, and to determine the cost per unit is stored, it can be searched by dividing the costs incurred by the number of inventories of raw materials, so that the cost per unit of Rp 874.00. Then the calculation of EOQ inventory Brownies sugar factory Fuel Lyn's can be seen as follows:

$$EOQ = \sqrt{\frac{2DS}{PxI}}$$
$$= \sqrt{2x17460x22500}$$
$$= 874$$
$$= \sqrt{8989702,52}$$

= 2998.28 kg or rounded up to 2998kg

For frequencies can be searched by:

Frequency of purchase = 5.82

rounded to 6 times

Based on the calculation of the quantity of raw material inventory optimal sugar based method Economic Order Quantity (EOQ) the obtained difference calculation of the quantity of inventory by conventional methods. The difference can be seen in Table 5 as follows:

From table 5 sugar purchases of raw materials by the company using the conventional method amounted to 1477kg in one message with a frequency of 12 times a year. It is different when using Economic Order Quantity (EOQ) in the purchase of raw materials quantity of sugar, by at 2998kg in one message and in fekuensi 6 times the purchase. Purchase of raw materials to the quantity is not too large and the frequency that will often result in increased cost of the booking fee.

Use of the method Economic Order Quantity (EOQ) in the purchase of raw material inventory sugar with the optimal amount and frequency of the less it will produce an efficient booking fees. The difference between the conventional method and the method of use Economic Order Quantity (EOQ) in the purchase of raw materials of sugar is equal to 1512kg and the difference in the frequency of 6 times. Then the method Economic Order Quantity (EOQ) can be done for the purchase of raw materials optimally sugar.

Burn Lyn's Brownies factory in anticipation of a shortage of raw material supply of sugar (stock out) and avoid the threat of delays in delivery or failure of delivery of the need for safety stock. To set up a safety stock (safety stock) required the use of data from a maximum in one year, an average usage and lead time.

The maximum consumption of raw materials of sugar in one year is 1620 kg with a monthly average of 1455kg and lead time for 2 days. To find out how much safety stock can be searched as follows:

Safety Stock = (Mak usage - usage on average) x LD

= (1620-1455) x2

= 330kg

Then to process the booking time back (reorder point), which aims to smooth production, it is necessary to use the method of Economic Order Quantity (EOQ). The amount Reorder Point (ROP) is the amount of raw material usage during the lead time which is summed with the safety stock.

ROP raw material sugar by Plant Fuel Lyn's Brownies can be calculated as follows:

Reorder Point
= (LD X AU) + SS
= (2 x 60) + 330
= 450kg

Based on the calculation of safety stock and reorder point in the raw material sugar using Economic Order Quantity (EOQ), obtained the following results:

Table 6. Results of Safety Stock and the Reorder Point Raw Sugar

Year	safety Stock	Reorder Point
2018	330kg	450kg

From Table 6 shows that the safety stock of raw material sugar that must exist to ensure the production at the factory Brownies kelacaran Burn Lyn's using Economic Order Quantity (EOQ) is worth 330kg. As for reordering (reorder point) granulated sugar feedstock by the company do when there is a stock of raw materials warehouse at 450kg.

The total cost of factory inventories Brownies Burn Lyn's raw material for sugar can be determined using the formula Total Inventory Cost (TIC). Calculation of Total Inventory Cost (TIC) using Economic Order Quantity (EOQ) is formulated as follows:

Total Inventory Cost (TIC) = √2. D. S.h
$=\sqrt{2x17460x22500x874}$
= USD 2,620,496.00

Based on the calculation of Total Inventory Cost (TIC) using methods Econimic Order Quantity (EOQ) against inventories of raw materials on the factory Brownies sugar Burn Lyn's is Rp 2,620,496.00

As for knowing Total Inventory Cost (TIC) using conventional methods for raw material sugar at factory Fuel Lyn's Brownies can be calculated with the following formula:

Total Inventory Cost (TIC)

= (Total storage costs) + (P) x (F)
= (USD 450.000,00) + (225000) x (12)
= USD 3,150,000.00

Based on the results of the calculation of the total cost of inventory (TIC) raw material sugar on Lyn's Grill Brownies plant using conventional meto get the Rp 3,150,000.00.

Compared with the calculation of Total Inventory Cost (TIC) that using Economic Order Quantity (EOQ), the calculation of the total cost of raw material inventory in the conventional granulated sugar there are differences in values, which can be seen in Table 7.

From the data presented in Table 7 shows that the calculation results Total Inventory Cost (TIC) with the conventional method and the calculation of Total Inventory Cost (TIC) that using Economic Order Quantity (EOQ) there is a difference of US $ 529,504.00. This suggests that policies Burn Lyn's Brownies plant with the conventional method in calculating the total cost of inventory is inefficient compared to using the calculation of total cost of inventory that using Economic Order Quantity (EOQ) with a considerable margin of USD 529,504.00. of calculation

The method EOQ company can make savings of US $ 529,504.00.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results penelitiandan discussion, it has been concluded that raw material control policy determination using Economic Order Quantity (EOQ) is more optimal and more efficient than the determination of raw material control with conventional methods determined by the company. Ameliorating or EOQ inventory is food supply utility increases from time to time with ameliorating activation (Panda et al, 2013).

Table 7. Comparison of Total Inventory Cost (TIC) Sugar Raw Materials Using Conventional Methods and Methods Using the Economic Order Quantity (EOQ) at Brownies Factory Fuel Lyn's 2018

Year	TIC conventional methods	TIC EOQ	Change in cost
2018	USD 3,150,000.00	USD 2,620,496.00	Rp 529,504.00

It can be proved by the presence of the optimal purchase of raw materials and savings Total Inventory Cost (TIC) as follows:

Purchases of raw materials of flour companies using conventional methods in 2018 amounted to 1105kg with a frequency of purchase as many as 12 times. the optimal inventory is sbesar 2445kg. For the calculation of raw material inventory based sugar optimal EOQ method amounted to 2998kg. ROP raw material for wheat flour in 2018 amounted to 338kg, while the ROP for the raw material sugar is equal to 450kg.

For the calculation of Total Inventory Cost (TIC) EOQ method of raw materials from wheat flour generate USD 2,945,963.00 while EOQ TIC using raw materials of sugar amounted to USD 2,620,496.00. Total supply of both raw materials from wheat flour and sugar is more efficient using the EOQ method has been demonstrated by the difference in the cost of wheat flour Rp 854,037.00 and for the raw material sugar is Rp 529,504.00

Then the researchers can not give advice For management company Brownies Burn Lyn's factory in production management company should pay more attention to the quantity in the purchase of raw materials production, it would be better also if the company implemented a detailed recording system are managed so that it will be known when the company suffered losses. The management company can apply raw material control using Economic Order Quantity (EOQ) for the calculation of EOQ companies to optimize inventory and can minimize inventory costs. For further research on the theme is similar should use methods other than the EOQ method such as methods Product Order Quantity (POQ) and the model of quantity discount in researching the calculation of raw material control and can compare it with EOQ method which may yield more efficient results in the calculation of the raw materials.

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