Analysis Of Handling Of Fertilizer Raw Material Stock Delay Using Safety Stock And Reorder Point Methods In Gresik Fertilizer Company

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A R T I C L E I N F O

Jurnal Economic Resources

ISSN: 2620-6196
Vol. 7 Issues 2 (2024)

Article history:
Received - 12 September 2024
Revised - 15 December 2024
Accepted - 20 February 2025

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Keywords:
stock delays, safety stock, reorder point, inventory management, lead time.

A B S T R A C T

This research analyzes the handling of delays in stock of fertilizer raw materials at the Pupuk Gresik Company by applying the safety stock and reorder point methods. The main problem faced by the company is the lack of supply of raw materials due to short arrival times and seasonal demand, which has an impact on smooth production. This research uses a qualitative descriptive approach with observation methods, interviews with the President Director and Head of Operations, as well as analysis of historical data related to the use of raw materials, lead time and delivery delays. The research results show that companies still use manual recording in inventory management, which contributes to low accuracy in stock planning. By implementing the safety stock and reorder point methods, companies can determine the optimal amount of reserve inventory and more effective reorder points to achieve the desired service level (95%). The implementation of this method is expected to reduce the risk of delays in raw materials and increase operational efficiency at the Gresik fertilizer company.

INTRODUCTION

Raw material inventory is a key factor in the smooth running of the production process in the manufacturing industry, including in the fertilizer production sector. Without adequate inventory, companies may experience obstacles in meeting market demand, leading to distribution delays and potential operational losses. According to Heizer and Render (2015), inventory is the most expensive asset in a company, representing 50% of the total invested capital. Therefore, optimal inventory management is very important to maintain production stability.

This company is a company engaged in the production and distribution of fertilizers since 2006, facing challenges in managing raw material stocks. This company relies on three main raw materials, natural phosphate, dolomite flour, and calcium supplied from one main distributor. Based on the results of the Pre-Research with the Head of Operations, it was revealed that there were obstacles in the availability of raw materials that had an impact on the smooth running of the production process. Who said that:

"The most common problem here is the delay in raw materials, especially natural phosphate, dolomite flour, and calcium. If the raw materials arrive late, production is automatically disrupted, sometimes even having to stop completely,"

Based on the results of the Pre-Research, it can be concluded that the main problem faced by the company is the delay in the supply of raw materials. This is caused by high fluctuations in demand during certain agricultural seasons, so that the supplier's capacity to fulfill orders becomes unstable.

Currently, Gresik Fertilizer Company still uses manual methods in managing raw material inventory. Orders are made based on experience and direct observation of the stock in the warehouse. When stock is running low, the company immediately places a large order. This approach is less effective because it does not consider demand fluctuations and lead time uncertainty, so the company often experiences stock

shortages that hamper the production process. This is based on pre-research evidence from interviews with the head of operations of the Gresik Fertilizer Company. Who said that:

"So far, raw material orders have only been made based on estimates, there is no system that ensures that stock is always safe. So if there are obstacles from the supplier, we can't produce because the raw materials are out of stock."

This problem shows that the manual inventory management system makes it difficult for the company to anticipate supply delays. The absence of a structured system in determining when to reorder results in a higher risk of running out of stock. To further understand the level of delays in raw material supply experienced by the company, the following is Table 1. Data on Delays in Raw Material Stock Delivery showing the frequency and duration of delays in delivery from suppliers.

Table 1. Data on Delays in Fertilizer Raw Materials (Days) for the Period 2024 at the Gresik Fertilizer Company.

No	Month	Raw Material Delivery Delays for 2024 (Days)		
		Phosphate Rock	Dolomite Flour	Calcium
1	January	2	3	1
2	February	3	2	4
3	March	5	4	5
4	April	6	5	3
5	May	3	3	4
6	June	4	2	3
7	July	5	4	2
8	August	3	2	2
9	September	1	2	1
10	October	4	2	1
11	November	3	2	2
12	December	5	2	4
Total		**44**	**33**	**32**

Source: Gresik Fertilizer Company (2024)

Table 1 shows that the delay in raw material delivery at Gresik Fertilizer Company during the 2024 harvest varied each month, natural phosphate experienced the highest delay (44 days), followed by dolomite flour (33 days) and calcium (32 days). This shows that fluctuations in demand during the planting season and distribution uncertainty have a significant impact on supply delays, which can hamper fertilizer production and disrupt company operations.

The company needs to overcome the problem of delays in raw material stock by implementing a more structured method in inventory management. One solution that can be applied is the Safety Stock and Reorder Point method. According to Assauri (2019) explains that managing raw material inventory is very important for the smooth running of the production process, with safety stock functioning as a reserve stock to anticipate demand uncertainty and supply delays. According to Aslamiyah (2023) also emphasized that good inventory management can improve the company's operational efficiency. Meanwhile, Aslamiyah (2024) stated that effective inventory management contributes to a company's competitive advantage in the global market. With safety stock, companies can reduce the risk of running out of raw materials which can disrupt the production process. In addition, Aslamiyah (2021) showed that implementing the right method can optimize cost efficiency. Therefore, the Safety Stock and Reorder Point methods are very relevant to improving the company's operational performance.

Research conducted by Bawono & Erik (2023) shows that the combination of the Reorder Point and Safety Stock methods can reduce the possibility of stockouts by up to 70% and increase production efficiency. This indicates that the implementation of both methods simultaneously has a strong influence in ensuring the availability of sufficient raw materials and supporting the smooth running of the production process. Meanwhile, Heru Winarno & Syahrul M. Dhani (2023) explain that companies that do not

implement the Reorder Point system tend to reorder manually without considering lead time and actual needs, which results in delays in the supply of raw materials. In addition, research by Itsna et al. (2023) shows that the use of Safety Stock and Reorder Point simultaneously can optimize the availability of raw materials and reduce production disruptions by 60%. These findings emphasize the importance of implementing both methods in inventory management to improve the company's operational efficiency.

Based on the problem of raw material stock delays experienced by the company and the findings of previous studies, this study aims to analyze raw material stock delays at the Gresik Fertilizer Company and apply the Safety Stock and Reorder Point methods as solutions to improve inventory management efficiency. By implementing these two methods, it is hoped that the company can reduce the risk of delays in raw material supply, maintain smooth production, and minimize storage and ordering costs. This study is also expected to provide recommendations that can help companies improve their inventory management systems to be more structured, efficient, and effective. With these improvements, the company is expected to increase its competitiveness in an increasingly competitive market and ensure more stable operational continuity.

RESEARCH METHOD

Type of Research

In this study, the author uses a qualitative research type with a descriptive approach. According to Sugiyono (2019), qualitative research is a research method used to examine the condition of an object naturally, where the researcher acts as the main instrument in data collection. This study aims to analyze the handling of raw material delays through the application of the safety stock and reorder point methods in the company. The data analysis techniques used include in-depth interviews with parties involved in the management of raw material inventory and the collection of documentation data related to historical data on raw material usage, lead time, and inventory policies implemented in the company.

Place and Time of Research

The place of this research was conducted at the Fertilizer Company in Gresik Regency, East Java 61153. The research time was conducted from January 2025 until completion.

Analysis Unit

This study uses the Purposive Sampling technique to select relevant informants who have high competence related to the research topic. Purposive Sampling is a sample selection technique based on certain criteria that are in accordance with the research objectives (Sugiyono, 2019). This technique is used in qualitative research by selecting subjects or units of analysis that have high relevance and can provide in-depth insights into the research topic. The selection of informants in this study was based on the following criteria:

1. Active employees at the Gresik fertilizer company.
2. Employees who have direct involvement in the management of fertilizer raw material stock
3. Employees who understand the application of the Safety Stock and Reorder Point methods.

Based on the above criteria, this study selected three main informants who have strategic roles in the management of raw material stock at the Gresik fertilizer company, namely:

1. President Director

   Responsible for raw material procurement policies and the implementation of reserve stock and reorder methods.
2. Head of Operations

   Supervises the management of raw material stock and ensures smooth production.
3. Admin

   Manages stock recording and the number of reorders.

Types, sources, and Data Collection Methods

The type of data used in this study is qualitative data related to the analysis of handling delays in fertilizer raw material stock using the Safety Stock and Reorder Point methods at the Gresik Fertilizer Company. The data sources used consist of primary data, obtained through interviews with the head of operations and production, the main director, and the company admin, and secondary data, derived from reports on the use of raw materials, data on late delivery, and lead time records in ordering raw materials.

Data collection methods in this study include observation, interviews, and documentation to obtain more in-depth information regarding the raw material stock management strategy in the company.

RESULTS AND DISCUSSION

Research Results

Gresik Fertilizer Company is a company engaged in the production of fertilizers, dolomite, and natural phosphates to support the agricultural and plantation sectors in Indonesia. Established since November 2006, this company is committed to providing high-quality products to improve soil fertility and agricultural yields. Located in the Gresik area, East Java, this company utilizes available natural resources to create effective solutions for farmers. With experience and innovation that continues to be developed, Gresik Fertilizer Company strives to provide long-term benefits for the agricultural sector and implement environmentally friendly business practices to maintain the sustainability of the ecosystem.

The company's vision is to support the agricultural and plantation sectors in Indonesia by providing high-quality products. To achieve this vision, the company has several main missions, namely producing fertilizers, dolomite, and natural phosphates that meet high quality standards, implementing environmentally friendly production processes, and building close partnerships with farmers and other stakeholders. In addition, the company aims to create a positive image as a reliable and socially responsible agricultural solution provider, so that it can make a real contribution to the progress of national agriculture.

The research results obtained by the researcher are based on in-depth interviews with related informants, direct observations in the field, and analysis of data collected from company documentation. Interviews were conducted with the President Director and the head of operations, in January 2025. The purpose of this interview was to identify and analyze the fertilizer raw material procurement process and measure the impact of late deliveries on the company's operations.

Based on the results of interviews with informants, it is known that the procurement of fertilizer raw materials at the Gresik Fertilizer Company often occurs due to the company's dependence on one main supplier with whom it has established long-term cooperation. Although the relationship with the supplier is stable, the distribution of raw materials is often hampered, especially during the planting season. The spike in demand during this period causes long queues at the distributor, which not only serves the Gresik Fertilizer Company, but also other factories that need raw materials for fertilizer production. As a result, the delivery of raw materials to the company is late, which has a direct impact on the smoothness of production and the availability of raw material stock. More details about the causes of delays in raw materials related to the planting season and the needs of other factories can be seen in Table 2 below.

Table 2. Reduction of interview data regarding late delivery of raw materials

Informant	Theme Attribute	Explanation
CEO	Causes of Raw Material Delays	The surge in demand during the planting season overwhelms distributors, as many other factories also require a large supply of raw materials for fertilizer production.
Head of Operations		The procurement of raw materials relies on a single main supplier, but the delivery process is delayed due to long queues at the distributor, especially during the planting season.
Admin		Other factories requiring raw materials during the planting season keep distributors busy, resulting in delayed raw material deliveries to the Gresik fertilizer company.

Source: Researcher's processing (2025)

Table 2 shows that the delay in the delivery of raw materials to the Gresik fertilizer company was caused by several main factors. The surge in demand during the planting season overwhelmed the distributor, especially since many other factories also needed raw materials for fertilizer production. Dependence on one main supplier and long queues at the distributor further exacerbated this situation. From the explanations of the informants, it can be concluded that the combination of increased demand and logistical constraints were the main causes of the delay in the delivery of raw materials, which had a negative impact on the fertilizer production process.

The delay in the procurement of raw materials at the Gresik Fertilizer Company was also influenced by external factors, such as weather conditions. Rainy weather that occurs in certain seasons can slow down the delivery process, especially those related to the drying of natural phosphate raw materials. The drying process of these raw materials is hampered if the weather is rainy, which ultimately results in a delay in the supply of raw materials to the company. This is exacerbated by the surge in demand during the planting season, which causes distributors to be overwhelmed in meeting the needs of all factories. More details about external factors causing delays in raw materials can be seen in Table 3 below:

Table 3. Reduction of interview data regarding External factors causing delays in raw materials.

Informant	Theme Attribute	Explanation
CEO	External Factors Causing Raw Material Delays	The surge in demand during the planting season overwhelms distributors, as many other factories also require raw materials for fertilizer production.
Head of Operations		Rainy weather, which hinders the drying process of natural phosphate raw materials, causes delays in raw material deliveries to the company.
Admin		Rainy weather slows down the drying process of natural phosphate raw materials, further obstructing the smooth delivery of raw materials to the company.

Source: Researcher's processing (2025)

Table 3 identifies external factors that cause delays in the delivery of raw materials to fertilizer companies. The spike in demand during the planting season is one of the main causes, where distributors are overwhelmed to meet the needs of many other factories. In addition, rainy weather also contributes significantly to delays, because it hampers the drying process of the required natural phosphate raw materials. From the explanations of the informants, it can be concluded that the combination of increased demand and unfavorable weather conditions are the main external factors that disrupt the smooth delivery of raw materials.

In addition to interviews, observations conducted in the production area of the Gresik Fertilizer Company showed that the company still uses manual methods in managing raw material stock. Orders are made based on estimates without a system that can determine the optimal ordering time. As a result, raw material stock often runs out before new supplies arrive. In this situation, production machines must be temporarily stopped, and some employees are forced to wait without certainty when production can resume. Observations in the warehouse also show that stock recording is still done manually, without an integrated recording system, which makes reorder planning less accurate.

Documentation obtained from the company shows that the main raw materials used in fertilizer production are natural phosphate, dolomite flour, and calcium. Based on raw material usage data during 2024, there are fluctuations in usage every month, indicating a seasonal demand pattern that affects raw material needs.

Table 4. Fertilizer Raw Material Usage (Tons) Period 2024 at Gresik Fertilizer Company

No	Month	Raw Material Usage for Fertilizer in 2024 (Tons)		
		Phosphate Rock	Dolomite Flour	Calcium
1	January	189	150	125
2	February	141	120	87
3	March	150	135	98
4	April	172	146	71
5	May	118	97	68
6	June	219	189	156
7	July	267	217	209
8	August	243	178	154
9	September	213	187	153

No	Month	Raw Material Usage for Fertilizer in 2024 (Tons)		
		Phosphate Rock	Dolomite Flour	Calcium
10	October	167	125	119
11	November	173	138	120
12	December	265	241	176
Total		**2.317**	**1.923**	**1.536**

Source: Gresik Fertilizer Company (2024)

Table 4 shows the use of fertilizer raw materials at Gresik Fertilizer Company during 2024. Overall, the use of natural phosphate raw materials reached 2,317 tons, dolomite flour 1,923 tons, and calcium 1,536 tons. The month with the highest usage was July, with 267 tons of natural phosphate, 217 tons of dolomite flour, and 209 tons of calcium. Conversely, the month with the lowest usage was May, with 118 tons of natural phosphate, 97 tons of dolomite flour, and 68 tons of calcium. Fluctuations in the use of these raw materials indicate a seasonal pattern in fertilizer production needs.

In addition, data on the lead time for delivery of raw materials shows that the average time required for delivery is 3 days. However, during the planting season, delivery times can be longer due to high demand and weather constraints

Table 5. Lead time for fertilizer raw materials at Gresik Fertilizer Company

Fertilizer Raw Material Name	Lead Time (Days)
Phosphate Rock	3
Dolomite Flour	3
Calcium	3

Source: Gresik Fertilizer Company (2024)

In addition, the desired service level by Gresik Fertilizer Company in procuring fertilizer raw materials is 95%, as explained by the President Director, in an interview. He emphasized that the company targets 95% of total raw material orders to be available on time so that the production process can run smoothly.

"We want the raw material procurement service level to reach 95%, meaning that 95% of orders must be available on time so that production is not hampered. If it is still below that, the risk of production being disrupted is greater,"

This service level is set to reduce the risk of delays in raw materials that can cause production to stop. If the service level is below 95%, the company is at risk of experiencing operational disruptions, which can ultimately have an impact on delays in fertilizer distribution to customers.

Based on the results of interviews, observations, and documentation, it can be concluded that delays in raw material delivery at Gresik Fertilizer Company occur mainly due to seasonal demand fluctuations and dependence on one main supplier. Although the company has tried to anticipate delays by ordering early, the method used is still based on manual estimates without a structured system. As a result, the company still faces the risk of running out of raw material stock which can hamper the production process. Therefore, the application of inventory management methods such as safety stock and reorder points is expected to help companies maintain the availability of raw materials and ensure smooth production.

Data Processing

After obtaining data on raw material usage during the 2024 period in Table 2 and Lead Time data in Table 3, the data will then be processed using the safety stock method to determine the amount of reserve stock that must always be available. The application of this method aims to anticipate uncertainty in lead time and fluctuations in demand that increase during the planting season. With safety stock, Gresik Fertilizer Company can minimize the risk of running out of raw materials which can hamper the production process. In addition, this method also helps the company maintain the desired service level, which is 95%, so that the continuity of fertilizer production is guaranteed even though there is a delay in delivery from the supplier.

Safety Stock Analysis Process

The Safety Stock analysis process can be carried out as follows:

1. Identify the required data.
    a. Collect data on fertilizer raw material usage. In this case, data on fertilizer raw material usage

during the period of 2024 is used, namely from January to December 2024, as stated in table 4.

b. Lead Time (waiting time / procurement time) for fertilizer raw material stock from suppliers. In this case, the Lead Time for procurement of fertilizer raw materials from suppliers is 3 days. As stated in Table 5.
c. Service level. The level of service desired by the Gresik Fertilizer Company is 95%.

2. Collect demand data. Record the use of fertilizer raw materials every month as stated in table 4.
3. Calculate safety stock. Because the demand on the data has a fluctuating value / changes every month and the Lead Time value remains at 3 days, the formula used to calculate the safety stock is:

   $SS = Z \times \sigma d \times \sqrt{LT}$

   Description:
   Z: inverse value of normal distribution
   σd: standard deviation of demand
   LT: Lead Time
   Given:
   Z (95%) = 1.64 (to calculate the inverse value of normal distribution / Z, you can use the excel formula "= NORM.S.INV (95%)" or you can see it in the normal distribution table)
   σd natural phosphate = 48.57 (to calculate the standard deviation of demand, you can use the excel formula "= STDEV")
   example of calculating safety stock for natural phosphate raw materials
   SS natural phosphate = $Z \times \sigma d \times \sqrt{LT}$
   SS natural phosphate = $1.64 \times 48.57 \times \sqrt{3}$
   SS natural phosphate = $1.64 \times 48.57 \times 1.73$
   SS natural phosphate = 137.80

Table 6. Results of Safety Stock Calculation Analysis

Raw Material Name	Unit	Total Usage of Raw Material (2024 Period)	Lead Time (Days)	Lead Time Root	σd	Z (95%)	Safety Stock
Phosphate Rock	Ton	2,317	3	1.73	48.57	1.64	137.80
Dolomite Flour	Ton	1,923	3	1.73	42.54	1.64	120.69
Calcium	Ton	1,536	3	1.73	43.21	1.64	122.59

Source: data processing results, 2025

Table 6 shows the results of the safety stock calculation analysis for three main types of raw materials used by Gresik Fertilizer Company, namely natural phosphate, dolomite flour, and calcium, based on raw material usage data for the 2024 period. With an average lead time of 3 days, a lead time root of 1.73, and a standard deviation of raw material usage (σd), the company calculates the amount of reserve stock needed to achieve a service level of 95% (z = 1.64). From the calculation results, natural phosphate has a safety stock of 137.80 tons, dolomite flour of 120.69 tons, and calcium of 122.59 tons. By implementing this safety stock, the company can anticipate delivery uncertainty and demand fluctuations, especially during the planting season, so that production can continue without being disrupted by delays in raw material supply.

Reorder Point Analysis Process

After the safety stock calculation analysis is carried out and the results are obtained as shown in Table 6, the next step is to conduct a reorder point (ROP) analysis. Reorder point is used to determine the right time to reorder raw materials so that stock does not run out before the next shipment arrives. The ROP calculation takes into account lead time, average daily raw material usage, and the amount of safety stock that has been calculated previously. By implementing this method, Gresik Fertilizer Company can ensure that raw material orders are made in a planned and timely manner, so that the risk of delays in raw materials that can hamper production can be minimized.

The Reorder Point analysis process can be carried out as follows:

1. Calculate the total amount of fertilizer raw material usage per period (3 months, 6 months, 8 months or annually).
2. Find out the Lead Time (waiting time). In this case, the Lead Time for procuring fertilizer raw materials to the Gresik Fertilizer Company from suppliers is 3 days.

3. Calculate the average daily demand.
   Average daily demand for natural phosphate = total usage / number of days in the period (360 days)
4. Calculate Safety Stock. In this case, the Safety Stock calculation has been carried out and the results of the Safety Stock calculation can be seen in table 6.
5. Calculate Reorder Point.
   ROP of natural phosphate = (average demand x Lead Time) + Safety Stock
   ROP of natural phosphate = (6.44 x 3) + 137.80
   ROP of natural phosphate = 19.32 + 137.80
   ROP of natural phosphate = 157.12

Table 7. Results of Reorder Point (ROP) Calculation Analysis

No	Raw Material Name	Unit	Total Raw Material Usage (2024 Period)	Lead Time (Days)	Average Daily Demand	Safety Stock	Reorder Point
1	Phosphate Rock	Ton	2317	3	6.44	137.80	157.12
2	Dolomite Flour	Ton	1923	3	5.34	120.69	136.71
3	Calcium	Ton	1536	3	4.27	122.59	135.40

Source: data processing results, 2025

Table 7 shows the results of the analysis of the reorder point (ROP) calculation for three main types of raw materials at the Gresik Fertilizer Company, namely natural phosphate, dolomite flour, and calcium. The ROP calculation takes into account the average daily demand, lead time, and safety stock to determine the optimal reorder point. The analysis results show that the reorder point for natural phosphate is 157.12 tons, dolomite flour is 136.71 tons, and calcium is 135.4 tons. This means that when the stock of raw materials reaches that number, the company must immediately reorder so that inventory is maintained and production is not disrupted due to delays in supply.

Discussion

The results of the study on the application of the Safety Stock and Reorder Point methods at the Gresik Fertilizer Company show that this approach is effective in overcoming delays in the supply of fertilizer raw materials due to fluctuations in demand and unstable lead times. Based on the inventory management theory according to Jacobs (2015), inventory is various types of goods or resources used in an organization, which in this context are fertilizer raw materials that must be available to maintain production continuity. Heizer & Render (2015) explain that inventory control can be achieved through functional organizations and documentary evidence, but in the case of the Gresik Fertilizer Company, inventory recording is still done manually, which causes delays in making reorder decisions. By implementing the Safety Stock method, the company can have sufficient stock reserves to anticipate delays in deliveries from suppliers, while Reorder Point helps in determining the right time to reorder so that raw materials do not run out of stock. According to Nurcahyawati (2023), Reorder Point is the minimum limit for the amount of inventory that must be available before reordering, which in this study has been proven to be able to maintain the stability of the company's raw material inventory.

Further analysis shows that without implementing this method, the company has difficulty in controlling the availability of raw materials because it still uses manual recording in inventory management. This is in line with the opinion of Ervianti (2024) who stated that the inventory management system needs to be developed with careful consideration based on its operational context, including inventory recording and reporting methods. In addition, the company needs to consider the driving factors of Safety Stock as expressed by Assauri (2019), namely fluctuations in demand and the risk of late supply that can cause stock out. With Safety Stock, the company can determine the amount of sufficient raw material reserves based on fluctuations in demand and the average lead time of suppliers, as explained by Achmad Muharram Ahsani Taqwim (2024), that Safety Stock is the minimum amount of inventory that must be available in the company as a reserve to anticipate shortages of materials or delays in supply. In addition, the use of Reorder Point allows companies to order raw materials before stock runs out, thereby reducing the impact of late supply on the production process.

The results of this study are also in line with previous studies which show that the application of the Safety Stock and Reorder Point methods can optimize inventory management and reduce the risk of stock shortages. For example, research conducted by Bawono & Erik (2023) found that determining the

appropriate Safety Stock and Reorder Point values can prevent running out of raw materials and ensure the availability of raw materials in the company. In addition, research by Nurcahyawati (2023) showed that the application of an information system in inventory management with the Safety Stock and Reorder Point method can reduce the amount of empty stock by up to 95%, thereby increasing operational efficiency. This is in line with the opinion of Simamora (2024), who emphasized that the higher the level of service to be achieved in each ordering cycle, the greater the need for Safety Stock to anticipate variations in demand and lead time. The results of this study are also reinforced by research by Tarunokusumo & Sukania (2021), which concluded that calculating Safety Stock and Reorder Point can help companies overcome fluctuations in demand and delays in raw material delivery. Thus, this study confirms that the Safety Stock and Reorder Point methods are effective solutions in overcoming the challenges of raw material inventory management, especially in dealing with uncertainty in demand and supplier lead time.

The application of this method has broad implications for the operations of the Gresik Fertilizer Company. With a more systematic calculation of Safety Stock and Reorder Point, companies can optimize the raw material ordering process and avoid delays that can disrupt smooth production. According to Tarunokusumo & Sukania (2021), the ideal amount of Safety Stock in a particular situation is greatly influenced by the average demand, average waiting time, and the level of service that the company expects from customers. In this study, the company implemented the calculation of Safety Stock and Reorder Point to balance inventory investment with service needs, as explained by Nurcahyawati (2023), that effective inventory management is not only about managing stock but also plays a strategic role in the supply chain

CONCLUSION

Based on the analysis and implementation of the safety stock and reorder point methods at the Gresik Fertilizer Company, the application of this method can help the company overcome delays in fertilizer raw material stock and improve inventory management efficiency. By using this analysis, the company can determine the optimal amount of reserve stock and the right reorder time, so that the risk of raw material delays can be minimized. The results of the study show that by considering the pattern of raw material consumption and supplier lead time, the company can achieve a service level of 95% according to the desired target. This method is not only effective in maintaining the availability of raw materials, but can also reduce the potential for stock shortages that can hamper the production process.

The suggestion from the results of this study is that the Gresik Fertilizer Company conducts regular monitoring and evaluation of the safety stock and reorder point methods applied, especially in adjusting the amount of reserve stock with seasonal demand fluctuations. In addition, the company is also advised to switch from a manual recording system to a digital recording system so that the accuracy of stock data is more guaranteed and decision making related to ordering raw materials becomes faster and more effective. If there is a change in the demand pattern or supplier lead time, it is necessary to make adjustments in the calculation of safety stock and reorder points so that the procurement system continues to run optimally.

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