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# Analysis of Raw Material Inventory Control in Tofu Business in Wonomarto Village

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**Abstract**

*Tofu Business in Wonomarto Village, North Lampung Regency, is one of the local business entities operating in the food industry. Raw material inventory control involves a number of key aspects, including the determination of optimal ordering quantities, safety stock management, and supply risk management. Inventory control methods and models, such as EOQ as well as JIT, can provide valuable insights in determining the optimal ordering quantity and managing inventory more efficiently. However, the implementation of these methods needs to be adapted to the specific conditions and needs of Tofu Business as well as the characteristics of the local food industry. By conducting a careful analysis of raw material inventory control, Tofu Business can identify opportunities to improve operational efficiency, reduce costs, as well as improve customer service. This will help the company to remain competitive in a dynamic market and support long-term business growth in Wonomarto Village, North Lampung Regency.*

**Keywords: Inventory, Raw Materials, Tofu Business**

## INTRODUCTION

The Tofu Business located in Wonomarto Village, North Lampung Regency is one of the local business entities engaged in tofu production. In carrying out its production activities, the inventory of raw materials, especially soybeans, plays a crucial role. Therefore, analyzing inventory control is crucial to the operational continuity and profitability of Usaha Tahu Mandiri. By digging deeper into how raw material inventory is



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managed in this company, we can gain valuable insights into effective inventory management strategies in the context of the local tofu industry (Womack et al., 2021).

One of the key aspects of inventory control is the determination of the optimal order quantity. For this tofu business operating in a local food industry environment, the balance between ordering costs as well as storage costs becomes very important (Hung et al., 2014). Therefore, approaches such as the EOQ method can provide valuable insights in determining the most economical order quantity for soybean raw materials. However, how to apply this method amidst the dynamics of the local industry is an interesting question to explore.

Another important aspect of inventory control is the management of safety stock. In a tofu production environment, instability in the supply of raw materials such as soybeans can have a significant impact on smooth production (Muttaqi et al., 2022). Therefore, determining the right level of safety stock is key to reducing the risk of raw material shortages and maintaining operational continuity. In the context of Tofu Business, safety stock management is a strategic element that can support the company's operational success. In addition, geographical factors and the local business environment also need to be considered in the inventory control analysis. North Lampung Regency, with its unique business characteristics and dynamics, may have its own challenges and opportunities in managing raw material inventory for tofu businesses. By understanding this context, we can design inventory control strategies that are more targeted and responsive to the local business environment (Tuerah, 2014).

As such, a detailed analysis of raw material inventory control in Tofu Businesses in Wonomarto Village, North Lampung District, will provide a better understanding of the challenges, strategies and potential in managing inventory in the context of the local food industry. With a deeper understanding of the factors that influence inventory control, a more effective framework can be developed to support the sustainability and growth of Usaha Tahu Mandiri and similar enterprises in the future.

## LITERATURE REVIEW

Controlling, in a business context, refers to the process of supervising, regulating, and managing specific activities or functions to achieve organizational goals. Controlling is an integral part of management, which involves monitoring performance and operational activities to ensure that resources are used effectively as well as organizational goals are achieved (Novanto, 2023). In business, control covers various


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aspects, including financial, operational, quality, inventory, and other controls. Its purpose is to reduce risks, improve efficiency, and ensure compliance with established standards and procedures. For example, financial control involves monitoring a company's expenditures and revenues and adherence to established budgets. Controls also play an important role in managing risk (Rakian et al., 2015). By implementing proper controls, a company can identify, evaluate and mitigate risks associated with various aspects of its operations, such as financial, operational or reputational risks. This involves establishing policies, procedures, and systems that enable early identification and effective handling of risks that may arise (Larasati et al., 2021). In addition, controlling also involves monitoring the quality of products or services produced by the company. This includes the implementation of quality standards, testing, and inspections to ensure that the product or service meets customer expectations as well as the standards set by the company. Controlling not only relates to the internal aspects of the company, but also involves relationships with external parties such as suppliers, business partners, and regulators. Companies need to ensure that they comply with applicable regulations and legal requirements and maintain good relationships with related parties in order to achieve their business objectives.

Inventory is a term that refers to the amount of certain goods or materials available for use or sale in a business or organization at a certain time (Ahmad et al., 2019). Inventory can be in the form of finished goods that are ready to be sold to customers, raw materials that will be processed into final products, or goods in the production process. Inventory management is critical in business operations because it has a direct impact on a company's profitability, customer service, and cash flow. Inventory management covers several aspects, including determining the optimal amount of inventory, controlling inventory to avoid excess or shortage of stock, and efficient storage and distribution strategies (Simbar et al., 2014). The main objective of inventory management is to strike a balance between maintaining sufficient inventory to meet customer demand, while avoiding excessive storage costs or losses due to stock shortages. There are several methods as well as models used to manage inventory, including the EOQ method, JIT, and the kanban method. The EOQ method, for example, helps in determining the optimal order quantity that can reduce ordering costs and storage costs. Meanwhile, the JIT method focuses on reducing inventory to a minimum level by producing only when there is direct demand from customers (Renta et al., 2013).


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Raw materials are raw materials or basic components used in the production process to produce finished goods or final products. Raw materials can be natural materials such as wood, metal, or fabric, or they can be chemicals, plastics, or electronic components, depending on the type of industry or product being produced. The importance of raw materials in the production process is undeniable. The quality, availability, and price of raw materials directly affect the quality, production quantity, and production cost of a final product (Trihudiyarmanto, 2017). Therefore, efficient raw material procurement, quality monitoring, and good inventory management are key in successful business operations (Manangkey, 2014). For example, in the food industry, raw materials such as wheat, sugar, and oil are key components in the food manufacturing process. The quality and freshness of these raw materials will have a direct impact on the quality of the finished product as well as customer satisfaction. Therefore, food manufacturers must ensure a consistent and high-quality supply of raw materials. In addition, factors such as raw material prices, market fluctuations, and international trade policies can also affect raw material procurement strategies and overall production costs (Spataro et al., 2019). Market and risk analysis, as well as supply diversification strategies, are important in managing risks and minimizing the impact of market fluctuations on business operations.

## RESEARCH METHODS

The qualitative research method aims to understand natural facts in a holistic and integrated manner without any intervention from the researcher to manipulate the conditions of the object under study. This research conducts exploration using inductive logic and focuses on objects that interact and influence each other in a comprehensive system. It seeks to explain natural events with detailed and in-depth descriptions that are different from qualitative approaches in general that use numbers. (Sugiyono, 2016).

Qualitative research is a type of research that is structured and aims to study an object in a natural environment without manipulation or hypothesis testing. The method is natural and does not focus on generalization based on quantity measures, but on understanding through the phenomenon under study. The expected results of expected from this qualitative research is the meaning of the object under study. (Prastowo. A, 2016).

Descriptive research has the aim of obtaining an overview or description of how raw material inventory control in the Company. In this study, qualitative methods were


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used as a data analysis method to descriptively describe the raw material inventory carried out by the independent tofu business.

## RESULTS AND DISCUSSION

### Inventory Control by Tofu Factory Business

Basically, inventory management aims to harmonize the operations of the factory company efficiently so that production and distribution of products to consumers run smoothly. The approach to managing raw material inventories varies between companies, including in terms of determining the amount of raw materials required, the timing of use, and the allocation of costs required for their procurement. However, careful control of raw material inventory is key for every manufacturing company. Without proper control, the ability of the factory to run the production process effectively will be disrupted.

Tofu Factory uses the conventional method of managing raw material inventory, which is to order and store raw materials with a standard for one month of production. However, this approach does not result in an optimal inventory calculation. The strategy for purchasing soybean raw materials is carried out on a regular basis, with purchases tailored to routine production needs. Determination of purchases is based on previous experience, which is then adjusted to future production needs. Soybean raw material orders are made once a week, with the main source of raw materials from PRIMKOPTI Lampung Utara, which is considered to have the closest reach and adequate quality. However, the Tofu Factory faces constraints related to waste in the use of soybeans, especially during the screening process of soybean porridge which is less than optimal, resulting in low yields of soybean juice and the quality of tofu produced is not optimal.


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**Tabel 1.** Pembelian Bahan Baku Kedelai Tahun 2023

| No. | Bulan Pembelian | Pembelian Bahan Baku Kedelai (kg) | Harga Per Kg (Rp) | Harga Pembelian |
|---|---|---|---|---|
| 1. | Januari | 1.500 | Rp 12.000 | Rp 600.000 |
| 2. | Februari | 1.500 | Rp 12.000 | Rp 600.000 |
| 3. | Maret | 1.500 | Rp 12.000 | Rp 600.000 |
| 4. | April | 1.500 | Rp 12.000 | Rp 600.000 |
| 5. | Mei | 1.500 | Rp 12.000 | Rp 600.000 |
| 6. | Juni | 1.500 | Rp 12.000 | Rp 600.000 |
| 7. | Juli | 1.500 | Rp 12.000 | Rp 600.000 |
| 8. | Agustus | 1.500 | Rp 12.000 | Rp 600.000 |
| 9. | September | 1.500 | Rp 12.000 | Rp 600.000 |
| 10. | Oktober | 1.500 | Rp 12.000 | Rp 600.000 |
| 11. | November | 1.500 | Rp 12.000 | Rp 600.000 |
| 12. | Desember | 1.500 | Rp 12.000 | Rp 600.000 |
| | Total Pembelian | 18.000 | - | Rp 7.200.000 |

Sumber : Wawancara Usaha Pabrik Tahu Mandiri (2023)

In 2023, the Tofu Factory buys soybeans as much as 18,000 kg every month at a fixed price of Rp 12,000 per kg. Thus, every month, they spend Rp 600,000 for the purchase of soybean raw materials. The total expenditure for the purchase of soybeans in a year reaches Rp 7,200,000.

**Tabel 3.** Biaya pemesanan bahan baku dalam sekali pesan

| Jenis Biaya | Harga (Rp) | Jenis Biaya | Harga (Rp) | Jenis Biaya |
|---|---|---|---|---|
| Biaya Telepon | Rp 480.000 | Biaya Telepon | Rp 480.000 | Biaya Telepon |
| Jumlah | Rp 480.000 | Jumlah | Rp 480.000 | Jumlah |

Sumber : Wawancara Usaha Pabrik Tahu Mandiri (2023)

It is known that the Tofu Factory Business spends IDR 480,000 for telephone costs used for one year.


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**Tabel 4.** Biaya Penyimpanan Bahan Baku Dalam Satu Bulan

| Biaya Simpan Bahan Baku | Harga (Rp) | Biaya Simpan Bahan Baku | Harga (Rp) | Biaya Simpan Bahan Baku |
|---|---|---|---|---|
| Listrik | Rp 600.000 | Listrik | Rp 600.000 | Listrik |
| Jumlah | Rp 600.000 | Jumlah | Rp 600.000 | Jumlah |

Sumber : Wawancara Usaha Pabrik Tahu Mandiri (2023)

It is known that the Tofu Factory Business spends IDR 600,000 for electricity costs required to store raw materials.
The Tofu Factory business places orders four times a month, which means that in one year they place orders 48 times.

**Tabel 5.** Frekuensi Pemesanan Bahan Baku Kedelai Tahun 2023

| Pembelian | Frekuensi Pembelian | Pembelian | Frekuensi Pembelian | Pembelian |
|---|---|---|---|---|
| 1 bulan | 4 kali | 1 bulan | 4 kali | 1 bulan |
| 1 tahun | 48 kali | 1 tahun | 48 kali | 1 tahun |

Sumber : Wawancara Usaha Pabrik Tahu Mandiri (2023)

If calculated based on the comparison between purchases and raw material requirements, the Tofu Factory Business still has excess raw material inventory. On average, the consumption of soybean raw materials by the Tofu Factory Business in one month is around 1,300 kg. During one year, the total soybean raw materials used in the production process reached 15,600 kg. The Tofu Factory Business purchases 18,000 kg of raw materials a year, with an ordering cost of Rp 480,000 and a storage cost of Rp 600,000.

**Analysis of Soybean Raw Material Inventory Control**

Calculations are very important in managing raw material inventory, such as soybeans for making tofu, so that Tofu Factory Businesses can reduce ordering costs as well as storage costs, to be able to meet consumer demand efficiently.


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**Purchasing Raw Materials (EOQ)**

In order to determine the number of orders that are economically profitable, Tofu Businesses can utilize analysis using the EOQ method. With EOQ, companies are able to find the most economical amount of purchases to make in each purchase period.

The total purchase of soybean raw materials by Tofu Business in 2023 reached 18,000 kg, with a purchase frequency of 4 times a month or 48 times a year. The amount of raw material used was 15,600 kg during 2023. Ordering costs incurred amounted to Rp 480,000 in 2017, while storage costs reached Rp 600,000 in the same year.

Tofu Business spends Rp 480,000 in one year to order raw materials, namely soybeans, with a total order frequency of 48 times. Each time the order is placed, the cost incurred is Rp 10,000.

$$\text{Biaya setiap kali pesan} = \frac{\text{total biaya pemesanan}}{\text{frekuensi pemesanan}}$$
$$= \frac{\text{Rp } 480.000}{48}$$
$$= \text{Rp } 10.000/\text{ pemesanan}$$

The following is a calculation to determine the storage cost of soybean raw materials:

$$= \text{Rp } 600.000/18.000 \text{ kg}$$
$$= 33 / \text{kg}$$

The following is the calculation procedure to determine the economic order quantity (EOQ) using the EOQ method:


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Perhitungan Economic Order Quantity (EOQ)

EOQ = 2.(D).(OC)

EOQ = 2.18.000.10.000/33

EOQ = 38.000.10.000/33

EOQ = 380.000.000/33

EOQ = 11.515.000

EOQ = 3.393 kg

Dibulatkan menjadi 3.393

Perhitungan rata-rata = Q*/2

= 3.393 kg/ 2

= 1.696 kg

The calculation to determine the estimated order frequency in each order based on the EOQ method is as follows:

Jumlah pesanan yang diperkirakan = D/ Q*

F = 18.000 kg/3.393 kg

F = 5 kali

The calculation procedure for determining annual ordering costs using the EOQ method is as follows:

Biaya pemesanan = D/Q* x S

= 18.000 kg /3.393 kg x 10.000/pemesanan

= 53.050 / tahun



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The calculation steps to determine annual storage costs using the EOQ method are as follows:

Biaya penyimpanan = Q*/2 x H

= 3.393/2 x 33/kg

= Rp 55.984 / tahun

**Reorder Point (ROP)**

The calculation steps to determine the time when the reorder is placed are as follows:

Waktu Pemesanan = Jumlah hari kerja/Frekuensi pemesanan

=317/5

= 63 hari

The calculation steps to determine average usage are as follows:

Q = EOQ/Waktu pemesanan

Q = 3.393/63

Q = 53 kg

Calculation to calculate ROP:

ROP = Lt x Q

ROP = 6 hari x 53 kg

ROP = 318 kg



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**Security Supplies**

Safety Stock Calculation:

SS = (Pemakaian maksimum – Pemakaian rata-rata) x LT

SS = 1.450 kg – 14.900 kg x 6 hari

SS= 80.700 kg/tahun

**Total Cost of Inventory**

The following is the calculation of the total cost of inventory based on the EOQ method in the Tofu Business for 2023:

TIC = D/Q* x S + Q*/2 x H

TIC = 18.000/3.393 x 10.000 + 3.393/2 x 33

TIC = 53.050 + 55.984

TIC = Rp 109.034

The inventory model described above shows a formulaic approach using the EOQ method. The use of the EOQ method is favored because it results in a decrease in ordering costs and storage costs, which in turn can reduce expenses at the tofu factory and increase potential profits. Safety stock, which acts as a reserve inventory that must be available in the warehouse, is calculated as 80,700 kg. Using the ROP method, an order can be placed when the inventory in the warehouse reaches 318 kg, and is placed every 63 days, with an average usage of 53 kg. Thus, the use of the EOQ method is more profitable as well as efficient than the traditional method.

## CONCLUSION AND RECOMMENDATION

### Conclusion

Based on the results obtained, the following conclusions were drawn:

1.By referring to the inventory formula approach using the EOQ method, it was found that the economic ordering quantity resulted in a decrease in ordering costs as well as storage costs. This can reduce expenses at the tofu factory and increase potential profits.



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2.If the Tofu Business applies the EOQ method, the frequency of purchasing soybean raw materials will be five times a year. Instead, in practice, Tofu Business has made purchases 48 times a year. As a result, the total inventory issued by the Tofu Business is higher than that generated by the EOQ method, which is Rp 43,000. This increase occurred because the number of orders decreased.
3.Tofu Business does not adopt the concept of safety stock in its policy, but in applying the EOQ method, it is important to have safety stock to maintain the smooth production process.
4.The assumption put forward in this study is that the Tofu Business has sufficient working capital to purchase raw material inventory.

**Recommendation**

Suggestions for this research include:
1.We recommend that the Tofu Business re-evaluate the soybean raw material inventory policy that has been implemented.
2.Tofu Businesses are able to try to apply the EOQ method to determine the economical order quantity.
3.Mandiri Tofu Businesses are advised to set a safety stock level as well as a reorder point to manage the risk of shortages or excess raw materials. This has the aim of minimizing the cost of soybean raw materials.

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