



EOQ (Economic Order Quantity) ANALYSIS OF RICE AVAILABILITY IN PUBLIC BULOG COMPANY IN LHOKSEUMAWA CITY

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Abstract

The research aims to find out that the implementation of rice orders at the Lhokseumawe Bulog Public Company has used the EOQ method well and the performance of rice availability management at the Lhokseumawe Bulog Public Company. The location of this research was chosen deliberately with the consideration that the area is one of the densely populated areas so it requires a large stock of rice, but the area is still classified as an area with low rice production compared to other areas in Aceh. The method of determining the sample in this study uses purposive sampling with a research sample of 11 respondents who are employees of the Public Company Bulog Lhokseumawe in each field. The data of this study were obtained from secondary data and primary data which are related to the EOQ (Economic Order Quantity) analysis. Data analysis was carried out by quantitative descriptive method where data analysis used the EOQ (Economic Order Quantity) method. The results showed that the implementation of ordering rice at the Bulog Lhokseumawe Public Company had not been carried out properly and the management performance of the Lhokseumawe Bulog Public Company was not running well.

Keywords: EOQ Method, Public Company Bulog Lhokseumawe, Rice Availability.

1. Introduction

Rice is a strategic commodity which is not only an economic commodity but also a political commodity and is an important factor in maintaining national stability. For this reason, the government must be responsive to parameters related to the availability, demand and stock of rice (Sari et al, 2020).

One of the important things in the management of national rice is knowing the supply, demand and stock of rice so that there is no scarcity or surplus of rice in the market and causes losses for the community as consumers and farmers as producers. At the desired level, a decent and affordable rice price will be achieved by the community and will benefit farmers as producers (Arief, 2012).

Availability (food availability) is the availability of food in sufficient, safe and nutritious quantities for everyone, whether from self-production, imports, food reserves or food assistance. This availability is expected to be able to meet food, which is defined as the number of calories needed for an active and healthy life (Hanani, 2012). Availability means available in sufficient quantities to meet the needs of all family members in terms of quantity, quality, and safety.

To achieve food security, the Bulog Public Company has an important role through its public duties. One of them is implementing a policy to purchase domestic rice or unhulled rice with

the provisions of the Government Purchase Price (HPP). This activity is manifested in the form of domestic procurement of grain or rice by the Bulog Public Company. Therefore, through this policy, it is hoped that the Bulog Public Company will be able to realize food security in accordance with applicable regulations. The rice procurement policy which is the task of the Bulog Public Company based on Presidential Instruction number 05 of 2015 concerning the procurement of rice, Bulog assigns the Bulog Public Company to be responsible for the implementation of rice procurement.

Bulog Public Company in carrying out rice procurement policies must apply inventory control techniques, the inventory control technique used is the Economic Order Quantity (EOQ) method. The Economic Order Quantity (EOQ) method is a classic or oldest and simplest inventory control technique. This method was first introduced by Ford W. Harris in 1915. This method aims to minimize total or overall costs and to obtain economical inventory results by cost efficiency (Bernad, 2006).

According to Syamsuddin (2009) states that the Economic Order Quantity (EOQ) method considers both operating costs and financial costs and determines the order quantity that will minimize overall inventory costs. Thus, the Economic Order Quantity (EOQ) method does not only determine the optimal amount of availability but, more importantly, concerns the financial aspects of decisions about the quantity of availability.

Economic Order Quantity (EOQ) is an inventory management method that determines the number of orders or purchases that must be made and how many quantities must be ordered so that the total cost (the sum of ordering costs and storage costs) is to a minimum. According to Manullang (2005) the Economic Order Quantity (EOQ) method is a way to obtain a number of goods with a minimum cost and supervision of ordering costs and carrying costs. The Economic Order Quantity (EOQ) method is the number of goods that can be purchased with a minimum inventory cost or often called the optimal number of goods orders.

2. Research methods

This research was carried out in Lhokseumawe City, namely the Bulog Public Company Jl. T. Hamzah Treasurer Ka II Garing 55, Keude Aceh, Banda Sakti, Lhokseumawe City, Aceh. The research was determined purposively (deliberately), with the consideration that Lhokseumawe was chosen as the research area because the area is a densely populated area so it requires a large stock of rice but the area is still classified as an area with low rice production compared to other areas in Aceh.

The method used in sampling in this study is purposive sampling, which is sampling intentionally. The sample in this study were employees of the Public Company Bulog Lhokseumawe in each field. Furthermore, the sample will be called the respondent, the

respondents in this study amounted to 11 people. The population in this study were employees of the Public Company Bulog Lhokseumawe.

Data collection methods used in this study are primary data and secondary data. Primary data is obtained directly from the field, either by direct observation in the field or interviews with respondents. Primary data collection is done by conducting interviews with respondents by asking various questions that have been prepared in advance. Secondary data were obtained from observations, literature studies, and recording data related to the number of orders for economical rice such as data on rice procurement and data on rice distribution. The data that has been obtained is processed and analyzed so that it becomes the basis for discussion in the preparation of the report. The results of data processing are compared with various libraries, then the research results are compiled. Descriptive methods and quantitative methods were used to analyze the data. Descriptive method aims to describe the nature of a situation when the research is conducted and examine the causes of a certain condition. Quantitative method is a calculation method used to state conclusions that are proven by numbers. Economic Order Quantity (EOQ) is the number of orders that can minimize the total cost of inventory (Tersine, 1994).

3. Results and Discussion

3.1 Rice Availability at Bulog Public Company in Lhokseumawe

The availability of rice at the Bulog Public Company in Lhokseumawe City was obtained from several parties, including from domestic farmers, especially farmers in Lhokseumawe City and generally Aceh and from the Aceh Regional Bulog Public Company. Rice inventory management at the Bulog Public Company of Lhokseumawe City begins with the flow of rice procurement, rice supply, rice quality maintenance and rice distribution. The flow of rice procurement begins with the Bulog Public Company Headquarters providing procurement targets to the Regional Division (Divre)/Regional Sub-Division (Subdivre). The Divre/Subdivre contracts through 3 channels, namely the Unhulled and Rice Processing Business Unit (UB-PGB), Work Partners, and the Task Force (SATGAS). The three channels deliver the rice to the designated warehouse, according to the agreed amount.

Procurement of rice comes from domestic procurement, milled grain products, reprocessed / rebagging results, regional moves in, national moves in, foreign procurement, returns, cancellation of Delivery Orders (DO), and corrections.

Expenditures include distribution of batches (golang) based on logistical orders (prinlog), distribution of golang outside the PRINlog, distribution of Raskin, government rice reserves, milled grain, reprocessing/rebagging, regional move out, national move out, loss/shortage/destruction, loss of savings. , downgrade, and correction. The distribution of golang based on the PRINLOG is distribution to the TNI, POLRI, and the Ministry of Social Affairs in accordance with a logistics order from the center.

1. Rice Needs at Bulog Public Company in Lhokseumawe

Table 1. Rice Needs Based on Rice Distribution.

No	Year	Annual Rice Needs (tons)
1	2016	20,940,273
2	2017	19,216,123
3	2018	13,146,914
4	2019	4,894,633
5	2020	4,868,579
Amount		63,066,522

In Table 1 Rice Needs Based on Rice Distribution above shows that the distribution of rice by the Public Company Bulog Lhokseumawe in 2016 was 20,940,273 tons, in 2017 as many as 19,216,123 tons, in 2018 as many as 13,146,914 tons, in 2019 as many as 4,894, 633 tons and in 2020 as many as 4,868,579 tons.

2. Rice Procurement at Bulog Public Company in Lhokseumawe

The procurement of rice at the Bulog Public Company in Lhokseumawe City is carried out according to the Regulation of the Minister of Trade of the Republic of Indonesia No. 24 of 2020 Determination of the Government Purchase Price for Unhulled or Rice that to maintain food availability and food price stability, especially for the staple food type of rice, the Government establishes a policy of grain procurement or rice through the management of the Government's food reserves and in Article 5 The policy for the procurement of government grain or rice as regulated in this Ministerial Regulation is implemented by the Bulog Public Company. The Regional Office of the Bulog General Company of Aceh Province stated that domestic rice procurement in the province reached 68 percent or 8,547 tons of rice equivalent, which is targeted to reach 12,600 tons in 2021.

3. Rice Ordering Fee at Bulog Public Company in Lhokseumawe City (S)

Table 2 Cost of ordering rice at Bulog Public Company in Lhokseumawe City (S)

No	Year	Ordering Fee (Rp)
1	2016	80,658,240
2	2017	62,578,308
3	2018	123,846.385
4	2019	25,210,764
5	2020	62,175,600

In Table 2 the cost of ordering rice at the Bulog Public Company in Lhokseumawe City above shows that the cost of ordering rice at the Lhokseumawe Bulog Public Company in 2016 was Rp.80,658,240, in 2017 it was Rp.62,578,308, in 2018 it was Rp.123,846 .385, in 2019 it was Rp.25,210,764 and in 2020 it was Rp.62,175,600.

4. Rice Storage Cost at Bulog Public Company in Lhokseumawe City (H)

Table 3. Rice Storage Costs at Bulog Public Company in Lhokseumawe City (H)

No	Year	Storage Fee (Rp)
1	2016	104,037,440
2	2017	80,716,948
3	2018	158.010.905
4	2019	32,024,484
5	2020	78,755,760

In Table 3 the cost of storing rice at the Bulog Public Company in Lhokseumawe City above shows that the cost of storing rice at the Lhokseumawe Bulog Public Company in 2016 was Rp.104,037,440, in 2017 it was Rp.80,716,948, in 2018 it was Rp.158.010 .905, in 2019 it was Rp.32,024,484 and in 2020 it was Rp.78,755,760.

5. Rice Demand for Bulog Public Company in Lhokseumawe City (D)

Table 4. Rice Demand at Bulog Public Company in Lhokseumawe City (D)

No	Year	Demand (Tons)
1	2016	20,940,273
2	2017	19,216,123
3	2018	13,146,914
4	2019	4,894,633
5	2020	4,868,579

In Table 4, Rice Demand for Bulog Public Companies in Lhokseumawe City above shows that rice demand for Lhokseumawe Bulog Public Companies in 2016 was 20,940,273 tons, in 2017 19,216,123 tons, in 2018 as many as 13,146,914 tons, in 2019 as many as 4,894,633 tons and in 2020 as many as 4,868,579 tons.

3.2 Economic Order Quantity (EOQ)

Table 5. Ordering Rice with Economic Order Quantity (EOQ) Method

No	Year	EOQ (Tons)
1	2016	180,19
2	2017	172.61
3	2018	143.55
4	2019	87.78
5	2020	144.07

In Table 5 Ordering rice with the Economic Order Quantity (EOQ) method at the Bulog Public Company in Lhokseumawe City above shows that the EOQ value per message in 2016 was 180.19 tons, in 2017 was 172.61 tons, in 2018 was 143, 55 tons, in 2019 it was 87.78 tons and in 2020 it was 144.07 tons.

3.3 Total Inventory Cost (TIC) of Rice EOQ Metode Method

Table 6. Total Inventory Cost (TIC) of Rice EOQ Metode Method

No	Year	TIC (Rp)
1	2016	18,746,547,227.2
2	2017	13,932,920,445.1
3	2018	22,683,606,602.5
4	2019	2,811,312,604.8
5	2020	7,774,280,496.7

In Table 6 the Total Cost of Rice Inventory of the EOQ Method at the Bulog Public Company in Lhokseumawe City above shows that the total cost of the EOQ model of rice inventory in 2016 was Rp. 18,746,547,227,2, in 2017 it was Rp. 13,932,920,445,1 year 2018 is Rp.22,683,606,602.5, in 2019 it is Rp.2,811,312,604,8 and in 2020 it is Rp.7,774,280,496.7.

3.4 Safety Stock (SS)

Safety Stock is an additional inventory that is needed to maintain production continuity from the possibility of a shortage of raw materials. Procurement of rescue supplies is intended to reduce losses arising from the occurrence of stock outs, but at the same time efforts are made to keep storage costs as low as possible.

Table 7. Safety Stock Table for 2016 - 2020

Year	Request()	()	()	()
2016	20,940,273	1,745.02	19,195.25	368,457,622.56
2017	19,216,123	1,601.34	17,614.78	310,280,580,13
2018	13,146,914	1,095.57	12,051.34	145,234,892.20
2019	4,894,633	407.88	4,486.75	20,130,952.56
2020	4,868,579	405.71	4,462.86	19,917,199.71
Total	63,066,522			

Table 7 Safety Stock from 2016 to 2020 above shows that the Safety Stock in 2016 was 9,549.37 tons, in 2017 was 8,763.23 tons, in 2018 was 5,995.45 tons, in 2019 was 2,232.12 tons, 2020 is 2,220.24 tons.

4. Conclusion

The implementation of Rice Ordering at the Lhokseumawe Bulog Public Company has not been carried out properly, this can be seen from the failure to achieve the target in 2016, 2017 and 2019, and only in 2018 and 2020 the target according to the EOQ method was achieved. Based on the comparison of procurement targets and procurement realization, it is known that management performance is not going well, this can be seen from the discrepancy between the comparison of procurement targets and procurement realization. This can lead to a shortage of rice for the community and also the price of rice to become unstable.

Reference

- Arief. 2012. Pengaruh Harga dan Lokasi Terhadap Keputusan Pembelian beras. Yogyakarta. Universitas Muhammadiyah Yogyakarta.
- Assauri, Sofyan. 2004. Manajemen Produksi. Jakarta. Lembaga Penerbitan FE U.I
- Bernad W, Taylor 2006. Operations Management: Quality and Competitiveness in A Global Environment, edisi kelima. New York. John Willey and Sons Inc.
- Garrison, Ray H. 1997. Akuntansi Manajemen : Konsep Untuk Perencanaan, Pengendalian dan Pengambilan Keputusan. Bandung. ITB.
- Hanani, Nuhfil. 2012. Strategi Pencapaian Ketahanan Pangan Keluarga, Perhimpunan ekonomi pertanian Indonesia. Bogor
- Handoko, T Hani. 2000. Dasar-Dasar Manajemen Produksi dan Operasi, Edisi 1. Yogyakarta. BPPE
- Heizer J. dan Render B. 2001. Prinsip-Prinsip Manajemen Operasi. Terjemahan. PT.Gramedia: Jakarta.
- Peraturan Menteri Perdagangan Republik Indonesia Nomor 19/M- DAG/PER/3/2014 Tentang Ketentuan Ekspor Dan Impor Beras. Menteri Perdagangan Republik Indonesia. 2014. Jakarta.
- Peraturan Presiden PERPRES Nomor 48 Tahun 2016 tentang Penugasan Kepada Perusahaan Umum (Perum) Bulog Dalam Rangka Ketahanan Pangan Nasional. 2016. Jakarta.