Inventory Management Calculations Using the Economic Order Quantity (EOQ) Method in Determining Optimal Quantity and Costs at CV Standard Entertainment Music

Jaecky[1], Hajan Hidayat[2]

{ zjaecky9@gmail.com[1], Hajan@polibatam.ac.id[2] }

Politeknik Negeri Batam, Business and Management Department, Batam City, Indonesia[12]

Abstract. CV Standard Entertainment Music can provide a large inventory to prevent stockouts or inventory shortages. However, maintaining a large inventory can lead to increased ordering costs and storage expenses and vice versa, which may prompt them to switch to other companies. This can hinder business growth. This research aims to determine the optimal inventory management calculations for Speaker BMB S10, Amplifier BMB SM250, and Microphone BMB SM180 using Economic Order Quantity (EOQ) analysis, order frequency, Safety Stock (SS), Reorder Point (ROP), and Total Inventory Cost (TIC). The results of this study show that the Economic Order Quantity (EOQ) method can provide optimal inventory results, allowing the company to efficiently utilize the order quantity for each order, avoid stock shortages or excesses with safety stock and reorder points, and save inventory costs for the three sample products of CV Standard Entertainment Music in the 2022 period.

Keywords: Inventory Management, Economic Order Quantity (EOQ), Order Frequency, Safety Stock, Reorder Point, Total Inventory Cost.

1 Introduction

In general, companies can maintain a large inventory to avoid shortages or stockouts. However, having a large inventory can lead to increased ordering and storage costs. Large inventories can also impact storage operations, increasing the risk of inventory damage and obsolescence due to prolonged storage, which can hinder business growth. On the other hand, if a company maintains a small inventory, it may face stockouts or shortages, leading to customer waiting times and potential customer dissatisfaction, increasing the likelihood of customers switching to other companies.

Based on previous research conducted by [1] with research titled "Analysis of Raw Flour Inventory Management Using the Economic Order Quantity (EOQ) Method at Mie Tenaga Muda Pekanbaru," concluded that the inventory management of raw flour should order 5.29 sacks each time with a purchase frequency of 5 times in one period and set a Safety Stock of 230 sacks. With this approach, the company has saved Rp 2,312,070.

CV Standard Entertainment Music has generally managed its inventory flexibly and made restocking decisions based on previous experience. CV Standard Entertainment Music sets a restocking point for sound system products when there are only 100 units left in the warehouse

to avoid stockouts. However, in practice, some of the sound system products have a relatively fast turnover rate, and the company's inventory anticipation is slow, leading to inventory shortages. On the other hand, products with slower sales or less market demand accumulate in storage. This can lead to suboptimal inventory ordering systems and inventory costs in meeting market demand. Therefore, it is necessary to conduct further research on the company's inventory policy regarding the restocking point of 100 units for all sound system products. Based on the above description, the researcher is interested in conducting research on "Inventory Management Calculations Using the Economic Order Quantity (EOQ) Method in Determining Optimal Quantity and Costs at CV Standard Entertainment Music".

2 Theoretical Background and Literature Review

Generally, inventory management is used to address the challenges in a company's efforts to manage raw materials or finished goods [2]. Inventory management aims to reduce inventory costs while maintaining a high level of customer service using accurate forecasting methods [3]. EOQ (Economic Order Quantity) is the quantity of items ordered in a single purchase that minimizes costs while utilizing minimal funds [4]. EOQ is commonly used in inventory management by calculating the number of units a company should order or produce to replenish inventory, minimizing the total inventory cost, assuming constant consumer demand, and allowing no shortages [5].

The quantity of raw material purchase frequency can be determined based on the calculation results of the EOQ method [4]. Reorder frequency is the number of orders that must be placed within one planning period [6]. Safety stock is a buffer in case sales exceed estimates [6]. Safety stock serves to prevent, protect, maintain, and safeguard a company's inventory from risks such as delivery delays, ensuring the smooth continuation of production [7].

The reorder point is the moment before an item in the warehouse needs to be replenished [8]. When the stock of an organization reaches a specific reorder point, the relevant department must request a refill from the purchasing office [9]. TIC represents all expenses incurred in acquiring goods for a single production period [10].

3 Research Methodology

This ongoing research is quantitative and descriptive in nature. The research conducted in this study was carried out at CV Standard Entertainment Music, located at Jl.MT.Haryono No.38a-b, Bukit Berstari, Kota Tanjung Pinang, Kepulauan Riau. The research period undertaken by the researcher was estimated to be 8 months, starting from August 2022 to April 2023.

    a. **Economic Order Quantity (EOQ)**

       The formula for calculating Economic Order Quantity (EOQ) is as follows:

$$EOQ = \sqrt{\frac{2DCa}{CH}} \tag{1}$$

       Description:

D   : Total of units sold during one period
Ca   : Acquisition cost per order
Ch   : Holding cost per unit

b. Order Frequency

Here is the equation in the calculation of order frequency:

$$F = \frac{D}{EOQ}$$ (2)

Description:
D   : Total of units sold during one period
EOQ : Economic order quantity

c. Safety Stock

The calculation of safety stock can be done with the following equation [12]:

$$S = LT \times AU + \%S\ (LT \times AU)$$ (3)

Description:
S   : Safety stock
%S   : Percentage of safety stock
LT   : Lead time
AU   : Daily usage of inventory

d. Reorder Point

The formula for calculating the reorder point can be explained as follows:

$$ROP = S + LT$$ (4)

Description:
S   : Safety stock
LT   : Lead time

e. Total Inventory Cost

The formula for calculating total inventory cost, as explained, is as follows:

$$TIC = \left[\frac{D}{Q}Ca\right] + \left[\frac{Q}{2}Ch\right]$$ (5)

Description:
D   : Total of units sold during one period
Ca   : Acquisition cost per order
Ch   : Holding cost per unit
Q   : Economic order quantity

f. Total Inventory Cost (Company Policy)

Here is the formula for calculating the total inventory cost according to the company's policy:

$$TIC = (\text{Average sales} \times Ch) + (Ca \times F) \qquad (6)$$

Description:
Ca   : Acquisition cost per order
Ch   : Holding cost per unit
F   : Order Frequency

Sampling Technique and Data Collection

The researcher conducted sample selection using purposive sampling. The researcher selected 3 merchandise items from CV.Standard Entertainment, which are speakers, amplifiers, and microphones, based on several considerations, as follows:

a. Representing a karaoke system package.
b. Representing similar merchandise items, namely speakers, amplifiers, and microphones.
c. Representing different categories, including excess merchandise, deficient merchandise, and merchandise with the fastest sales turnover.

4 Result and Discussion

a. Analysis of Economic Order Quantity (EOQ) Method Calculation in Inventory Management of Speaker BMB S10 at CV Standard Entertainment Music in 2022

Table 1. Speaker BMB S10 Sales Data for the Year 2022

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Des	Total
Sales (unit)	21	8	18	8	28	14	29	5	12	9	21	18	191

Based on table 1, CV Standard Entertainment Music sold the Speaker BMB S10 merchandise for a total of 191 units in one year, with an average monthly sale of 15.92 or 16 units.

Table 2. Speaker BMB S10 Ordering Cost Data for the Year 2022

Product Name	Frequency (times)	Ordering Cost	Total Ordering Cost (Rupiah)
Speaker BMB S10	12	326.000	3.912.000
Total			3.912.000

Based on table 2, CV Standard Entertainment Music placed orders 12 times in one year, with a cost of Rp 326,000 per order, resulting in a total ordering cost of Rp 3,912,000.

Table 3. Speaker BMB S10 Inventory Cost Data for the Year 2022

Product Name	Total Unit	Total Inventory Cost (Rupiah)

Speaker BMB S10	191	1.200.000

Based on table 3, CV Standard Entertainment Music was able to store 191 units of Speaker BMB S10 with a total storage cost of Rp 1,200,000.

a. Economic Order Quantity (EOQ)

The formula for calculating the Economic Order Quantity (EOQ) used in the calculation for Speaker BMB S10 is as follows [11]:

$$EOQ = \sqrt{\frac{2 \times 191 \times 326.000}{18.848,17.}}$$
$$EOQ = \sqrt{6607,11}$$
$$EOQ = 81,28 \text{ (81 units)}$$

So, the optimal order quantity for each order in the year 2022 for the Speaker BMB S10 commercial product is 81.

b. Order Frequency

Here is the equation in the calculation of order frequency [12]:

$$F = \frac{191}{81}$$
$$F = 2,35 \text{ (2 times)}$$

The ordering frequency for the Speaker BMB S10, based on the EOQ calculation, is 2 times per year.

c. Safety Stock

Due to the need for additional data besides sales, storage, and ordering data, the researcher obtained some additional data related to the calculation of safety stock for the Speaker BMB S10 merchandise. Here is the required data:

safety stock percentage (%S) : 30%
lead time (LT) : 14 (14 days)
daily usage (AU) : 191 units / 360 days = 0,53 unit per day

The calculation can then proceed with the safety stock calculation formula for the Speaker BMB S10 as follows [12]:

$$S = 14 \times 0,53 + 30\% (14 \times 0,53)$$
$$S = 9,65 \text{ (10 units)}$$

So, the total safety stock for the Speaker BMB S10 merchandise according to the EOQ method is 10 units.

d. Reorder Point

Calculation of the ROP is then continued and can be described as follows:
$$ROP = 10 + 14 \text{ and } ROP = 24 \text{ (24 units)}$$

So, according to the EOQ calculation, the company should reorder the Speaker BMB S10 merchandise when there are only 24 units left in stock.

e. **Total Inventory Cost**

Calculate the total inventory cost (TIC), which combines various data such as sales, orders, and storage costs, as follows:

$$\text{TIC} = \left[\frac{191}{81}326.000\right] + \left[\frac{81}{2}18.848,17\right]$$
$$\text{TIC} = [768.716,05] + [763.350,89]$$
$$\text{TIC} = 1.532.066,94$$

Therefore, the total inventory cost that the company needs to incur for Speaker BMB S10 merchandise in the 2022 period, according to the Economic Order Quantity (EOQ) method, is Rp 1,532,066.94.

f. **Total Inventory Cost (Company Policy)**

Company's inventory cost in 2022 is calculated as follows:

$$\text{TIC} = (16 \times 18.848,17) + (326.000 \times 12)$$
$$\text{TIC} = (301.570,72) + (3.912.000)$$
$$\text{TIC} = 4.213.570,72$$

Therefore, the total inventory cost that the company needs to incur for Speaker BMB S10 merchandise in the 2022 period, according to the company's policy calculation, is Rp 4,213,570.72.

b. Analysis of Economic Order Quantity (EOQ) Method Calculation in Inventory Management of Amplifier BMB SM250 at CV Standard Entertainment Music in 2022

Table 4. Amplifier BMB SM250 Sales Data for the Year 2022

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Des	Total
Sales (unit)	5	9	19	18	27	19	27	22	12	16	23	21	218

Based on table 4, CV Standard Entertainment Music company sold the Amplifier BMB SM250 merchandise for a total of 218 units in one year, with an average monthly sale of 18.17 or rounded to 18 units.

Table 5. Amplifier BMB SM250 Ordering Cost Data for the Year 2022

Product Name	Frequency (times)	Ordering Cost	Total Ordering Cost (Rupiah)
Amplifier BMB SM250	9	195.000	1.755.000
	Total		1.755.000

Based on table 5, the company CV Standard Entertainment Music placed orders 9 times in one year, with a cost of Rp 195,000 per order, resulting in a total order cost of Rp 1,755,000.

Table 6. Amplifier BMB SM250 Inventory Cost Data for the Year 2022

Product Name	Total Unit	Total Inventory Cost (Rupiah)
Amplifier BMB SM250	218	3.600.000

According to table 6, CV Standard Entertainment Music company is capable of storing 218 units of Amplifier BMB SM250 merchandise with a total storage cost of Rp 3,600,000.

a. Economic Order Quantity (EOQ)

The formula for calculating the Economic Order Quantity (EOQ) used in the calculation of Amplifier BMB SM250 is as follows [11]:

$$EOQ = \sqrt{\frac{2 \, x \, 218 \, x \, 195.000}{16.513,76}}$$

$$EOQ = \sqrt{5.148,43}$$

$$EOQ = 71,75 \text{ (72 units)}$$

Therefore, the optimal quantity of orders for Amplifier BMB SM250 merchandise for each order in the year 2022 is 71.75, rounded up to 72 units.

b. Order Frequency

Here is the equation used in the calculation of order frequency for Amplifier BMB SM250 data [12]:

$$F = \frac{218}{72}$$

$$F = 3,03 \text{ (3 times)}$$

The order frequency for Amplifier BMB SM250 based on the EOQ calculation method is 3 times per year.

c. Safety Stock

Due to the need for additional data besides sales, storage, and ordering data, the researcher obtained some additional data related to the calculation of safety stock for the Speaker BMB S10 merchandise. Here is the required data:

safety stock percentage (%S)   : 30%
lead time (LT)   : 14 (14 days)
daily usage (AU)   : 218 units / 360 days = 0.61 unit per day

With this data, the calculation of safety stock for Amplifier BMB SM250 can proceed using the following formula [12]:

$$S = 14 \times 0,61 + 35\% \, (14 \times 0,61)$$

S = 11,45 (11 units)

So, the total safety stock for Amplifier BMB SM250 merchandise according to the EOQ method is 11 units.

d. Reorder Point

Calculation of the Reorder Point (ROP) is continued as follows:

ROP = 11 + 14

ROP = 25 (25 units)

Therefore, the company will reorder Amplifier BMB SM250 merchandise according to the EOQ calculation when the remaining inventory reaches only 25 units.

e. Total Inventory Cost

Calculation of inventory costs, which includes several combined data such as sales, orders, and storage, can be performed as follows:

$$\text{TIC} = \left[\frac{218}{72} 195.000\right] + \left[\frac{72}{2} 16.513,76\right]$$

TIC = [590.416,67] + [594.495,36]

TIC = 1.184.912,03

Therefore, the total inventory cost that the company needs to incur in the year 2022 for Amplifier BMB SM250 merchandise according to the Economic Order Quantity (EOQ) method is Rp 1,184,912.03.

f. Total Inventory Cost (Company Policy)

Company's inventory cost in 2022 is also performed, as follows:

TIC = (18 x 16.513,76) + (195.000 x 9)

TIC = (297.247,68) + (1.755.000)

TIC = 2.052.247,68

Therefore, the total inventory cost that the company needs to incur in the year 2022 for Amplifier BMB SM250 merchandise according to the company's policy calculation is Rp 2,052,247.68.

c. Analysis of Economic Order Quantity (EOQ) Method Calculation in Inventory Management of Microphone BMB SM180 at CV Standard Entertainment Music in 2022

Table 7. Microphone BMB SM180 Sales Data for the Year 2022

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Des	Total
Sales (unit)	33	44	42	39	54	21	61	12	27	32	53	21	439

According to table 7, CV Standard Entertainment Music company sold 439 units of the Microphone BMB SM180 merchandise in one year, with an average monthly sale of 36.58 or rounded to 37 units.

Table 8. Microphone BMB SM180 Ordering Cost Data for the Year 2022

Product Name	Frequency (times)	Ordering Cost	Total Ordering Cost (Rupiah)
Microphone BMB SM180	12	137.000	1.644.000
Total			1.644.000

Based on table 8, CV Standard Entertainment Music company placed orders 12 times in one year, with a cost of Rp 137,000 per order, resulting in a total order cost of Rp 1,644,000.

Table 9. Microphone BMB SM180 Inventory Cost Data for the Year 2022

Product Name	Total Unit	Total Inventory Cost (Rupiah)
Microphone BMB SM180	439	3.600.000

According to table 9, CV Standard Entertainment Music company is capable of storing 439 units of Microphone BMB SM180 merchandise with a total storage cost of Rp 3,600,000.

a. **Economic Order Quantity (EOQ)**
The formula for calculating the Economic Order Quantity (EOQ) used in the calculation of Microphone BMB SM180 is as follows [11]:

$$EOQ = \sqrt{\frac{2 \times 439 \times 137.000}{8.200,46}}$$

$$EOQ = \sqrt{14.668,2}$$

$$EOQ = 121,11 \text{ (121 units)}$$

The optimal order quantity for Microphone BMB SM180 merchandise for each order in the year 2022 is 121.11, rounded up to 121 units.

b. **Order Frequency**
The equation for calculating order frequency used in the calculation of Microphone BMB SM180 data is as follows [12]:

$$F = \frac{439}{121}$$

$$F = 3,63 \text{ (4 times)}$$

Therefore, the order frequency for Microphone BMB SM180 based on the EOQ calculation method is 4 times per year.

c. **Safety Stock**
Due to the need for additional data beyond sales, storage, and ordering data, the researcher obtained some supplementary data from interviews related to the calculation of safety stock for Microphone BMB SM180 merchandise. Here is the required data:
safety stock percentage (%S)   : 30%

lead time (LT)   : 14 (14 days)
daily usage (AU)   : 439 units / 360 days = 1.22 unit per day

With this data, the calculation of safety stock for Microphone BMB SM180 can proceed using the following formula [12]:

$S = 14 \times 1{,}22 + 45\% \ (14 \times 1{,}22)$

$S = 24{,}77$ (25 units)

Therefore, the total safety stock for Microphone BMB SM180 merchandise according to the EOQ method is 25 units.

d. Reorder Point

Calculation of the Reorder Point (ROP) is continued as follows:

$ROP = 25 + 14$
$ROP = 39$

Therefore, the company will reorder Microphone BMB SM180 merchandise according to the EOQ calculation when the remaining inventory reaches only 39 units.

e. Total Inventory Cost

Calculation of inventory costs, which includes several combined data such as sales, orders, and storage, can be performed as follows:

$TIC = \left[\frac{439}{121}137.000\right] + \left[\frac{121}{2}8.200{,}46\right]$

$TIC = [497.049{,}59] + [496.127{,}83]$

$TIC = 993.177{,}42$

Therefore, the total inventory cost that the company needs to incur in the year 2022 for Microphone BMB SM180 merchandise according to the Economic Order Quantity (EOQ) method is Rp 993,177.42.

f. Total Inventory Cost (Company Policy)

Company's inventory cost in 2022 is also performed, as follows:

$TIC = (37 \times 8.200{,}46) + (137.000 \times 12)$

$TIC = (303.417{,}02) + (1.644.000)$

$TIC = 1.947.417{,}02$

Therefore, the total inventory cost that the company needs to incur in the year 2022 for Microphone BMB SM180 merchandise according to the company's policy calculation is Rp 1,947,417.02.

Discussion Result

Table 10. Comparison of Inventory Management Calculations Between the Economic Order Quantity (EOQ) Method and Company Policy Calculation for the Year 2022 for Three Merchandise Items of CV Standard Entertainment Music

Product Name	Method	Order Quantity	Order Frequency	Safety Stock	Reorder Point	Total Inventory Cost (Rp)
Speaker BMB S10	Company Policy	24	12	0	100	4.213.570,72.
	EOQ	81	2	10	24	1.532.066,94
Amplifier BMB SM250	Company Policy	15	9	0	100	2.052.247,68
	EOQ	72	3	11	25	1.184.912,03
Microphone BMB SM180	Company Policy	45	12	0	100	1.947.417,02
	EOQ	121	4	25	39	993.177,42

Based on table 10, inventory management of Speaker BMB S10 merchandise at CV Standard Entertainment Music, using the Economic Order Quantity (EOQ) method and data from the year 2022, can yield optimal results if the company can place orders for Speaker BMB S10 merchandise with a quantity of 81 units per order (57 units more than the average order quantity in the company's policy). However, when using the EOQ method, the ordering frequency decreases to 2 times per year (10 times less frequent than the company's ordering frequency). Furthermore, it sets the safety stock at 10 units and the reorder point at 24 units (76 units less than the reorder point set by the company). By implementing the EOQ method for Speaker BMB S10 merchandise, CV.Standard Entertainment Music can achieve savings of Rp 2,681,503.78.

Similarly, based on table 10, inventory management of Amplifier BMB SM250 merchandise at CV Standard Entertainment Music, using the Economic Order Quantity (EOQ) method and data from the year 2022, can yield optimal results if the company can place orders for Amplifier BMB SM250 merchandise with a quantity of 72 units per order (57 units more than the average order quantity in the company's policy). However, when using the EOQ method, the ordering frequency decreases to 3 times per year (6 times less frequent than the company's ordering frequency). Additionally, it sets the safety stock at 11 units and the reorder point at 25 units (75 units less than the reorder point set by the company). By implementing the EOQ method for Amplifier BMB SM250 merchandise, CV.Standard Entertainment Music can save Rp 867,335.65.

Furthermore, based on table 10, inventory management of Microphone BMB SM180 merchandise at CV Standard Entertainment Music, using the Economic Order Quantity (EOQ) method and data from the year 2022, can reach an optimal point if the company places orders for Microphone BMB SM180 merchandise with a quantity of 121 units per order (57 units more than the average order quantity in the company's policy). However, when using the EOQ method, the ordering frequency decreases to 4 times per year (8 times less frequent than the company's ordering frequency). It also sets the safety stock at 25 units and the reorder point at 39 units (75 units less than the reorder point set by the company). By implementing the EOQ method for Microphone BMB SM180 merchandise, CV.Standard Entertainment Music can save Rp 954,239.60.

5 Conclusion and Recommendations

a.   Conclussion

First, the calculations between the two methods conducted using the data from 2022 at CV.Standard Entertainment Music indicate that the quantity ordered in one inventory management order using the Economic Order Quantity (EOQ) method is greater than the average order quantity in one order placed by the company. However, in terms of cost, calculations using the EOQ method result in savings and are more cost-effective than the inventory costs incurred by the company in 2022.

Second, the frequency of inventory management order placements using the Economic Order Quantity (EOQ) method is lower or less frequent compared to the order frequency maintained by CV Standard Entertainment Music for its merchandise, resulting in reduced ordering costs for the company. Third, setting appropriate safety stock and reorder points can help the company save on ordering and storage costs while avoiding inventory shortages or excesses.

b.   Recommendations

First, having adequate storage capacity in the company's four storage warehouses, efficient delivery processes, and reliable suppliers for merchandise such as Speaker BMB S10, Amplifier BMB SM250, and Microphone BMB SM180 can support the application and implementation of the Economic Order Quantity (EOQ) method. Second, the company should consider implementing inventory management methods aimed at minimizing inventory-related expenses, ultimately leading to increased profits that can be reinvested in the company's growth. One recommended method is the Economic Order Quantity (EOQ).

Third, CV Standard Entertainment Music should continuously evaluate demand trends during each period to make informed decisions when setting inventory ordering policies. Fourth, the company should establish safety stock and reorder point levels that are neither excessive nor insufficient, allowing for flexibility in managing inventory levels while affecting ordering and storage costs positively.

Bibliography

[1]   R. Apriliandra, "Analisis Pengendalian Persediaan Bahan Baku Tepung Terigu dengan Metode Economic Order Quantity (EOQ) pada Perusahaan Mie Tenaga Muda Pekanbaru," Pekanbaru, 2019.

[2]   L. D. Simbolon, *Pengendalian Persediaan*. Forum Pemuda Aswaja, 2021.

[3]   M. Sahin, F. Eldemir, and A. Turkyilmaz, "Inventory Cost Minimization of Spare Parts in Aviation Industry," *Elsevier*, 2021.

[4]   A. S. Andini, A. A. Wiguna, R. A. Djamali, and F. E. A. Pratama, "Penerapan Pengendalian Persediaan Bahan Baku dengan Meotde Economic Order Quantity (EOQ) pada Perusahaan Sohun di Kota Madiun," *Jurnal Manajemen Agribisnis dan Agroindustri*, vol. 2, Dec. 2022.

[5]   J. Sicilia, L. A. Sanjose, D. A. L. De Pablo, and B. A. Jalbar, "Optimal Policy for Multi-Item Systems with Stochastic Demands, Backlogged Shortages and Limited Storage Capacity," *Elsevier*, Mar. 2022.

[6]   F. Aldiansyah and A. E. Nurhidayat, "Pengoptimalisasi Sistem Distribusi Pesanan Buku Paket dengan Metode DRP dan Tabu Search," *Jurnal Indonesia Sosial Sains*, vol. 3, Sep. 2022.

[7]   C. W. Oktavia and A. Sugioko, "Analisis Peramalan dan Perhitungan Total Biaya Persediaan Gula dengan Menggunakan Simulasi monte Carlo dan EOQ di PT. XYZ," *Jurnal Metris*, Aug. 2022.

[8] N. N. El Indri, H. E. Wahanani, and F. Muttaqin, "Pembuatan Sistem Prediksi Persediaan Barang pada Toko Nabila Menggunakan Metode Weighted Moving Average dan Reorder Point," *Jurnal Informatika Polinema (JIP)*, vol. 9, Feb. 2023.

[9] M. N. Piranti and A. Sofiana, "Kombinasi Penentuan Safety Stock dan Reoder Point Berdasarkan Analisis ABC sebagai Alat Pengendalian Persediaan Cutting Tools," *Jurnal Teknik Industri*, vol. 7, 2021.

[10] F. Manta, "Optimasi Total Inventory Cost pada Persediaan Spare Part Alat Berat dengan Menggunakan Metode Economic Order Quantity," *Jurnal PENA*, vol. 1, Mar. 2020.

[11] Harmono, *Manajemen Keuangan Berbasis Balaced Scorecard*, 1st ed. Jakarta: Bumi Aksara, 2009.

[12] P. P. Dasalin, "Analisis Perencanaan dan Pengendalian Persediaan Barang Dagang pada PT. NIPPON INDOSARI CORPINDO Banyuasin," Universitas Muhammadiyah Palembang, Palembang, 2013.

[13] Kasmir, *Pengantar Manajemen Keuangan*, 1st ed. Jakarta: Kencana Prenada Media Group, 2010.

[14] J. Heizer and B. Render, *Manajemen Operasi*, 2nd ed. Jakarta: Salemba Empat, 2010.