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THE IMPLEMENTATION OF ECONOMIC ORDER QUANTITY IN INVENTORY MANAGEMENT SYSTEM AT PT.INTAN TRIPUTRA ABADI

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ABSTRACT

PT Intan Triputra Abadi is a company engaged in the textile trade. The business process at this time there are several problems related to the inventory of goods in the warehouse, namely the number of requests for goods from customers is uncertain every month causing companies to have difficulty determining the right and efficient quantity of ordering goods so as to increase inventory prices so as not to cause a buildup of stock in the warehouse so can increase stock. The company has difficulty in determining the amount of reserves for each type of goods that is appropriate to ask for approval of the stock, excess stock of goods and accumulate for too long causing losses, because capital is not spinning. The company has difficulty in determining the time of ordering goods accordingly. The solution to overcome the problems that exist in this study will apply the Economic Order Quantity method because using this method can determine the optimal number of orders and can save on storage costs and purchase order costs. Based on the results of this study after testing the procurement system using the Economic Order Quantity method, conclusions can be generated that can help provide warehouse managers in determining the amount of inventory for each type of goods suitable for purchase. Helps purchase in the right amount and saves money so that it can save costs and also cause stock buildup in warehouses or out of stock. Assist purchasing in determining the time of ordering goods.

Keywords : *Inventory*, *Economic Order Quantity*, EOQ, *Safety Stock, Warehouse*

1. INTRODUCTION

PT Intan Triputra Abadi was founded in 1970 which is located in Bandung. Previously the company was named PD Intan, and was engaged in the textile trade. In 2012, after 42 years of existence, PD Intan changed into a new company, PT Intan Triputra Abadi. In running a trading business in the textile sector, this company sells various types of fabrics that are purchased directly from textile factories that produce various types of fabrics from various regions in Indonesia and are resold to various cities, especially the city of Bandung. This company sells various types of fabrics such as serena mas fabrics, grand master fabrics, crk bali rayon print fabrics 44 @ 150 y and various types of fabrics from other textile products to many customers in various cities. PT Intan Triputra Abadi gets direct supply of goods from several supplier factories that produce these textile fabrics. The company has its own warehouse with an area of about 500 m2 and with a storage capacity of up to 1000 roll used to store inventory of goods to be sold and distributed to its customers.

Based on the results of an interview with Operational Manager, the company currently only uses estimates to determine safe stock in the warehouse, if the stock inventory in the warehouse starts to run low, which is where there is only less than 50 meters of inventory left, it will immediately make a purchase order. The process of estimating the number of orders is based on the average previous inventory. Inventory rules at the company at this time every two weeks will be carried out checking of the stock in which this checking is to be able to find out what goods are already depleting stock and if the stock of goods in warehouse depleted it will immediately be ordered to suppliers, where each fabric product has its own supplier according to a mutual agreement between the company and the supplier. In the process of ordering goods to suppliers the company uses a monthly period. Ordering of goods is carried out with the approval of the owner of PT Intan Triputra Abadi, from the business process that has been explained at this time there are several problems that are often faced by the company related to the inventory of goods in the warehouse, such as due to the number of requests for goods from customers who are uncertain every month causing companies to difficulty determining the number of ordering goods

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precisely and economically so as to save costs and not cause stock buildup in warehouses or out of stock. The company has difficulty in determining the right amount of inventory for each type of goods to maintain the availability of stock, excess stock of goods and accumulate for too long causing losses, due to capital that is not spinning. The company has difficulty in determining the exact time of ordering goods. For this reason, this research will apply the Economic Order Quantity method because using this method can determine the optimal order quantity and can minimize storage costs and inventory ordering costs. With this method it is expected to be a solution to the problems that are happening at the company.

Based on the description that has been explained above, it is necessary to build an inventory system that is expected to be a solution of the existing problems. Thus the authors intend to analyze and create an Information System entitled "The Application of the Economic Order Quantity Method in Inventory Management Information Systems at PT. Intan Triputra Abadi".

2. RESEARCH CONTENTS

2.1 Theoretical Basis

Inventory is a general term that shows everything or organizational resources that are stored in anticipation of fulfilling demand. Demand for resources may be internal or external. This includes the supply of raw materials, work in process, finished goods or final products, auxiliary or supplementary materials, and other components that are part of the company's product output. This type of inventory is often referred to as product output inventory (product output), where almost everyone identifies quickly as inventory [3].

2.1.1 *Economic Order Quantity* (EOQ)

Economic Order Quantity (EOQ) is used to determine the quantity of inventory orders that minimize the direct cost of storing inventory and the inverse cost of inventory ordering [1].

The commonly used EOQ formula is :

$$EOQ = \sqrt{\frac{2DS}{H}}$$

Where :

D = estimated usage or demand per time period
S = booking fee
H = storage costs

2.1.2 *Safety Stock*

Safety stock if inventory usage exceeds estimates. Safety stock is an additional inventory held to protect or maintain the possibility of material shortages (stock out)[2].

2.2 Problem Analysis

In accordance with the results of research at PT Intan Triputra Abadi, obtained analysis of the problems, namely as follows:
1. The difficulty of determining the optimal number of goods ordered.
2. Difficult to determine the exact amount of inventory for each type of goods.
3. Difficult in determining the exact time of ordering goods.

2.3 Analysis of the Inventory Management Information System Model

Inventory Management Information System Model is a model that will be used as a picture or flow that will be applied to the process of inventory system. Inventory management information system model can be seen in Figure 2.1.
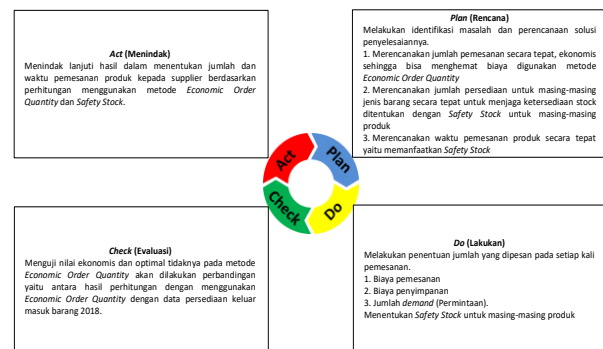

Figure 2.1 Model PDCA Inventory Information System

2.3.1 Planning Stages (Plan)

At this stage the problem identification and planning of the solution are carried out, the problems found are:
a. The number of requests for goods from customers is erratic every month, causing companies to difficulty determining the number of ordering goods precisely, economically so that it can save costs and does not cause stock buildup in warehouses or stock scarcity.
b. The company has difficulty in determining the right amount of inventory for each type of goods to maintain the availability of stock, excess stock of goods and accumulate for too long causing losses, due to capital that is not spinning.
c. The company has difficulty in determining the exact time of ordering goods.
The solution plan offered for the above three problems is as follows:

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a. To determine the right and economic order quantity of goods, the Economic Order Quantity (EOQ) method is used.

b. To determine the amount of inventory of each type of product / product and maintain stock availability, Safety Stock must be determined for each product.

c. To determine the time of ordering goods, by using the safety stock that has been previously determined, if the amount of inventory of a product is below the safety stock of the item / product, then it is used as a time reference for ordering to suppliers with the number of orders as much as the calculation results EOQ for these goods / products.

Inventory data needed to perform the analysis of the method that has been determined is the data of the previous period, namely in 2018. As a sample in the analysis, 3 products are selected as follows:

a. SERENA MAS Fabric - Tosca Color MD 6A.

b. GRAND MASTER Fabric - Black.

c. CRK BALI fabric rayon print 44 @ 150y - Color Red

Data on inventory of goods entering and leaving each type of goods in 2018 can be seen in table 2.1

Table 2.1 Inventory data in and out of each type of goods in 2018

Bulan	Kain SERENA MAS - Warna Tosca MD 6A				Kain GRAND MASTER - Warna Hitam				Kain CRK BALI rayon print 44 @150y - Warna Red			
	Stok Awal	In (Beli)	Out (Jual)	Stok Akhir	Stok Awal	In (Beli)	Out (Jual)	Stok Akhir	Stok Awal	In (Beli)	Out (Jual)	Stok Akhir
Januari	53	350	244	159	177	200	226	151	198	150	304	44
Februari	159	250	341	68	151	200	295	56	44	200	220	24
Maret	68	200	175	93	56	350	326	80	24	250	155	119
April	93	300	317	76	80	150	122	108	119	150	163	106
Mei	76	350	227	199	108	300	195	213	106	150	236	20
Juni	199	200	324	75	213	200	257	156	20	350	157	213
Juli	75	150	198	27	156	100	241	15	213	200	248	165
Agustus	27	200	227	0	15	150	123	42	165	150	219	96
September	0	350	189	161	42	250	212	80	96	300	264	132
Oktober	161	350	277	234	80	350	248	182	132	150	197	85
Nopember	234	300	281	253	182	200	189	193	85	200	228	57
Desember	253	250	278	225	193	150	275	68	57	200	217	40
Total		3250	3078			2600	2709			2450	2608	

2.3.2   Implementation Stages (Do)

2.3.2.1 Determine the EOQ for each product

In determining the amount ordered at each order, it is necessary to calculate the existing variables. Here are the counts of the variables needed:

a. Booking Fee

Ordering costs are ordering costs associated with trying to get raw materials or goods from outside.

Tabel 2.2 Ordering Details Details (per order)

No	Jenis Biaya	Jumlah (Rp)	Keterangan
1	Biaya angkut Muat	150.000	
2	Biaya Transport	0	Ditanggung oleh supplier
	Jumlah Biaya Pemesanan (S)	150.000	

So from the table above can be obtained the total cost of ordering for one message, which is Rp. 150,000.

b. Storage Fee

Storage costs (carrying costs or holding costs) are costs incurred because the company stores inventory.

Storage costs are obtained from the opportunity cost calculation if if the money that is embedded is saved saved in the bank, and the average bank interest rate as of June 20, 2019 is 6%. (Source: Bank Indonesia)

Storage Cost (H) = holding cost (in decimal) x price eachunit

Table 2.3 Risk Details of Storage Costs (per meter)

No	Nama Produk	Harga Beli (Rp)	Suku Bunga Bank	Biaya Simpan per Meter
1	Kain SERENA MAS - Warna Tosca MD 6A	20.500,-		Rp.1.230,-
2	Kain GRAND MASTER - Warna Hitam	18.750,-	6%	Rp.1.125,-
3	Kain CRK BALI rayon print 44 @150y - Warna Red	34.500,-		Rp.2.070,-

c. Amount of Demand (Requirement)

Plans for procurement of goods in 2019, based on the demand / needs for each type of goods, namely:

Table 2.4 Needs for each item in 2019

No.	Nama Barang	Kebutuhan Barang
1	Kain SERENA MAS - Warna Tosca MD 6A	3250 Meter
2	Kain GRAND MASTER - Warna Hitam	2600 Meter
3	Kain CRK BALI rayon print 44 @150y - Warna Red	2450 Meter

After doing the calculation as above, the amount of an economical purchase of goods using the Economic Order Quantity method is as follows:

$$EOQ = \sqrt{\frac{2DS}{H}}$$

Noted that :

D = total demand for goods in one year.

S = cost of the message in each message.

H = storage cost eachunit.

Table 2.5 Determine the EOQ of Each Product

No	Nama Barang	Qty / Pembelian	Jumlah	Frekuensi Pemesanan
1	Kain SERENA MAS - Warna Tosca MD 6A	$Q^* = \sqrt{\frac{2 \times 3250 \times 150.000}{1.230}}$ $= \sqrt{792.682,9268}$ $= 890.327$	890	3250: 890.327=3,650 (4 kali)
2	Kain GRAND MASTER - Warna Hitam	$Q^* = \sqrt{\frac{2 \times 2600 \times 150.000}{1.125}}$ $= \sqrt{693333.333}$ $= 832.666$	833	2600: 832.666=3.122 (3 kali)
3	Kain CRK BALI rayon print 44 @150y - Warna Red	$Q^* = \sqrt{\frac{2 \times 2450 \times 150.000}{2.070}}$ $= \sqrt{355072.564}$ $= 595.880$	596	2450: 595.880=4.112 (4 kali)

2.3.2.2 Determine the Safety Stock for each product

For the calculation of safety stock that will be used in research that is using statistical methods, in this study it is assumed that the desired level of service for companies and suppliers is the same as 95%, so that the 95% service level has a value of z = 1.64.

The following are the Safety Stock calculations for each product:

1.   Safety Stock for SERENA MAS Fabric products - Tosca MD 6A colors

The process of calculating the safety stock of SERENA MAS Cloth products - Tosca MD 6A colors can be seen in table 2.6

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Table 2.6 Calculating Safety Stock of SERENA MAS Fabric Products - Tosca Color MD 6A

Fabric SERENA MAS - Warna Tosca MD 6A			
Month	At	At-SA	(At-SA)^2
1	244	-12.50	156.250
2	341	84.50	7140.250
3	175	-81.50	6642.250
4	317	60.50	3660.250
5	227	-29.50	870.250
6	324	67.50	4556.250
7	198	-58.50	3422.250
8	227	-29.50	870.250
9	189	-67.50	4556.250
10	277	20.50	420.250
11	281	24.50	600.250
12	278	21.50	462.250
Total	3078		33357
SA	256.50		2779.75

- Determine Simple Average (SA)

$$Simple\ Average = \frac{At + At-1 + \cdots + At-(N-1)}{N}$$

Information :
SA = Simple Average
A = Actual Requests for the t-period
N = The amount of sales data involved in the calculation

$$Simple\ Average = \frac{3078}{12} = 256,5\ Meter$$

- Determine Standard Deviation (S)

$$STDEV = \sqrt{\frac{\sum_{i=1}^{n}(d-\bar{d})^2}{n}}$$
$$= \sqrt{\frac{33357}{12}}$$
$$= \sqrt{2779,75}$$
$$= 52,72$$

- Determine Safety Stock (SS)

SS (Safety Stock) = Z x s x $\sqrt{L}$
Information :
SS = Safety Stock
Z = Service Level 95% = 1.64
s = Standar Deviasi = 52,72
L = Lead Time = 1 Month
SS (Safety Stock) = Z x s x $\sqrt{L}$
= 1,64 x 52,72 x $\sqrt{1}$
= 86,466

= 86 Meters

2. Safety Stock for GRAND MASTER Fabric products - Black

The process of calculating the safety stock of GRAND MASTER Fabric products - Black can be seen in table 2.7.

Table 2.7 Calculating Safety Stock of GRAND MASTER Fabric Products - Black

Fabric GRAND MASTER - Warna Hitam			
Month	At	At-SA	(At-SA)^2
1	226	0.25	0.063
2	295	69.25	4795.563
3	326	100.25	10050.063
4	122	-103.75	10764.063
5	195	-30.75	945.563
6	257	31.25	976.563
7	241	15.25	232.563
8	123	-102.75	10557.563
9	212	-13.75	189.063
10	248	22.25	495.063
11	189	-36.75	1350.563
12	275	49.25	2425.563
Total	2709		42782.250
SA	225.75		3565.188

- Determine Simple Average (SA)

$$Simple\ Average = \frac{At + At-1 + \cdots + At-(N-1)}{N}$$

Information :
SA = Simple Average
A = Actual Requests for the t-period
N = The amount of sales data involved in the calculation

$$Simple\ Average = \frac{2709}{12} = 225.75$$

- Determine Standard Deviation (S)

$$STDEV = \sqrt{\frac{\sum_{i=1}^{n}(d-\bar{d})^2}{n}}$$
$$= \sqrt{\frac{42782,25}{12}}$$
$$= \sqrt{3565,19}$$
$$= 59,71$$

- Determine Safety Stock (SS)

SS (Safety Stock) = Z x s x $\sqrt{L}$
Information :
SS = Safety Stock
Z = Service Level 95% = 1.64
s = Standar Deviasi = 59,71
L = Lead Time = 1 Month

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SS (*Safety Stock*) = Z x s x $\sqrt{L}$
= 1,64 x 59,71 x $\sqrt{1}$
= 97,923
= 98 Meters

3. Safety Stock for CRK BALI rayon print 44 @ 150y - Red.

The process of calculating the safety stock of products CRK BALI rayon print 44 @ 150y - Red can be seen in table 2.8.

Table 2.8 Calculating Safety Stock of CRK BALI rayon print 44 @ 150y - Red

Kain CRK BALI rayon print 44 @150y - Warna Red			
Month	At	At-SA	(At-SA)^2
1	304	86.67	7511.111
2	220	2.67	7.111
3	155	-62.33	3885.444
4	163	-54.33	2952.111
5	236	18.67	348.444
6	157	-60.33	3640.111
7	248	30.67	940.444
8	219	1.67	2.778
9	264	46.67	2177.778
10	197	-20.33	413.444
11	228	10.67	113.778
12	217	-0.33	0.111
Jumlah	2608		21992.667
SA	217.33		1832.722

- Determine Simple Average (SA)

$$Simple\ Average = \frac{At + At-1 + \cdots + At-(N-1)}{N}$$

Information :
SA = *Simple Average*
A = Actual Requests for the t-period
N = The amount of sales data involved in the calculation

$$Simple\ Average = \frac{2608}{12} = 217,33333$$

- Determine Standard Deviation (S)

$$STDEV = \sqrt{\frac{\sum_{i=1}^{n}(d-\bar{d})^2}{n}}$$
$$= \sqrt{\frac{21992,67}{12}}$$

$= \sqrt{1832,72}$
$= 42,81$

- Determine Safety Stock (SS)

SS (*Safety Stock*) = Z x s x $\sqrt{L}$
Information :
SS = *Safety Stock*
Z = Service Level 95% = 1.64
s = *Standar Deviasi* = 42,81
L = *Lead Time* = 1 Month
SS (*Safety Stock*) = Z x s x $\sqrt{L}$
= 1,64 x 42,81 x $\sqrt{1}$
= 70,209
= 70 Meters

Based on the calculation above, the Safety Stock values for each product are obtained, as follows:

Table 2.9 Safety Stock for each product

No.	Nama Produk	Nilai *Safety Stock*
1.	Kain SERENA MAS - Warna Tosca MD 6A	86 Meter
2.	Kain GRAND MASTER - Warna Hitam	98 Meter
3.	Kain CRK BALI rayon print 44 @150y - Warna Red	70 Meter

2.3.3 Checking Stages (Check)

To check the economic and optimal value of the EOQ method in determining the number of orders to suppliers, it is carried out with a trial approach using the EOQ method with inventory procurement plans in 2019.

a. SERENA MAS Fabric - Tosca Color MD 6A

The test results of the cost of inventory of Serena Mas fabric goods - Tosca MD 6A color, the total procurement plan in 2019 is 3,250 meters, the storage cost (H) is Rp. 1,230 / meter, message fee (S) of Rp. 150,000 for one message. If using the EOQ method can be seen in table 2.10.

Table 2.10 Calculation of Inventory Cost of Fabric Goods Serena Mas

Kain SERENA MAS - Warna Tosca MD 6A									
FREKUENSI PESAN (X)	JUMLAH PESANAN (Meter)	PERSEDIAAN RATA-RATA (Meter)	BIAYA PEMESANAN (Rp)		BIAYA PENYIMPANAN (Rp)		BIAYA TOTAL (Rp)		
1	3250	1625	Rp	150,000	Rp	1,998,750	Rp	2,148,750	
2	1625	812.5	Rp	300,000	Rp	999,375	Rp	1,299,375	
3	1083.33	541.67	Rp	450,000	Rp	666,250	Rp	1,116,250	
4	812.5	406.25	Rp	600,000	Rp	499,688	Rp	1,099,688	
5	650	325	Rp	750,000	Rp	399,750	Rp	1,149,750	
6	541.67	270.83	Rp	900,000	Rp	333,125	Rp	1,233,125	
7	464.29	232.14	Rp	1,050,000	Rp	285,536	Rp	1,335,536	
8	406.25	203.13	Rp	1,200,000	Rp	249,844	Rp	1,449,844	
9	361.11	180.56	Rp	1,350,000	Rp	222,083	Rp	1,572,083	
10	325	162.5	Rp	1,500,000	Rp	199,875	Rp	1,699,875	
11	295.45	147.73	Rp	1,650,000	Rp	181,705	Rp	1,831,705	
12	270.83	135.4166667	Rp	1,800,000	Rp	166,563	Rp	1,966,563	

From the above table it can be concluded to minimize the total cost spent on the inventory of SERENA MAS - Tosca MD 6A colors, with a total of 3,250 meters in a year, if the company applies the EOQ method, the company can place orders with suppliers 4 times with quantity as much 812.5

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meters rounded up to 813 meters for each order with a total cost of Rp.1,099,688.

b. GRAND MASTER Fabric - Black

The results of testing the value of inventory costs of fabric Grand Master-black, the number of procurement plans in 2019 is as much as 2,600 meters, the cost of storage (H) of Rp. 1,125 / meter, message fee (S) of Rp. 150,000 for one message. If using the EOQ method can be seen in table 2.11.

Table 2.11 Calculation of Inventory Cost of Fabric Grand Master

FREKUENSI PESAN (X)	JUMLAH PESANAN (Meter)	PERSEDIAAN RATA-RATA (Meter)	BIAYA PEMESANAN (Rp)	BIAYA PENYIMPANAN (Rp)	BIAYA TOTAL (Rp)
		Kain GRAND MASTER - Warna Hitam			
1	2600	1300	Rp 150,000	Rp 1,462,500	Rp 1,612,500
2	1300	650	Rp 300,000	Rp 731,250	Rp 1,031,250
3	866.6666667	433.3333333	Rp 450,000	Rp 487,500	Rp 937,500
4	650	325	Rp 600,000	Rp 365,625	Rp 965,625
5	520	260	Rp 750,000	Rp 292,500	Rp 1,042,500
6	433.3333333	216.6666667	Rp 900,000	Rp 243,750	Rp 1,143,750
7	371.4285714	185.7142857	Rp 1,050,000	Rp 208,929	Rp 1,258,929
8	325	162.5	Rp 1,200,000	Rp 182,813	Rp 1,382,813
9	288.8888889	144.4444444	Rp 1,350,000	Rp 162,500	Rp 1,512,500
10	260	130	Rp 1,500,000	Rp 146,250	Rp 1,646,250
11	236.3636364	118.1818182	Rp 1,650,000	Rp 132,955	Rp 1,782,955
12	216.6666667	108.3333333	Rp 1,800,000	Rp 121,875	Rp 1,921,875

From the above table it can be concluded to minimize the total cost spent on inventory of Grand Master Fabrics - Black, with a total of 2,600 meters procurement in a year, if the company applies the EOQ method, the company can place orders with suppliers 3 times with a quantity of 866, 67 meters are rounded up to 867 meters for each order with a total cost of Rp.937,500.

c.

CRK BALI fabric rayon print 44 @ 150y - Color Red

The results of testing the value of the inventory costs of CRK Bali Rayon Fabric print 44 @ 150y, the number of procurement plans in 2019 is 2,450 meters, the storage cost (H) is Rp. 2,070 / meter, message fee (S) of Rp. 150,000 for one message. If you use the EOQ method can be seen in table 2.12.

Tabel 2.12 Perhitungan Biaya Persediaan Barang Kain CRK Bali Rayon Print 44@150y

FREKUENSI PESAN (X)	JUMLAH PESANAN (Meter)	PERSEDIAAN RATA-RATA (Meter)	BIAYA PEMESANAN (Rp)	BIAYA PENYIMPANAN (Rp)	BIAYA TOTAL (Rp)
		Kain CRK BALI rayon print 44 @150y - Warna Red			
1	2450	1225	Rp 150,000	Rp 2,535,750	Rp 2,685,750
2	1225	612.5	Rp 300,000	Rp 1,267,875	Rp 1,567,875
3	816.6666667	408.3333333	Rp 450,000	Rp 845,250	Rp 1,295,250
4	612.5	306.25	Rp 600,000	Rp 633,938	Rp 1,233,938
5	490	245	Rp 750,000	Rp 507,150	Rp 1,257,150
6	408.3333333	204.1666667	Rp 900,000	Rp 422,625	Rp 1,322,625
7	350	175	Rp 1,050,000	Rp 362,250	Rp 1,412,250
8	306.25	153.125	Rp 1,200,000	Rp 316,969	Rp 1,516,969
9	272.2222222	136.1111111	Rp 1,350,000	Rp 281,750	Rp 1,631,750
10	245	122.5	Rp 1,500,000	Rp 253,575	Rp 1,753,575
11	222.7272727	111.3636364	Rp 1,650,000	Rp 230,523	Rp 1,880,523
12	204.1666667	102.0833333	Rp 1,800,000	Rp 211,313	Rp 2,011,313

From the above table it can be concluded to minimize the total cost spent on inventory of Bali Rayon Print CRK 44 @ 150y type, with a total

procurement of 2,450 meters in a year, if the company applies the EOQ method then the company can place orders with suppliers 4 times with quantity as much 612.5 meters rounded up to 613 meters for each order with a total cost of Rp. 1,233,938.

2.3.4 Actions (Act)

This stage is carried out in determining the amount and time of ordering products to suppliers based on calculations using the EOQ and Safety Stock methods. From the data analysis process in the previous stage, we get:

a. The Order Amount for each order to the supplier using EOQ.

Table 2.13 Number of orders for each order to the supplier by using EOQ

Nama Produk	Pengadaan	Frekuensi	Quantity	Total Biaya
	Tabel Pengadaan EOQ			
Kain SERENA MAS - Warna Tosca MD 6A	3.250	4	813	Rp 1.099.688
Kain GRAND MASTER - Warna Hitam	2.600	3	867	Rp 937.500
Kain CRK BALI rayon print 44 @150y - Warna Red	2.450	4	613	Rp 1.233.938

b. Safety Stock Amount for each product

Tabel 2.14 Safety Stock Amount for each product

No.	Nama Produk	Nilai Safety Stock
1.	Kain SERENA MAS - Warna Tosca MD 6A	86 Meter
2.	Kain GRAND MASTER - Warna Hitam	98 Meter
3.	Kain CRK BALI rayon print 44 @150y - Warna Red	70 Meter

EOQ and Safety Stock results can be used to determine the amount and when to place an order. The results can be seen in table 2.15.

Table 2.15 EOQ and Safety Stock Results to determine the quantity and time of ordering goods

No.	Nama Produk	EOQ	Safety Stock	Data Persediaan Terakhir (Desember 2018)	Jumlah Rencana Pemesanan (EOQ)	Rencana Persediaan Akhir	Keterangan
1	Kain SERENA MAS - Warna Tosca MD 6A	813	86	225	-	225	Tidak ada pemesanan, persediaan masih aman diatas safety stock
2	Kain GRAND MASTER - Warna Hitam	867	98	68	867	935	
3	Kain CRK BALI rayon print 44 @150y - Warna Red	613	70	40	613	653	

2.3 Database Analysis

Database analysis is an analysis of data sets that are interconnected and stored in a particular storage medium without repetition.

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Figure 2.2 E-R Diagram (ERD) of Inventory System

2.4 System planning

The system design will be carried out after the analysis phase of the system has been completed.

2.4.1 Skema Relasi

Relation scheme that will be built on the system based on data and application requirements are as follows:

Figure 2.3 Relation Schema

2.5 System Implementation

At the implementation stage the system is the software development stage, and the ongoing stage of system design activities. This stage is the stage where the system must be ready to run.

2.5.1 Interface Implementation

In the implementation of the interface that is carried out in every appearance that is in the program being built and then in the coding that is using the form of program files.

Figure 2.4 Display Login

Figure 2.5 Display of the Inventory Plan

Figure 2.6 Display Purchase Order

3. COVERING

3.1 Conclusion

Based on the results of research that has been done using the blackbox technique, where testing is done by beta testing the Inventory Management Information System software Using the Economic Order Quantity Method, the conclusions obtained are:

1. This inventory system can assist warehouse managers in determining the exact amount of inventory for each type of goods to maintain stock availability.

2. This inventory system can help purchasing in determining the number of orders precisely and economically so as to save costs and not cause stock buildup in warehouses or stock scarcity

3. The new inventory system can help purchasing in determining the time of ordering goods.

3.2 Recommendation

Of all the results achieved at this time, of course there are still deficiencies that must be corrected or added. Suggestions for using the system that have been made are as follows:

It is necessary to have a barcode printing feature which will later be affixed to items to be sold or stored in warehouses and is useful for the inventory of data collection processes.

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