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Implementation Economic Order Quantity and Reorder Point Methods in Inventory Management Information Systems

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Abstract

Inventory control is at the core of supply management to balance inventory needs and demand. With an inventory system, management can control stock of materials and goods, production process and sales transactions can even stop the production process if necessary. Sari Gamping building materials store that sells various building needs including building materials and tools. Data management of goods, transactions and inventory processing still uses conventional methods using Microsoft Office. The purpose of this research is to analyze the ongoing inventory management process to create an inventory management information system so that it can help the Sari Gamping store in controlling inventory. The Economic Order Quantity (EOQ) and reorder point methods were chosen to optimize inventory to avoid shortages or excess inventories, to fulfill customer orders, to achieve cost efficiency and to prevent problems that may occur. The developed system can manage data on goods, categories, suppliers, manage purchase and sales transactions and can generate information from EOQ calculations, safety stock and reorder points. From the results of testing the calculations of the two methods used with 15 samples of catylac paint variants, the average inventory cost saving in June 2023 was 65.33%.

Keywords: Economic Order Quantity, Inventory, Management Information System, Reorder Point

1. INTRODUCTION

Business in Indonesia has shown quite rapid development, which means that Indonesia is a good place for various types of businesses, from start-ups managed by individuals to national companies that have many subsidiaries [1]. Generating profits by obtaining maximum profits is the goal of every company owner to keep growing. Therefore, company is required to carry out the right policies and strategies in the operational process [2]. One way that can be done is to produce as much as possible a quality and competitive product from the resources that are already owned by the company. To achieve this goal, it is

necessary to make important and appropriate decisions in order to produce according to plan [3].

Inventory or warehousing is an activity in order to fulfill the demand for goods in a business process which can be in supplying raw form, semi-finished and fully finished goods [4]. Inventory's function is to anticipate adverse situations due to excess or shortage of goods. Excess stock can be detrimental to a business because it raises warehouse costs, if there is a stock's shortage then company's income will decrease because it is unable to fulfill customer orders [5]. Inventory control is a core function of supply management to maintain a balance between inventory requirements and demand requirements [6]. To determine inventory control as expected, the three basic principles that must be met are type control, order quantity and reorder time [7]. Inventory control is a very important and noteworthy activity because it covers 20-40% of a company's total capital, especially manufacturing companies. When procuring materials, an appropriate method is needed by taking into account type and amount of materials needed in inventory [8]. An inventory system is a set of policies as well as controls that monitor inventory levels and determine what inventory should be stored, when to replenish stock and how much should be ordered. Manufacturing supplies are generally in goods's form that contribute to or become part of the results of the company's production process [9]. With the existence of an inventory system, management can control the stock of goods and materials, production processes and sales transactions, even if necessary, can stop the production process [10].

Information technology has become a major factor in the economy, especially business, and has fundamentally changed the structure, operations and management of organizations according to their functions. The big role of information technology is used for information management, producing information, storing information and delivering information [11]. One scope of information technology that is of concern to entrepreneurs is management information systems (MIS). MIS plays an important role in properly managing merchandise inventory in business processes, especially for businesses that have many types of goods and their quantities [12]. Existence of an inventory management information system makes it possible to react to isnformation needs relatively quickly and up-to-date, manual processes can be replaced to minimize data duplication and make it easier to process inventory, materials and orders using a computerized system [13].

EOQ is one of the oldest and most well-known techniques for inventory control. This technique aims to minimize the total cost of ordering and storage and storage costs of 26% of the unit price of goods [14]. By implementing EOQ method in a business, there will be a reduction in storage costs, saving

space in both warehouse and workspace, overcoming problems that arise due to large amounts of inventory piling up in warehouse so as to reduce risk [15]. Inventory of materials or goods commonly known as safety stock or safety stock. Inventory safety is an inventory reserve as a safeguard for the continuity of the production process in a business [16]. Reorder point which can be interpreted as a point or level of reordering is a level or condition where you have to place an order again so that goods ordered are received when safety stock is zero so that there is no empty stock [17].

Sari Gamping building shop is a business engaged in the sale of various building needs including building materials and tools located at Jl. Veteran No. 54, Sukoharjo. From observation's results with shop owners, known that goods data's management, transactions, and inventory processing still apply a conventional way using Microsoft Office. The owner and admin staff are still having difficulty calculating inventory and when to make another purchase because of the many types of goods they have. Difficulties are also felt in monitoring the position of inventory which results in difficulty in making decisions. For inventory management and storage of goods to be well organized and systemized, an application in a computerized system is needed to manage inventory. The purpose of this research is to produce an inventory management information system to assist store owners in controlling inventory. EOQ and reorder point methods are used in this research to optimize inventory so that cost efficiency occurs, avoid excess or shortage of inventory, can fulfill customer orders in a timely manner and prevent problems that may occur.

Previous research in form of a journal entitled Inventory Managements System Design on Angel Collection, produced a web-based system to assist small businesses in managing inventory using EOQ and RoP methods. By always monitoring inventory, you will get many benefits so that your business can always grow. Data used is sales data for 2021. December 2021 is the most shop owners place reorders due to high demand with a total of 41 products to be reordered. In this research did not calculate the cost savings after applying EOQ method [18]. Journal of research results with entitle Design and Build Inventory System using EOQ and ROP Methods (Case Study: CV. Ziefa Karya) developed a web-based system to facilitate inventory management. The development system method used is Model Driven Development (MDD) with stages of interviews, observation, literature study, problem analysis, needs analysis, system design, construction, and implementation. This research is more focused on making a system so that detailed calculations of two methods used are not discussed. From calculation results, it is obtained that company is able to spend 7 times in one year with a total expenditure of 71 units in each expenditure to meet the company's needs [19]. Scientific articles published in journals entitled Implementation of Inventory Information System Design Using Economic

Order Quantity Method create a web-based system. This research aims to help document loss, make it easier to make inventory reports and view stock items in a systematic way. The system was developed using the waterfall method. System can manage product categories, goods data, orders, warehouse stock to goods expenditure. This research also focuses more on system design and program development. Detailed calculations with the EOQ method are not presented. The conclusion of this study has not led to the method used only focusing on the system [20].

In this research using two methods that support each other, EQ and reorder point. The system can manage goods categories, goods data, supplier data, consumer data, manage purchase, sales and order transactions, display inventory lists, EOQ calculations, safety stock calculations, and reorder point calculations. system developed in this study is web-based which is already responsive.

2. METHODS

Figure 1 is a conceptual framework for the course of the research from initial observations until creating a web-based program.

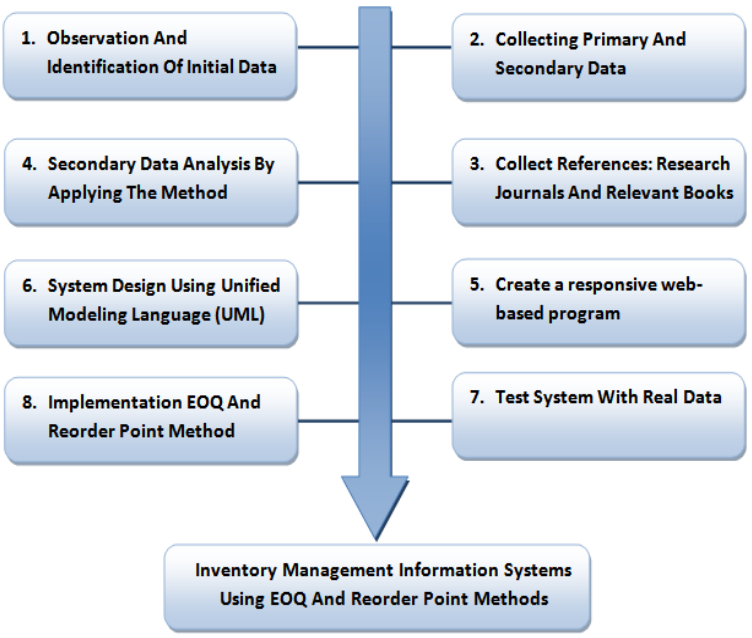

Figure 1. Research conceptual framework

The initial stage is data collection techniques through interview methods and documentary methods to obtain required data. Next stage is data analyzing. This stage is used to search for data related to methods that will be used to build systems using EOQ and ROP methods. Next is the design stage of stock management information system. Next stage is developing a stock management information system using responsive web-based programming. The final stage is a testing system that has been developed using the black box method.

2.1. Types And Data Sources

Data source of this research was obtained from the Sari Gamping building shop which consisted of primary and secondary data.

1. Primary Data
   Obtained from interviews with store owners about inventory handling that has been carried out with questions including total items sold for a month, constraints faced so far regarding shortages and excess stock, ordering and storage costs and delivery times from suppliers.
2. Secondary Data
   Collect data derived from documents or files in the store system such as incoming and outgoing goods data, sales transactions, inventory data and other data needed in developing an inventory management information system.

One of secondary data collection results is a need for catylac wall paint in June 2023 with a total sale are 34 which are presented graphically in Figure 2.

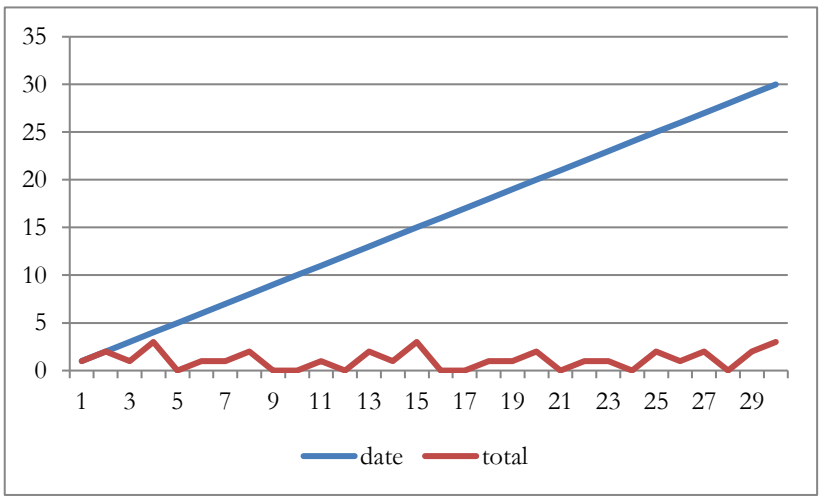

Figure 2. Graph of june 2023 catylac wall paint needs

In Table 1 present details cost of one order in June 2023.

Table 1. Order cost details

No.	Explanation	Cost
1	Transportation	115.000
2	Stationery and office	170.550
3	Telephone	188.000
	Total	473.550

Details of storage costs incurred in June 2023 are presented in Table 2.

Table 2. Storage cost details

No.	Explanation	Cost
1	Warehouse maintenance	78.000
2	Electricity	165.500
	Total	243.500

Figure 3 describes steps in calculating using the EOQ and ROP methods.

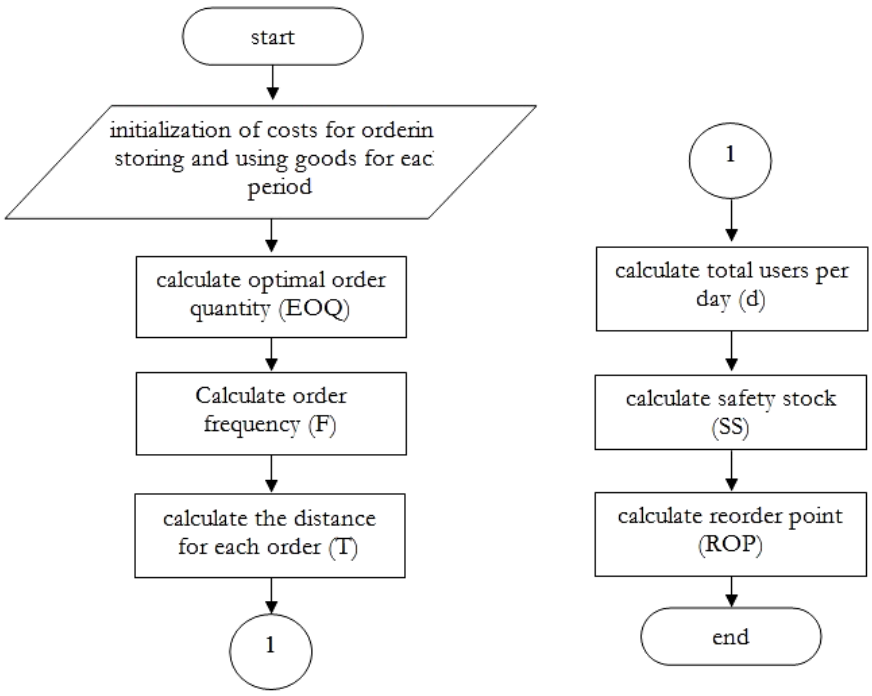

Figure 3. Calculating EOQ flowchart

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2.2. Design

A program or computerized system consists of three main components are input, process and output [21]. Inputs needed to create the system in this study include:

1) Total sales of goods during 1 period.
2) Ordering cost.
3) Storage cost.
4) Wait time.

Main process in this research is the calculation of two methods that used. Calculation process catylac wall paint data as previously described is as follows:
1. Formula to calculate EOQ as shown in Equation 1.

$$EOQ = \sqrt{\frac{2DC_0}{C_u}} \tag{1}$$

2. Calculating order frequency as shown in Equation 2.

$$F = \frac{D}{EOQ} \tag{2}$$

3. Calculating interval order as shown in Equation 3.

$$T = \frac{n}{F} \tag{3}$$

4. Calculate interval for each order as shown in Equation 4.

$$d = \frac{EOQ}{T} \tag{4}$$

5. Calculate safety stock as shown in Equation 5 and 6.

$$\bar{X} = \frac{D}{n} \tag{5}$$

$$SD = \sqrt{\frac{\sum (x-\bar{x})^2}{n}} \tag{6}$$

6. Calculating reorder point as shown in Equation 6.

$$ROP = d \times lead\ time + SS \tag{7}$$

Output generated by the system is information and reports based on input data and calculation processes from two methods. With information generated, shop

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owners can control goods inventory in warehouse. Database design in developed system can be seen in Figure 4.

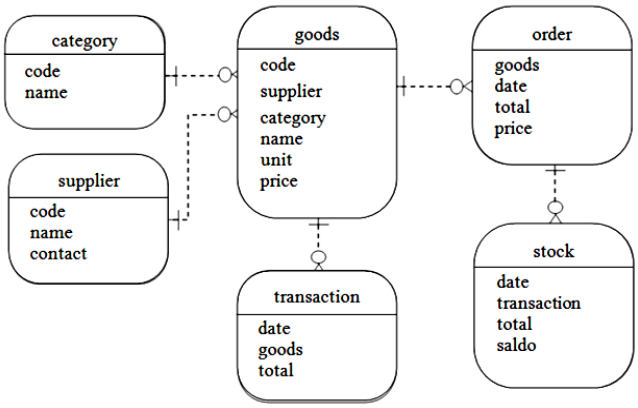

Figure 4. Inventory SIM entity relations diagram

3. RESULTS AND DISCUSSION

3.1. Calculation and Comparation

1. EOQ and RoP Method Calculation Results
Determine Standard Deviation (SD) for each catylac wall paint. SD calculations for catylac 1502 paint:

Table 3. Standard deviation for catylac 1502 paint june 2023

Date	Demand (X)	X^1	$X - X^1$	$(X - X^1)^2$	Date	Demand (X)	X^1	$X - X^1$	$(X - X^1)^2$
1	0	0.903	-0.903	0.8158	16	3	0.903	0.903	2.0968
2	3	0.903	2.0968	4.3965	17	0	0.903	0.903	-0.903
3	0	0.903	-0.903	0.8158	18	4	0.903	0.903	3.0968
4	1	0.903	0.0968	0.0094	19	1	0.903	0.903	0.0968
5	2	0.903	1.0968	1.2029	20	1	0.903	0.903	0.0968
6	1	0.903	0.0968	0.0094	21	0	0.903	0.903	-0.903
7	1	0.903	0.0968	0.0094	22	1	0.903	0.903	0.0968
8	3	0.903	2.0968	4.3965	23	0	0.903	0.903	-0.903
9	0	0.903	-0.903	0.8158	24	0	0.903	0.903	-0.903
10	0	0.903	-0.903	0.8158	25	1	0.903	0.903	0.0968
11	0	0.903	-0.903	0.8158	26	1	0.903	0.903	0.0968
12	2	0.903	1.0968	1.2029	27	0	0.903	0.903	-0.903
13	0	0.903	-0.903	0.8158	28	0	0.903	0.903	-0.903
14	0	0.903	-0.903	0.8158	29	0	0.903	0.903	-0.903
15	2	0.903	1.0968	1.2029	30	2	0.903	0.903	1.0968
					Total	28			40.71

$$SD = \sqrt{\frac{40.71}{31}} = 1.146$$

$$SS = 2.8566 \times 2.3263 = 6.6454$$

$$EOQ = \sqrt{\frac{2 \times 28 \times 30.787}{16.132}} = 10.338$$

$$F = \frac{28}{10.338} = 2.7085$$

$$T = \frac{31}{2.7085} = 11.4456$$

$$d = \frac{10.338}{11.4456} = 0.9032$$

$$ROP = 0{,}9032 \times 3 + 6{,}645480428 = 9{,}3552$$

From secondary data of catylac wall paint, 15 samples were taken to test the method used. Table 4 contains sales data for 15 catylac paint variants in June 2023 and calculations to produce reorder points.

Table 4. Calculation results of 15 catylac variants june 2023

code	qty	SD	SS	EOQ	F	T	D	RoP
1502	28	1.16	2.71	10.4	2.69	11.14	0.93	4.57
44545	34	1.25	2.91	11.46	2.97	10.11	1.13	5.17
44133	36	1.62	3.78	11.79	3.05	9.829	1.2	6.18
44198	27	2.86	6.66	10.21	2.64	11.35	0.9	8.46
46106	30	1.87	4.37	10.77	2.79	10.77	1	6.37
44195	27	2.86	6.66	10.21	2.64	11.35	0.9	8.46
44197	30	1.87	4.37	10.77	2.79	10.77	1	6.37
44123	28	1.16	2.71	10.4	2.69	11.14	0.93	4.57
45007	26	1.15	2.67	10.02	2.59	11.57	0.87	4.4
44556	28	1.16	2.71	10.4	2.69	11.14	0.93	4.57
44158	25	1.52	3.54	9.829	2.54	11.79	0.83	5.2
44505	26	1.15	2.67	10.02	2.59	11.57	0.87	4.4
45121	31	1.45	3.39	10.94	2.83	10.59	1.03	5.45
44196	27	2.86	6.66	10.21	2.64	11.35	0.9	8.46
44506	25	1.52	3.54	9.829	2.54	11.79	0.83	5.2

From calculation results in table 3, it is obtained total of items that must be available (EOQ), total times ordered per month (F), interval for each order (T), total of users per day and time to order again (RoP). With these data it is expected to reduce tootal of inventory that is too much or out of stock. From data in table 3, catylac wall paint 45121 code, sold 31 with a storage cost of 243500 and an ordering cost of 473550. With known data, inventory costs can be calculated:

$$TIC_{per} = (D \times C_u) + (n \times C_0) \quad (8)$$
$$= (31 \times 243500) + (1 \times 473550)$$
$$= 8022050$$

Previously, EOQ value was calculated, which was 11.46. From these data and EOQ value, it can be tested or compared with calculations using the EOQ method:

$$TIC_{EOQ} = (\frac{D}{EOQ} \times C_0) + (\frac{EOQ}{2} \times C_u) \quad (9)$$
$$= (\frac{31}{10,94} \times 473550) + (\frac{10,94}{2} \times 243500)$$
$$= 1341869.29 + 1331945$$
$$= 2673814.29$$

From the difference in calculations without EOQ and using EQ = 8022050 – 2673814.29 = 5348235.71, there is a saving of 66.7%.

Table 5. Inventory cost comparison

code	Qty	EOQ	TICper	TIC_{EOQ}	Savings	
					Rupiah	%
1502	28	10.4	7291550	2541141	4750409	65.15
44545	34	11.46	8752550	2800201	5952349	68.01
44133	36	11.79	9239550	2881383	6358167	68.81
44198	27	10.21	7048050	2495351	4552699	64.60
46106	30	10.77	7778550	2630331	5148219	66.18
44195	27	10.21	7048050	2495351	4552699	64.60
44197	30	10.77	7778550	2630331	5148219	66.18
44123	28	10.4	7291550	2541141	4750409	65.15
45007	26	10.02	6804550	2448705	4355845	64.01
44556	28	10.4	7291550	2541141	4750409	65.15
44158	25	9.83	6561050	2401153	4159897	63.40
44505	26	10.02	6804550	2448705	4355845	64.01
45121	31	10.94	8022050	2673810	5348240	66.67
44196	27	10.21	7048050	2495351	4552699	64.60
44506	25	9.829	6561050	2401153	4159897	63.40

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From results of calculations in table 4, comparison of calculations without the EOQ method using EOQ, there have been cost savings after implementing EOQ. Obtained an average saving of 65.33%. of the 15 samples calculated.

3.2. Implementation System

Web based management information system developed in this research uses the PHP programming language and bootstrap framework to create views and MySQL as database. Initial display of system after being called from browser is login page. User is asked to fill in his name and password, if user successfully logged in a home page will appear which contains menus and system information. The first process is to enter or manage data that functions as master data to be used and related for transaction processing. Required master data is supplier category data and goods data. Figure 5 is a display of item data processing page which contains item code, name, category, unit, and price. In the item data management form, there are facilities to add, change and delete data as well as search for data based on certain fields. There is also a feature for sorting data based on existing columns.

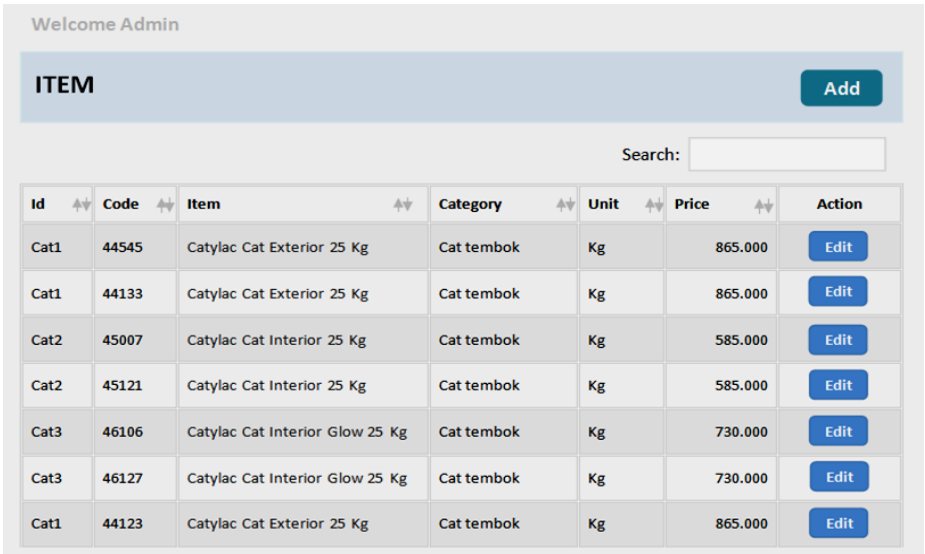

Figure 5. The item data management form display

Figure 6 is a display of calculation results using EOQ method according to formulas that was described previously. The results shown are rounded numbers and these values are the same as those presented in Table 3.

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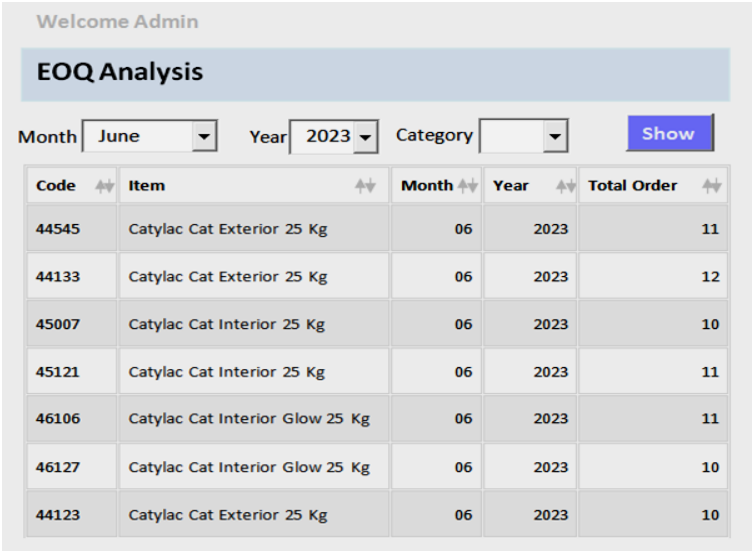
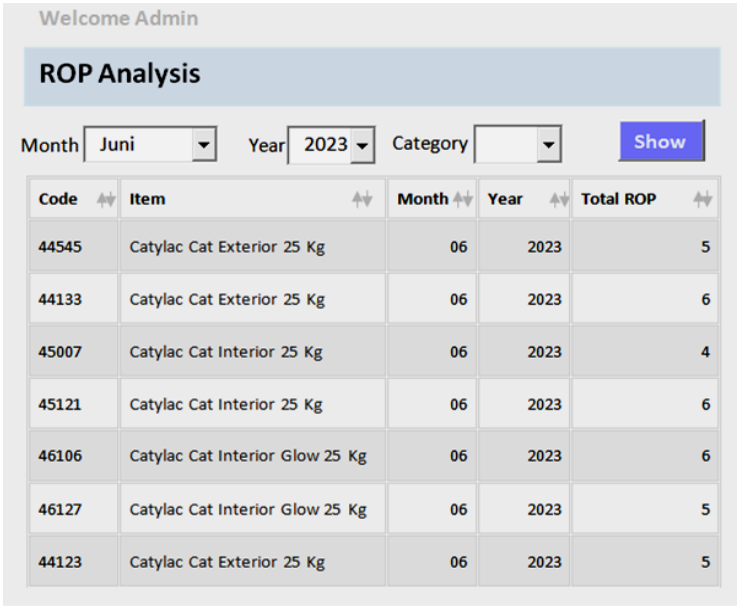


Code	Item	Month	Year	Total Order
44545	Catylac Cat Exterior 25 Kg	06	2023	11
44133	Catylac Cat Exterior 25 Kg	06	2023	12
45007	Catylac Cat Interior 25 Kg	06	2023	10
45121	Catylac Cat Interior 25 Kg	06	2023	11
46106	Catylac Cat Interior Glow 25 Kg	06	2023	11
46127	Catylac Cat Interior Glow 25 Kg	06	2023	10
44123	Catylac Cat Exterior 25 Kg	06	2023	10

Figure 6. EOQ analysis display

Figure 7 shows the ROP analysis display obtained from calculations using ROP method formula which was discussed previously. Values that displayed are rounding result from existing calculations and these values are the same as those in Table 3.



Code	Item	Month	Year	Total ROP
44545	Catylac Cat Exterior 25 Kg	06	2023	5
44133	Catylac Cat Exterior 25 Kg	06	2023	6
45007	Catylac Cat Interior 25 Kg	06	2023	4
45121	Catylac Cat Interior 25 Kg	06	2023	6
46106	Catylac Cat Interior Glow 25 Kg	06	2023	6
46127	Catylac Cat Interior Glow 25 Kg	06	2023	5
44123	Catylac Cat Exterior 25 Kg	06	2023	5

Figure 7. ROP analysis display

4. CONCLUSION

Based on calculation results of 15 samples of catylac wall paint variants in June 2023 by applying EOQ and reorder point methods, optimal total of inventory, reorder time and safety stock conditions at Sari Gamping building store is produced. From results of a comparison of calculations without applying the method with those applying two methods, it can be concluded that there is an average inventory cost savings of 65.33%. Web based inventory management information system produced in this research is in accordance with manual calculations that have been carried out for testing calculation process in the system. The developed system can manage goods data, goods categories, supplier data, order transactions in purchases, sales transactions. The system can also generate EOQ, safety stock and reorder point calculations. Results of these calculations can help store owners to maintain inventory and minimize inventory costs that arise.

REFERENCES

[1] J. S. Pasaribu, "Development of a Web Based Inventory Information System," *Int. J. Eng. Sci. Inf. Technol.*, vol. 1, no. 2, pp. 24–31, 2021, doi: 10.52088/ijesty.v1i2.51.

[2] J. Vasilev and T. Milkova, "Optimisation Models for Inventory Management with Limited Number of Stock Items," *Logistics*, vol. 6, no. 3, p. 54, 2022, doi: 10.3390/logistics6030054.

[3] W. S. Saputra, R. Ernawati, and W. A. Wulansari, "Analysis of Raw Material Inventory Control Using Economic Order Quantity (EOQ) Method at CV. XYZ," *Int. J. Comput. Inf. Syst.*, vol. 2, no. 3, pp. 118–124, 2021, doi: 10.29040/ijcis.v2i3.63.

[4] S. P. Anantadjaya, I. M. Nawangwulan, M. Irhamsyah, and P. W. Carmelita, "Supply chain management, inventory management & financial performance: evidence from manufacturing firms," *Linguist. Cult. Rev.*, vol. 5, no. S1, pp. 781–794, 2021, doi: 10.21744/lingcure.v5ns1.1463.

[5] S. Apriyanti and D. Y. Bernanda, "Inventory Information System Development to Improve Goods Data Collection Process," *J. Inf. Syst. Informatics*, vol. 5, no. 3, pp. 860–873, 2023, doi: 10.51519/journalisi.v5i3.510.

[6] A. F. Wijaya, R. Saputri, C. Rudianto, and A. D. Manuputty, "Designing of Information System for Stock Management using the FAST (FRAMEWORK FOR THE APPLICATIONS) Method," *J. Inf. Syst. Informatics*, vol. 2, no. 1, pp. 79–88, 2020, doi: 10.33557/journalisi.v2i1.46.

[7] Y. D. R. Montororing and M. Widyantoro, "Model of Inventory Planning

Using Monte Carlo Simulation in Retail Supermarket With Consider To Competitors and Stimulus Strategies," *J. Appl. Eng. Technol. Sci.*, vol. 4, no. 1, pp. 342–350, 2022, doi: 10.37385/jaets.v4i1.1093.

[8] A. J. Caicedo-Rolón, M. V. Davila Perez, and Palacios-Alvarado Wlamyr, "Inventory Management In Manufacturing Organizations," *J. Lang. Linguist. Stud.*, vol. 18, no. 4, pp. 995–1007, 2022.

[9] D. Gebisa, "The Impact of Information Sharing and Inventory Management Practices on Firms' Performance in Supply Chain Practices," *Gadjah Mada Int. J. Bus.*, vol. 25, no. 2, pp. 199–225, 2023, doi: 10.22146/gamaijb.69616.

[10] A. Rashid and R. Rasheed, "Mediation of Inventory Management in the Relationship Between Knowledge and Firm Performance," *SAGE Open*, vol. 13, no. 2, pp. 1–11, 2023, doi: 10.1177/21582440231164593.

[11] M. Z. A. Rikiti, E. Kusmayanto, and R. Kurniawati, "Design and Development of Help Patient Data Management Information System At Sinergi Atap Negeri Foundation Web-Based Using Codeigniter," *J. Appl. Eng. Technol. Sci.*, vol. 3, no. 2, pp. 235–245, 2022, doi: 10.37385/jaets.v3i2.792.

[12] A. Imran, Haripuddin, Sanatang, and M. Hasan Z, "Development of Service Mail Management Information System As a Supporting System for Calculating Recapitulation of Remuneration Performance Points At Universitas Negeri Makassar," *J. Appl. Eng. Technol. Sci.*, vol. 4, no. 1, pp. 415–428, 2022, doi: 10.37385/jaets.v4i1.1331.

[13] E. S. Soegoto and A. F. Palalungan, "Web Based Online Inventory Information System," in *IOP Conference Series: Materials Science and Engineering*, 2020, pp. 1–6. doi: 10.1088/1757-899X/879/1/012125.

[14] P. Yawara, N. Supattananon, P. Siwapornrak, and R. Akararungruangkul, "Purchasing planning for pharmaceuticals inventory : a case study of drug warehouse in hospital," *Indones. J. Electr. Eng. Comput. Sci.*, vol. 31, no. 3, pp. 1496–1506, 2023, doi: 10.11591/ijeecs.v31.i3.pp1496-1506.

[15] W. Emar, Z. A. Al-Omari, and S. Alharbi, "Analysis of inventory management of slow-moving spare parts by using ABC techniques and EOQ model-a case study," *Indones. J. Electr. Eng. Comput. Sci.*, vol. 23, no. 2, pp. 1159–1169, 2021, doi: 10.11591/ijeecs.v23.i2.pp1159-1169.

[16] A. Vania and H. Yolina, "Analysis Inventory Cost Jona Shop with EOQ Model," *Eng. Math. Comput. Sci. J.*, vol. 3, no. 1, pp. 21–25, 2021, doi: 10.21512/emacsjournal.v3i1.6847.

[17] A. H. Nobil, A. H. A. Sedigh, and L. E. Cárdenas-Barrón, "Reorder point for the EOQ inventory model with imperfect quality items," *Ain Shams Eng. J.*, vol. 11, no. 4, pp. 1339–1343, 2020, doi:

10.1016/j.asej.2020.03.004.

[18] B. Sugiarto and H. Haryanto, "Inventory Management System Design On Angel Collection," in *ConCEPt - Conference on Community Engagement Project*, 2022, pp. 635–643.

[19] R. H. Lubis, F. A. Nasution, and A. P. Juledi, "Design and Build Inventory System using EOQ and ROP Methods (Case Study: CV. Ziefa Karya)," *Sinkron*, vol. 7, no. 2, pp. 729–736, 2022, doi: 10.33395/sinkron.v7i2.11419.

[20] F. Frieyadie and T. Setiyorini, "Implementation of Inventory Information System Design," *J. Ris. Inform.*, vol. 3, no. 2, pp. 187–194, 2021, doi: 10.34288/jri.v3i2.236.

[21] M. Rumetna, E. E. Renny, and T. N. Lina, "Designing an Information System for Inventory Forecasting," *Int. J. Adv. Data Inf. Syst.*, vol. 1, no. 2, pp. 80–88, 2020, doi: 10.25008/ijadis.v1i2.187.