

MANAGEMENT INFORMATION SYSTEM IVENTORY FUEL OIL IN PT. GENERASI BACHTIAR

Irvan Medi Agustin¹, Riani Lubis²

Informatics Engineering - Indonesian Computer University
Dipatiukur Street 112-114 Bandung

irvanmedi@gmail.com , riani.lubis@email.unikom.ac.id

ABSTRACT

PT. Generasi Bachtiar moving as the company to supply the fuel Provider. Vacancy BBM request is estimated based on the number of sales (intuition), where the request is submitted by the supervisor to the Supervisor and then process the request to the Manager. Who becomes a constraint is on BBM where storage is done in the dombak is unknown due to the exhaustion of the Manager of the GAS STATION difficult to monitor it until later do the coordination with pertamina in determine ritse shipping fuel oil.

This research is expected to help determine the number of bookings by Supervisors and help managers monitor supplies. Inventory management in PT. Bachtiar generation uses the Inventory Management Model (Monitoring, Determining the number of BBM orders, Ordering BBM, Receiving BBM, Evaluation BBM). In penentuan the number of messages and the control method used EOQ using the ROP with uptake level number of supplies of Fuel Oil.

Based on the results of the functional testing, interviewing and testing end user applications in a corporate environment. This research it can be concluded that this system helps companies conduct process fuel oil supplies.

Keywords: Management Information System,
Inventory, Inventory Management, EOQ
Method, Method Of ROP.

I. INTRODUCTION

PT. Generasi Bachtiar is a company moving in oil and gas services and trying to be the public fuels needed by the people around and to build regional economic sector.

There are four types of fuel oil sold at these gas stations, namely Pertamina, Peralite, Premium, Dextrite with different storage capacity conditions (dombak),

namely premium and dextrite 30,000 liters and peralite and pertamax 15,000 liters.

Pengawas as a warehouse staff is in charge of calculating the sales data and stock inventories, demand for fuel oil that had only estimated based on the number of sales (intuition), where the request is submitted to the supervisor then processes the request. When the fuel oil that prompted the watchdog is not available in the dombak, then the Supervisor will apply fuel oil to make a purchase to the Manager of the GAS STATION.

In this regard, together with the purchase of the following request and follow that intuition still demand, causing the purchase was not appropriate where there is still a vacuum fuel oil from the initial request from the Superintendent are met. In making a purchase, surely must be known and approved by the Manager of a GAS STATION.

At the time this report is given to the manager with a period per day. GAS STATION Manager who is always available only no monitor outside the company makes both feel less control where reports are not provided in a timely manner so that the manager does not check the incoming supplies/outflow of goods and buy approved only in needs.

In the report the purchase and expense periods daily, the constraint is on fuel oil where storage is done in the dombak is unknown due to the substantial sales outside of the prediction or the delay in delivery and The Manager of the GAS STATION late doing coordination with PERTAMINA in determine ritse shipping fuel oil.

In a situation of rising prices fuel reservations can be made directly due to meet consumers ' needs are increasing. Based on problems that have been described, then needed a system of fuel inventory management in PT Generasi Bachtiar that can help solve the problem.

The goal of doing the research management information systems:

1. determine the number of Supervisors make it easier to Grow the purchase of fuel oil.

2. Help Managers monitor the fuel oil supplies in quicker time so that supplies can be fulfilled in accordance with the needs.

Management Fuel Oil using Model Calculation method of inventory management with the planning recommendations for purchases using the EOQ method approach with ROP and safety stock for monitoring against the inventory stock fuel oil.

II. THEORITICAL BASES

The theories that support the research this is a theory of information systems management, inventory management, safety stock, EOQ method and method of ROP.

1. Management information system (SIM)

The system can be defined as a collection or group of components / elements that are interconnected harmoniously to achieve certain goals. [1] Information is the result of the management of data, but not all the data management can be a result of something, information management data that is useful is not called a not information. There are three things to note in the information i.e.;

- information results processing data
- give meaning or meanings.
- Useful or helpful in improve decisions.

Information is the most important part of our lives, the information is a part that is not biased in terms of organization, likes blood flow in the organization. Information when in sports well it would be very useful to the recipient, the quality of the information should be accurate, relevant, timely and complete. [1] Management information systems (MIS – Management Information System) is a computer-based system that makes the information system available for the users who have similar needs. The users of the SIM is composed of formal organizational entity – an entity – company or sub units of its subsidiaries.

Information provided by the SIM explains the company or one of its main system seen from what happened in the past, what is happening and what will probably happen in the future. SIM will generate this information using the use of two types of software:

- The software maker reports (report – writing software) that produces periodic reports as well as special reports. Periodic reports are coded in

a language program and pasted right on schedule. A special report, which is commonly known as the ad hoc report, prepared in response to the information needs that are not anticipated in advance. Database management system currently features – features that can quickly generate reports in response to the needed data or specific information.

- produce a mathematical Model of information as the result of a simulation over company operations. Model – a mathematical model that describes the company's operations can be written using any type of programming language. However, the specific modeling languages can be this task becomes easier and quicker to do.

The output of the information generated will be used by the party – the party that will solve the problem in taking decisions to solve the problems of the company. [2] the SIM very useful for managing the problems of the company where information – information that is in the company can be processed and analyzed in order to reach a decision for supporting the advance of the company, until a company can analyze data needs that are considered important.

a. Inventory management.

The inventory is a common model used to resolve problems associated with the efforts of controlling raw materials or finished goods within the company. According to DR. IR. Eddy Soeryanto Soegoto in his book entitled *Entrepreneurship menjadi pembisnis ulung* note that management is the process of planning, organizing, direction, and oversight of the Organization's resources to achieve the objectives of the organization. [3] Inventory/inventory is a technique for material related to the management of the inventory. Materials in inventory management is done with multiple inputs that are used are: demand, the costs of storage, as well as related costs in the event of a shortage of supplies. [4]

Inventory management is one capital for the operations of the company so very needed concept matures to manage what became an indispensable necessity in preparation, so exact in its management.

b. Security Inventory (Safety Stock)

Based on the classification of the preparation which is already explained earlier the author uses techniques of Safety stock to accommodate the uncertainty of demand affects inventory.

Security or Safety stock inventory serves to protect the errors in predicting demand during Lead Time. Lead Time is the time it takes between the raw materials were ordered up to the company. The magnitude of the value of the Safety stock depends on the uncertainty of supply or demand.

Here's the formula in determining the Safety stock can be seen in formula 1. [4]

$$SS = \text{average Consumption the previous period} \times LT \quad (1)$$

Reversed stock is stock taken from helpers 2 times safety stock with formula

$$RS = 2 \times \text{used the average of the previous period} \times LT \quad (2)$$

Description:
 SS = Safety Stock
 LT = Lead Time

Security of supplies required for the operation of the company's performance so that what is needed by the consumer can cover it with supplies in the security, in which the security concepts must be in strict accordance with the estimate that what needed to meet the consumer demand index.

c. EOQ Method

Economic Order Quantity (EOQ) is the first inventory model developed in 1915 by Ford independently Harris and R. H. Wilson. EOQ method is a calculation with formulas about how the amount, frequency or booking or booking the most economical value. In almost all situations involving finished goods inventory Manager, this method can be said to be suitable for use. [5] inventory management companies who are not good in the company is going to lack or excess inventory so the loss, occurs because the amount of customer demand is uncertain so companies have difficulties in determine the minimum stock of any item, determine any reordering and determine how many messages the goods accordingly. Deal with it, the company needed investment planning system which can determine the minimum inventory, reorder time and optimal amount of the reservation. The solution is to do an inventory information system planning using an economical number of bookings (EOQ) EOQ method, inventory management bias determined properly. [7]

$$\text{Formula EOQ} = \sqrt{(\text{method 2. A. D})/h} \quad (3)$$

This method calculates a very economical rates where the cost of procurement on estimate and then on to how many deliveries are to meet the needs of the inventory. [6] the method of ROP

Reorder point or the point of booking again is when inventory reaches a point where the booking has to be done again. Reorder Point is the point at which the order should be held again such that the arrival or receipt of the ordered goods it was appropriate at the time where the above inventory safety stock is equal to zero. [5] the ROP Formula $EOQ = \{(\text{long round of production}) \times \text{lead time}\} + \text{safety stock} \quad (4)$

In this method of analyzing when the right moment to order back to the terms with the calculation of the amount of the booking of an economical so the right booking levels obtained during booking raw materials according to the needs of the company.

III. DISCUSSION

This section will discuss the content of the research as a solution to the problem that is described in the introduction. This section consists of the analysis model of inventory management.

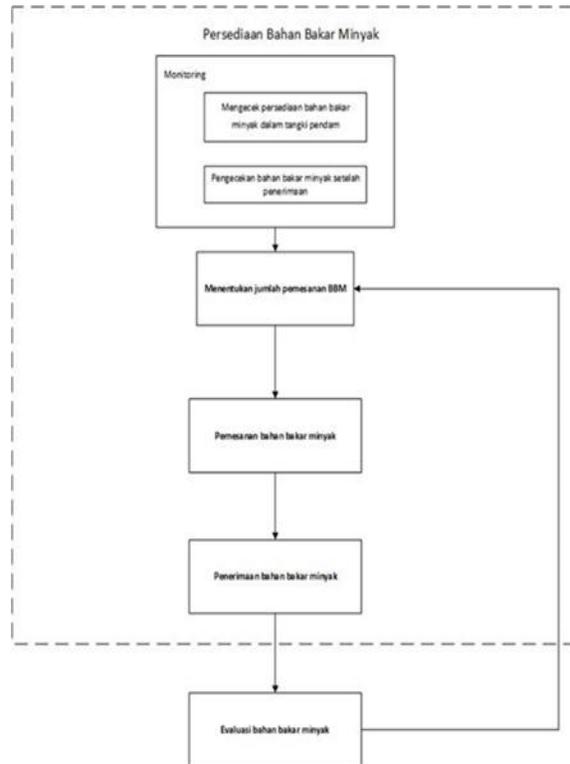


Figure 1 Inventory Management Model

3.1 Inventory Management Model

checked FUEL supply in PT.Generasi Bachtiar, brought together an activity in coordination regarding checking the amount of oil fuel tank capacity exists in the dombak well after the sale or After the delivery of fuel oil. Fuel oil stock that is in the dombak can calculate

with the formula of initial stock sales = stock of late, when there is fuel in, initial stock sales entry + fuel = end of stock. Suppose the data taken from the August 2017 on 30 August and 31 August of the following 2017 as:

Table 1

Stock BBM August 2017						
PREMIUM						
Tgl	First stock	DO in	Total	sell	End stock	Space BBM
30	10,736.0		10,736.0	8,080.1	2.650,6	27.349,4
31	2.650.6	8,000	10,650.6	5,798.0	4.847,7	25.152,3

From the above data checking of fuel oil 30 August 2017 taken from stock beginning i.e. 10,736 liters was reduced from data taken from the stock sales of shift 1 amounted to 3233.2 liter taken from the results of meter sales i.e. teller end 146837 – b1 the early 146028, b2 end 146831 – b2, b3 of the late 146033 early 146833 – b3, b4 the end of the initial 146026 146846 – b4 early 146026 then obtained the stock end of shift 1 for 7502.8 and then at shift 2 is taken from the sales meter results i.e. teller end b1 147709 – b1, b2 146837 early end of 147 705 – b2, b3 of the late 146831 early 147703 – b3, b4 the end of the 146833 initial 147704 – early b4 146846 sales of 3474.1 liter, the final stock shift 1 for 7502.8 – 3474.1 i.e. 4028.7 liters and on shift 3 sales drawn from the results of meter sales i.e. teller end b1 148049 – b1, b2 of the late 147709 early 148050 – b2, b3 of the late 147705 early 148051 – b3, b4 the end of the 147703 early 148043 of early 147704 of b4 – 1372.8 with the stock end of shift 2 of 4028.7 – sales shift 3 of 1372.8 liter, so the stock end of August 30, 2017 of 265 0.6 liter.

After checking the fuel oil received taken on August 31, 2017 gained initial stock of 2650.6 on this date the stock fuel oil also received a shipment of fuel oil amounted to 8000 liter on shift 1 for 2650.6 plus FUEL Enter 8000 liter of stock into 10650.6 and then shift to FUEL sold in 1 liter of 2424.9 is taken from the sales meter results i.e. teller end b1 148656 – b1, b2 148049 early end 148657 – b2, b3 of the late 148050 early 148651 – b3, b4 the end of the 148051 initial 148654 – b4 the start of 148043 , so the stock end of shift 1-liter 8225.7 then reduced the sales shift 2 is taken from the sales meter results i.e. teller end b1 149172 – b1, b2 148656 early late 149175 – b2, b3 148657 early late 149171 early 148651, b3 – b4 the end of the 149176 – early 148654 b4, amounted to 2076.1 liter into liter and sales 6149.6 shift 3 is taken from the sales meter results i.e. teller end b1 148656 – b1, b2 148049 early end 148657 – b2, b3 of the late 148050 early 148651 – b3, b4 the end of the

148051 initial 148654 – b4 the start of 148043, so the stock end SHIFT 1-liter 8225.7 an then reduced the sales shift 2 is taken from the sales meter results i.e. teller end b1 149497 – b1, b2 of the late 149172 early 149497 – b2, b3 of the late 149175 early 149499 – b3, b4 the end of the 149171 early 149503 of early 149176 of b4 – 1297 liter be 4847.6 liter for stock end August 31, 2017.

a. determine the amount of FUEL

Here its application when doing the booking point so that it can meet the needs are met so that it can supply fuel oil to the time of the booking in accordance with the planning. In the amount of fuel taken safety-stock and EOQ method to get ROP in determine the level of inventory.

Table 2

No	month	buy	sell
1	September2016	152,000	153,581.2
2	October 2016	168,000	172,177.9
3	November2016	136,000	122,706.7
4	Desember2016	152,000	167,557.1
5	January 2017	160,000	159,146.7
6	Fabruari2017	176,000	176,974.0
7	Maret2017	189,000	191,283.0
8	April 2017	104,000	109,616.4
9	Mei 2017	112,000	106,547.0
10	June 2017	132,500	129,839.1
11	July 2017	128,000	131,450.9
12	August 2017	152,000	155,872.0
	total	1.761.500	1.776743,0
	equal	14.6791,6	14.8061,9

Median = Sales – Sales/∑ n from an average monthly sales – 14.8061 .9/4 period = 37,015.5 liters
 The mean unobtainable – average sales a week 37,015.5/7 days = 5,287.9 liters
 Median the median monthly purchases – 14.6791 .6/4 period= 36,697.9 liters the obtained average – average a week 36.697 .9/7hari = 5,242.5 liters
 Obtained safety stock (SS) = 5287.9 x 1 day sale
 SS = 5287.9 liters
 And stocks reversed (RS) = 2 days sales x 5287.9
 RS = 10575.8 liters
 After obtained safety stock and reversed the stock then went into the EOQ method:

$$Q = \sqrt{\frac{2.5000.5242,5}{6550}}$$

2.4 Data Flow Diagram Level 1

Data flow diagram shows how data flow outlines the processes that occur in the system until the process in more detail information systems management supplies.

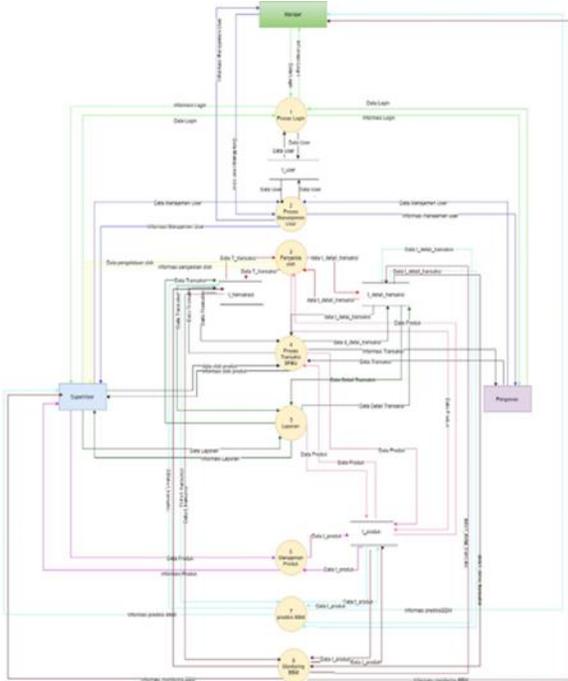


Figure 5 Data Flow Diagram Level 1

2.5 Relation Scheme

The process of relationship between attributes is a combination between an attribute that has the same primary key, so that these attributes into a single entity linked by the key field. Scheme Relation management information systems inventory in PT. Generasi Bachtiar as follows:

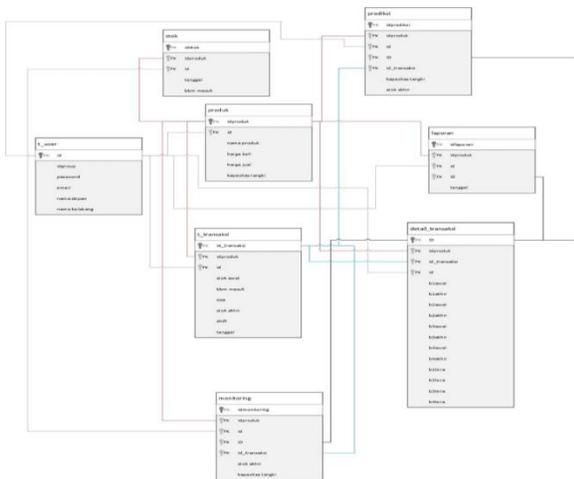


Figure 6 Relation Scheme

2.6 Design Interface

The design is based on the display of the input as well as output either interface to be generated when the application is implemented. Design of interfaces in inventory management information system of fuel oil can be seen as follows:

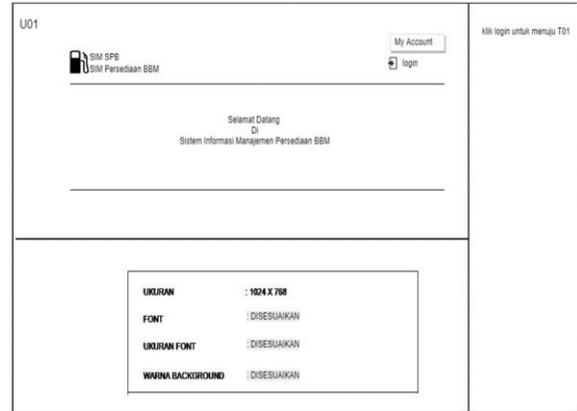


Figure 7 Design Interface

2.7 Black Box Testing

Testing system is an important point which aims to find errors or deficiencies in management information system supplies of fuel oil at PT. Generasi Bachtiar. The test aims to find out management information system supplies fuel oil created has fulfilled the criteria in accordance with the design objectives.

Testing is used to test the new system is a black box testing. Black box testing is focused on testing the functional information systems.

The testing plan will do is to test the system in a way that was built in black box and beta. Testing construction of management information system of supplies of fuel oil at PT. Generasi Bachtiar using test data based on data provided from some of the data that has been given.

Table 4

List function	Test item	Type testing
Login	Login user	Black Box
User	Add Data user	Black Box
	Edit Data user	
	delete Data user	
	search Data user	
	print Data user	
Product	Add Data Product	Black Box

		Edit Data Produk	
		delete Data Produk	
		Cari Data Produk	
		Print Data Produk	
Manajerial Product	Stok	add Data Stok Produk	Black Box
		Edit Data Stok Produk	
		Delete Data Stok Produk	
		Search Data Stok Produk	
		Print Data Stok Produk	
manajerial Transaksi Product		Add Data Transaksi Produk	Black Box
Prediksi Data inventori Stok Product		See Data Prediksi inventori Stok Produk	Black Box
Monitoring Data ivontiry Product		See Data Monitoring inventori Stok Produk	Black Box
Report / Monitoring SPBU		See Data Laporan Transaksi Produk	Black Box

IV. CONCLUSION

Based on the results obtained in the research and drafting of this thesis, then a conclusion can be drawn as follows:

1. Management information systems inventory has already made and will help Managers monitor fuel oil based on appropriate criteria on the requirements or the void that exists.
2. Inventory management information system has been created and will assist the supervisor in determining the amount of fuel oil supplies.

V. REFERENCE

- [1] Utami Dewi Widiawati, Pembangunan Sistem Informasi Aset Di PT. Industri Telekomunikasi Indonesia (PERSERO) Berbasis Web, Jurnal Ilmiah Komputer dan Informatika (KOMPUTA), Jilid 1, Terbitan 2, hal 57 – 62, 2012.
- [2] Deni Darmawan, Kunkun Nur Fauzi, 2015, Sistem Informasi Manajemen, edisi 3. Bandung: Remaja Rosdakarya.
- [3] Raymond Mcleod, Jr., George P. Schell., 2011, Sistem Informasi Manajemen, edisi 10, Jakarta: Salemba Empat.
- [4] Eddy Soeryanto soegoto.,2014, Entrepreneurship

Menjadi Pembisnis Ulung, edisi 2, Jakarta:Alex Media Kompotindo.

- [5] Nur Bahagia, senator. 2006, Sistem Inventori, Bandung: Penerbit ITB.
- [6] Agus Ristono.,2013, Manajemen Persediaan, edisi 1. Yogyakarta: Graha Ilmu
- [7] Olivia Elsa Andira, Analisa Persediaan Bahan Baku Tepung Terigu Menggunakan Metode EOQ (ECONOMIC ORDER QUANTITY) Pada Roti PacakMakasar, <https://media.neliti.com/media/publications/96488-ID-analisis-persediaan-bahan-baku-tepung-te.pdf>, 28 February 2019.21.55
- [8] Andi Wijaya, Moch Arifin, Tony Subianto, Rancang Bangun Sistem informasi Perancangan Persediaan Barang,<https://jurnal.stikom.edu/index.php/jsika/article/view/162>, 28 February 2019. 22.50
- [9] B, Indra, Yatini. 2001, Pemrograman Terstruktur, Yogyakarta: J&J Learning.
- [10] B, Hariyanto. 2004, Rekayasa Sistem Berorientasi Objek, Bandung: Informatika.

