

DEVELOPMENT OF MEDICINE INVENTORY MANAGEMENT INFORMATION SYSTEMS IN APOTEK WAREHOUSE KELUARGA PT. ABDI YAKIN ANUGERAH

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ABSTRACT

Apotek Keluarga is a service unit in the pharmaceutical field that serves sales both for patients from clinics and the public. The type of sales is divided into three (3) types of prescription drug sales kinds of clinics, general medicine penjualan types and kinds of narcotics sales. Apotek Keluarga is part of the health care system Klinik Keluarga. Pharmacy and clinic is under the auspices of PT. Abdi Yakin Anugerah is located at the village Cigombong, Ciherang Village, District Pacet, Cianjur, West Java. Problems found in the Apotek Keluarga inventory management so that there is a vacuum of medical supplies as well as occurring reservations over the limit specified date. Therefore we need an inventory management information system that can help the head of the warehouse in the Apotek Keluarga in determining the optimal number of bookings as well as assist in determining when it is appropriate to melakukan orders to suppliers in order to avoid gaps supplies and can meet the maximum limit supplies. By using the method of analysis ABC / analysis Pareto for grouping data, the method Economic Order Quantity (EOQ) is used to determine the optimal number of bookings related to the Maximum Inventory and Reorder Point method (ROP) is used to determine the return booking. So the system can complete the information dibanggun permasalahan inventory management at Apotek Keluarga.

Keywords : Pharmacy, Inventory Management Information System, ABC Analysis, Economic Order Quantity (EOQ), Reorder Point (ROP).

1. PRELIMINARY

Apotek Keluarga is a unit or part of service delivery in the field of pharmacy for patients of clinics and public and is part of the health care system Klinik Keluarga. Pharmacy and clinic is under the auspices of PT. Abdi Yakin Anugerah is located at the village Cigombong, Ciherang Village, Kecataman Pacet, Cianjur, West Java. Apotek Keluarga is a unit or part of service delivery in the field of pharmacy for patients of the clinic and the public. Service activities in the pharmaceutical field conducted as drug sales. The type of drug sales were

conducted at Apotek Keluarga there are three (3) types of prescription drug sales kind of clinic, the type of general drug sales, and the type of narcotic sales.

Based on the results of interviews with the head of the warehouse in Apotek Keluarga, head of the warehouse said that the problems that occur are the head of the warehouse had difficulty in determining the number of bookings or purchases optimal because the process is now carried out to determine the number of orders based solely on intuition alone so that the head of the warehouse do not know the number of reservations must be met. It is influenced as yet it determines the maximum limit for each drug. So the head of the warehouse do not know whether the number of orders placed was nearing the maximum limit drug supply is needed or not. The maximum limit in question is the extent to which stock the warehouse must be met (maximum inventory). Maximum inventory to stock the drug is very important to implement, its purpose as a reference to know that the amount of inventory of medicines in a pharmacy warehouse not excessive and no experienced vacancies in the current wait time for future bookings. If the stockpiling of drugs in the main barn until they run it will affect into service at the pharmacy because when pharmacies require a drug, the drug is not available in the main warehouse, causing the patient to be buying drugs at other pharmacies or patients should wait first of at least one day to drugs unwanted available in pharmacies and it is a loss for the company as well. Based on the data warehouse stock in January 2017 - December 2017 of 414 drugs that are owned by Apotek Keluarga as much as 58.9% or as much as 244 drug experienced vacancies of medical supplies. If the stockpiling of drugs in the main barn until they run it will affect into service at the pharmacy because when pharmacies require a drug, the drug is not available in the main warehouse, causing the patient to be buying drugs at other pharmacies or patients should wait first of at least one day to drugs unwanted available in pharmacies and it is a loss for the company as well. Based on the data warehouse stock in January 2017 - December 2017 of 414 drugs that are owned by Apotek Keluarga as much as 58.9% or as much as 244 drug experienced vacancies of medical supplies. If the stockpiling of drugs in the main barn until they

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Besides the head of the warehouse had difficulty in determining when to place an order drugs back to the supplier because during this time the reservation is made when the drug supply has been exhausted, it is caused yet-determined point determination medicine order back to the supplier by the company. It also resulted in the booking time is erratic and often occur outside the schedule time of reservation, while the company determined that the time of reservation should only be done in the range of 1 to 15 each month. Based on data from drug bookings in the period January 2017 - December 2017 as many as 212 times the frequency of drug bookings are 40% occurred medicine order exceeds a predetermined date.

Based on the description that has been described, researchers intend to make inventory management information system to help solve existing problems in the Apotek Keluarga.

2. THEORETICAL BASIS

2.1 Pharmacy

Says a pharmacy in accordance with article 1, paragraph 1 in the Minister of Health of the Republic of Indonesia Number 9 Year 2017 concerning pharmacies, pharmacy is a pharmaceutical facility where he did practice of pharmacy by pharmacists [6].

2.2 Management information System

Said management information systems According Chamdan book information management

system can be interpreted as "a system of human / machine integrated to present information to support the operation, management, and decision-making [8]".

Management information system or what we often call the SIM is an application of information systems in an organization to support sources of information obtained from both internal and external information necessary for decision making.

2.3 Inventory management

Word management by DR. Ir. Eddy Soeryanto Soegoto in the book Entrepreneurship be accomplished businessman can mean "the process of planning, organizing, directing, and monitoring of an organization's resources to achieve the goals of the organization [1]".

Inventory is a technique for manajemen en material related inventory. Materials used in inventory management among other things, request that the case (demand) and the costs associated with inventory [2].

Inventory management is one technique to resolve the problem in inventory to achieve a balance between the deficiency or excess inventory by minimizing inventory costs and improve services aimed at improving profitability.

2.4 ABC Analysis Model

As the name implies ABC analysis is one model that divides inventory into three (3) different classes based on the value of inventories. The value of inventories is not the price of per unit of inventory but the total value of all items at one period or a certain annual volume.

ABC analysis criteria are divided into each class, including:

1. Class A - have a high inventory value each period approximately 70% -80% of the total annual inventory cost and about 15% of the total supply, but require intensive supervision because it has a very high impact on costs.
2. Class B - have intermediate inventory values around 15% -25% of the total annual inventory cost and about 30% of the total inventory.
3. Class C - have a low inventory value approximately 5% of the total annual inventory cost, but has a large number of approximately 55% of the total inventory. Inventory control is not carried out any time so much simpler.

2.5 Model Economic Order Quantity (EOQ)

Total economic order is the number of items purchased with minimum inventory cost or the optimal number of reservations [5]. Total economic order is the amount of inventory that are costing inventory each year [9]. EOQ aims to determine the number of orders to consider the total cost of the reservation and the cost of storage to meet the minimum total inventory cost. According

Prawirosentono book operations management: analysis and case studies explaining that the fourth edition booking fees, storage fees, the required amount per year and total quantity of each booking are elements contained in the EOQ method [10].

To determine the total cost of inventory (TC (Q)) can be calculated by the equation:

$$TC(Q) = h \cdot \left(\frac{Q}{2}\right) + A \cdot \left(\frac{D}{Q}\right) + c \cdot D \quad (1)$$

The calculations used to determine the quantity / number of the economic order or EOQ can be seen in the equation:

$$Q = \sqrt{\frac{2 \cdot A \cdot D}{h}} \quad (2)$$

EOQ calculation can be known from the frequency of booking and reservation time interval that can be seen in the equation:

$$f = \frac{D}{Q} \quad \text{and} \quad v = \frac{1}{f} = \frac{Q}{D} \quad (3)$$

2.6 Point Booking Back

Booking point back or ROP is determined based on the need for a waiting time of order. If the position of the stock of sufficient inventory to meet demand during the waiting time, the reservation must again point Q. dilakukan as reordering can be given by the equation:

$$RP = B = \frac{DL}{12} \quad (4)$$

If $B < Q$ then the stock inventory safe during the waiting time.

If $B > Q$ then the stock inventory would lack every time you make a reservation.

If both of these conditions do not apply, we need to hold the policy for safety stock or safety stock. Reorder point calculation presence and absence of safety stock, can be seen in the equation:

1. Policy without Safety Stock

$$RP = \frac{EOQ}{\text{lamaperputaranproduksi}} \cdot \text{xleadtime} \quad (5)$$

2. Safety Stock with Policy

$$RP = \left(\frac{EOQ}{\text{lamaperputaranproduksi}} \cdot \text{xleadtime} \right) + \text{safetystock} \quad (6)$$

2.7 Safety supplies

Aim of securing supplies in addition to minimizing the occurrence of shortages can also reduce the incremental cost of storage and the cost-of-stock. Storage costs will be growing along with the addition of derived from reorder point due to the policy of safety stock.

The calculations in determining the standard deviation can be seen in the equation:

$$SD = \frac{\sum(x-x')^2}{n} \quad (7)$$

Calculation to calculate safety stock can be seen in the equation:

$$SS = SD \cdot Z \quad (8)$$

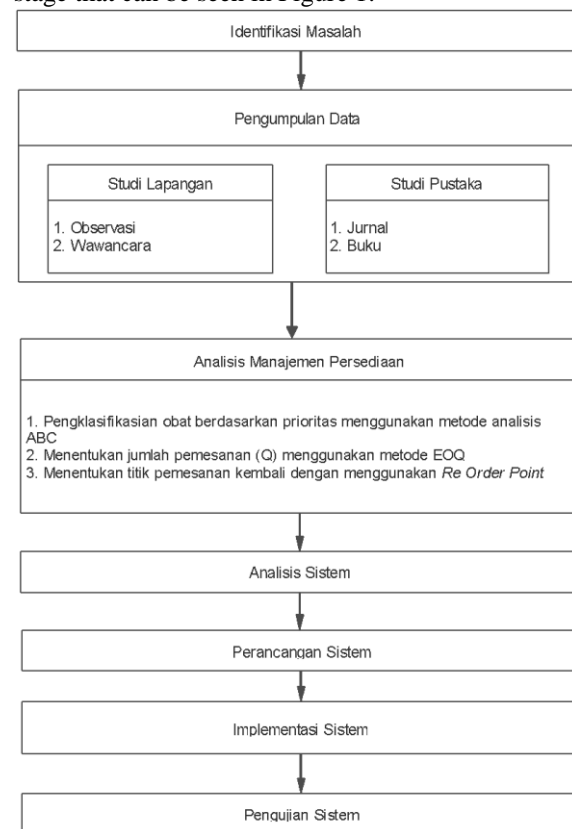
2.8 Maximum inventory

The maximum inventory or inventory is known as the maximum limit the amount of inventory that should be reliable / met by the company so that the quantity or amount of existing inventory stock in the warehouse is not excessive [3]. Calculations to determine the maximum inventory can be seen in the equation:

$$\text{MaxInventory} = \text{SafetyStock} + \text{EOQ} \quad (9)$$

3. RESEARCH METHODS

Metodologi research used as guidance in exercising their intensive search for the results achieved do not deviate from the goal, and can be used to solve a problem. In this study the methodology used has a stage that can be seen in Figure 1.



Picture 1. Research methodology

3.1 Identification of Problems

Identification of the problem is the stage to find the problems that occurred in the study that Apotek Keluarga PT. Abdi sure Award. So from the existing problems will be determined application of what is needed by Apotek Keluarga PT. Abdi sure Award.

3.2 Data Collection

Data collection techniques in this study using interviews by way of question and answer directly to the head of the warehouse, collecting observation data regarding inventory management system at Apotek Keluarga and study both books and journals on inventory management.

3.3 Analysis of Inventory Management

Analysis of the inventory management method used to solve the problem in Risk Management analyzes the inventory with ABC, EOQ, ROP.

3.4 Analysis System

System analysis conducted to determine the functional requirements and non-functional requirements the system to be built.

3.5 Design System

Stage design of the system is done after analysis system to be built.

3.6 Implementation System

Implementation stage is a stage system to implement or implements which have been designed in accordance with the expected.

3.7 Testing System

The testing phase is the phase of testing on applications that have been built. Tests will be done to study media applications aimed at testing applications built and observe whether there is any deficiency in the application. Testing method and system using a blackbox approach User Receiver.

4 RESULTS AND DISCUSSION

4.1 Analysis of Management Information Systems (MIS) Inventories Medicines In Pharmacy Warehouse PT. Abdi sure Award

Inventory Management Information System which is in the Apotek Keluarga PT. Abdi sure Anugerah have two warehouse activities including activities in mainstream medicine and medicine warehouse drugstore (pharmacy drug storage area). The picture of a model of inventory management information system to be used can be seen in Figure2.

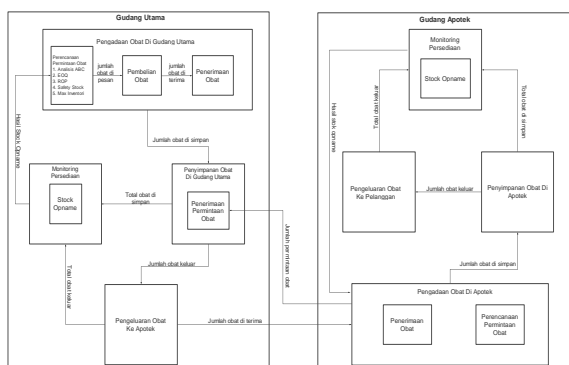


Figure 2. Inventory Management Model Medicine in Apotek Keluarga warehouse PT. Abdi sure Award

1. ABC Analysis Method

(Farida, 2016)classification ABC analysis to classify inventory based on sales [7]. The steps in determining the class / category of drugs with ABC analysis is as follows [4]:

1. Calculating the amount of expenditure per year for each unit of medicine.
2. Make a list of each drug.
3. Multiplying the number of dispensing with the price of the drug to get the value of investments.
4. Sort the investment value from largest to smallest.
5. Calculating the value of the cumulative investment.
6. Calculating the cumulative percentage of the investment value.
7. Grouping drugs based on a percentage of the value of the cumulative investment.
8. If the value of the cumulative frequency from 0 to 80% then it is classified as A. If the range between 80-95% will be classified as B, and when the range between 95-100% will be classified as C.

The results of the classification process ABC analysis there are 37 types of drugs that fall into the category / class A. These drugs are used as material to perform calculations on the next step. These drugs can be seen in Table 1.

2.method EOQ

Sample data used to determine EOQ is the result data from the ABC analysis which is a class A because the drugs are in a class A drugs that need special attention and should be done immediately booking. Drugs that are in class A can be seen in Table 1.

Table 1. Drug Class A

No.	Medicine name	Unit	total Purchases	Frequency
1	amlodipine 10	Boxes	45	3
2	amlodipine 5	Boxes	240	7
3	brocon	Boxes	28	3
4	cendo xytrol	fls	75	3
5	Elsiron (FORTE)	Boxes	70	5
6	enzymplex	Boxes	35	6
7	etaflox	Boxes	25	3
8	galtaren	tube	62	5
9	Grantusif	Boxes	50	8
10	helixime	Boxes	48	9
11	Histigo	Boxes	86	7
12	holimox	Boxes	27	3
13	hufadine	Boxes	193	11
14	Hufaflox	Boxes	66	8
15	hufaneuron	Boxes	23	6
16	Linmag	Boxes	115	7
17	lodecon forte	Boxes	51	5
18	Lokev	Boxes	301	10
19	Medscab	tube	40	2
20	meloxicam	Boxes	86	12
21	mesonta	tube	26	5
22	Milorin	Boxes	70	6
23	neuropyramin-m	Boxes	90	5
24	Novadiar syr	different cartoon	62	3
25	novaflox	Boxes	70	5
26	Novagesic Forte	Boxes	90	7
27	novamag syr	different cartoon	178	4
28	Nucral syr	fls	205	3
29	repass	Boxes	50	6
30	Rhemafar	Boxes	55	7

No.	Medicine name	Unit	total Purchases	Frequency
31	roverton syr	different cartoon	102	3
32	trobuges	Boxes	100	8
33	Tropigesic	Boxes	331	7
34	Vadrol	Boxes	60	6
35	vitalgin	Boxes	100	7
36	xiltrop	Boxes	110	3
37	Zultrop forte	Boxes	51	7
Total			3416	215

a. The booking fee

Cost reservations issued by Apotek Keluarga in the year 2017 can be seen in Table 2.

Table 2. Booking fees

Booking fees	total
wifi	Rp 6,000,000
Administration	Rp 2,400,000
electricity	Rp 2,400,000
Total	USD 10.8 million

b. Storage costs

Storage costs incurred by the Apotek Keluarga in the year 2017 can be seen in Table 3.

Table 3. Storage costs

Storage costs	total
electricity	Rp 2,400,000
Labor	USD 26.4 million
Total	USD 28.8 million

After knowing booking fees and storage costs per drug for one year / period, then the next calculation to determine the optimal order quantity. Here are the results of the calculation method of EOQ can be seen in Table 4.

Table 4. Recapitulation of the calculation method of EOQ

No.	Medicine name	total Purchases	F	Booking fees	Storage costs	EOQ
1	amlodipine 10	45	3	Rp 50 233	Rp 8431	23
2	amlodipine 5	240	7	Rp 50 233	Rp 8431	53
3	brocon	28	3	Rp 50 233	Rp 8431	18
4	cendo xytrol	75	3	Rp 50 233	Rp 8431	30
5	Elsiron (FORTE)	70	5	Rp 50 233	Rp 8431	29
6	enzymplex	35	6	Rp 50 233	Rp 8431	20
7	etaflox	25	3	Rp 50 233	Rp 8431	17
8	galtaren	62	5	Rp 50 233	Rp 8431	27
9	Grantusif	50	8	Rp 50 233	Rp 8431	24
10	helixime	48	9	Rp 50 233	Rp 8431	24
11	Histigo	86	7	Rp 50 233	Rp 8431	32
12	holimox	27	3	Rp 50 233	Rp 8431	18
13	hufadine	193	11	Rp 50 233	Rp 8431	48
14	Hufaflox	66	8	Rp 50 233	Rp 8431	28
15	hufaneuron	23	6	Rp 50 233	Rp 8431	17
16	Linmag	115	7	Rp 50 233	Rp 8431	37
17	lodecon forte	51	5	Rp 50 233	Rp 8431	25
18	Lokev	301	10	Rp 50 233	Rp 8431	60
19	Medscab	40	2	Rp 50 233	Rp 8431	22
20	meloxicam	86	12	Rp 50 233	Rp 8431	32
21	mesonta	26	5	Rp 50 233	Rp 8431	18
22	Milorin	70	6	Rp 50 233	Rp 8431	29
23	neuropyramin-m	90	5	Rp 50 233	Rp 8431	33
24	Novadiar syr	62	3	Rp 50 233	Rp 8431	27
25	novaflox	70	5	Rp 50 233	Rp 8431	29
26	Novagesic Forte	90	7	Rp 50 233	Rp 8431	33
27	novamag syr	178	4	Rp 50 233	Rp 8431	46
28	Nucral syr	205	3	Rp 50 233	Rp 8431	49
29	repass	50	6	Rp 50 233	Rp 8431	24
30	Rhemafar	55	7	Rp 50 233	Rp 8431	26
31	roverton syr	102	3	Rp 50 233	Rp 8431	35
32	trobuges	100	8	Rp 50 233	Rp 8431	35
33	Tropigesic	331	7	Rp 50 233	Rp 8431	63
34	Vadrol	60	6	Rp 50 233	Rp 8431	27
35	vitalgin	100	7	Rp 50 233	Rp 8431	35
36	xiltrop	110	3	Rp 50 233	Rp 8431	36
37	Zultrop forte	51	7	Rp 50 233	Rp 8431	25

Calculation of the optimal frequency of drug purchases can dilihat in Table 5.

Table 5. Recapitulation optimal frequency of purchases

No.	Medicine name	Unit	total Purchases	F	EOQ	F (EOQ)
1	amlodipine 10	Boxes	45	3	23	2
2	amlodipine 5	Boxes	240	7	53	5
3	brocon	Boxes	28	3	18	2
4	cendo xytrol	fls	75	3	30	3
5	Elsiron (FORTE)	Boxes	70	5	29	2
6	enzymplex	Boxes	35	6	20	2
7	etaflox	Boxes	25	3	17	1
8	galtaren	tube	62	5	27	2
9	Grantusif	Boxes	50	8	24	2
10	helixime	Boxes	48	9	24	2
11	Histigo	Boxes	86	7	32	3
12	holimox	Boxes	27	3	18	2
13	hufadine	Boxes	193	11	48	4
14	Hufaflox	Boxes	66	8	28	2
15	hufaneuron	Boxes	23	6	17	1
16	Linmag	Boxes	115	7	37	3
17	lodecon forte	Boxes	51	5	25	2
18	Lokev	Boxes	301	10	60	5
19	Medscab	tube	40	2	22	2
20	meloxicam	Boxes	86	12	32	3
21	mesonta	tube	26	5	18	1
22	Milorin	Boxes	70	6	29	2
23	neuropyramin-m	Boxes	90	5	33	3
24	Novadiar syr	different cartoon	62	3	27	2
25	novaflox	Boxes	70	5	29	2
26	Novagesic Forte	Boxes	90	7	33	3
27	novamag syr	different cartoon	178	4	46	4
28	Nucral syr	fls	205	3	49	4
29	repass	Boxes	50	6	24	2
30	Rhemafar	Boxes	55	7	26	2
31	roverton syr	different cartoon	102	3	35	3
32	trobuges	Boxes	100	8	35	3
33	Tropigesic	Boxes	331	7	63	5
34	Vadrol	Boxes	60	6	27	2
35	vitalgin	Boxes	100	7	35	3
36	xiltrop	Boxes	110	3	36	3
37	Zultrop forte	Boxes	51	7	25	2

3. Safety Stock

safety stockor safety stock intended to overcome the shortcomings of the stock (stock out) during the lead time. Here are the results of calculation of safety stock can be seen in Table 6.

Table 6. Recapitulation Safety Stock

No.	Medicine name	F	X	SS
1	amlodipine 10	3	45	28
2	amlodipine 5	7	240	128
3	brocon	3	28	18
4	cendo xytrol	3	75	47
5	Elsiron (FORTE)	5	70	41
6	enzymplex	6	35	20
7	Etaflox	3	25	16
8	Galtaren	5	62	36
9	Grantusif	8	50	25
10	helixime	9	48	23
11	Histigo	7	86	46
12	holimox	3	27	17
13	hufadine	11	193	87
14	Hufaflox	8	66	33
15	hufaneuron	6	23	13
16	Linmag	7	115	61
17	lodecon forte	5	51	30
18	Lokev	10	301	140
19	Medscab	2	40	23
20	meloxicam	12	86	37
21	mesonta	5	26	15
22	Milorin	6	70	39
23	neuropyramin-m	5	90	53
24	Novadiar syr	3	62	39
25	novaflox	5	70	41
26	Novagesic Forte	7	90	48
27	novamag syr	4	178	109
28	Nucral syr	3	205	129
29	repass	6	50	28
30	Rhemafar	7	55	29
31	roverton syr	3	102	64
32	trobuges	8	100	51
33	Tropigesic	7	331	176
34	Vadrol	6	60	33
35	vitalgin	7	100	53

No.	Medicine name	F	X	SS
36	xiltrop	3	110	69
37	Zultrop forte	7	51	27

4. Point Booking Back

Having in mind the safety stock for each drug then the next calculating reorder point. Results of the calculations are presented in Table 7.

Table 7.Recapitulation Point Booking Back

No.	Medicine name	Unit	total Purchases	SS	Average Usage	ROP
1	amlodipine 10	Boxes	45	28	4	32
2	amlodipine 5	Boxes	240	128	20	148
3	brocon	Boxes	28	18	2	20
4	cendo xytrol	fls	75	47	6	53
5	Elsiron (FORTE)	Boxes	70	41	6	47
6	enzymplex	Boxes	35	20	3	23
7	etaflox	Boxes	25	16	2	18
8	galtaren	tube	62	36	5	41
9	Grantusif	Boxes	50	25	4	29
10	helixime	Boxes	48	23	4	27
11	Histigo	Boxes	86	46	7	53
12	holimox	Boxes	27	17	2	19
13	hufadine	Boxes	193	87	16	103
14	Hufaflox	Boxes	66	33	6	39
15	hufaneuron	Boxes	23	13	2	15
16	Linmag	box	115	61	10	71
17	Iodecon forte	Boxes	51	30	4	34
18	Lokev	Boxes	301	140	25	165
19	Medscab	tube	40	23	3	26
20	meloxicam	Boxes	86	37	7	44
21	mesonta	tube	26	15	2	17
22	Milorin	Boxes	70	39	6	45
23	neuropyramin-m	Boxes	90	53	8	61
24	Novadiar syr	different cartoon	62	39	5	44
25	novaflox	Boxes	70	41	6	47
26	Novagesic Forte	Boxes	90	48	8	56
27	novamag syr	different cartoon	178	109	15	124
28	Nucral syr	fls	205	129	17	146
29	repass	Boxes	50	28	4	32
30	Rhemafar	Boxes	55	29	5	34
31	roverton syr	different cartoon	102	64	9	73
32	trobuges	Boxes	100	51	8	59
33	Tropigesic	Boxes	331	176	28	204
34	Vadrol	Boxes	60	33	5	38
35	vitalgin	Boxes	100	53	8	61
36	xiltrop	Boxes	110	69	9	78
37	Zultrop forte	Boxes	51	27	4	31

5. Maximum inventory

Maximum inventory used to determine the maximum limit of inventory that must be met. Here are the results of the calculation of the maximum inventory can be seen in Table 8.

Table 8.Maximum Inventory recapitulation

No.	Medicine name	Unit	EOQ	SS	Maximum inventory
1	amlodipine 10	Boxes	23	28	51
2	amlodipine 5	Boxes	53	128	181
3	brocon	Boxes	18	18	36
4	cendo xytrol	fls	30	47	77
5	Elsiron (FORTE)	Boxes	29	41	70
6	enzymplex	Boxes	20	20	40
7	etaflox	Boxes	17	16	33
8	galtaren	tube	27	36	63
9	Grantusif	Boxes	24	25	49
10	helixime	Boxes	24	23	47
11	Histigo	Boxes	32	46	78
12	holimox	Boxes	18	17	35
13	hufadine	Boxes	48	87	135
14	Hufaflox	Boxes	28	33	61
15	hufaneuron	Boxes	17	13	30
16	Linmag	Boxes	37	61	98
17	Iodecon forte	Boxes	25	30	55
18	Lokev	Boxes	60	140	200
19	Medscab	tube	22	23	45
20	meloxicam	Boxes	32	37	69
21	mesonta	tube	18	15	33
22	Milorin	Boxes	29	39	68
23	neuropyramin-m	Boxes	33	53	86
24	Novadiar syr	different cartoon	27	39	66
25	novaflox	Boxes	29	41	70
26	Novagesic Forte	Boxes	33	48	81
27	novamag syr	different cartoon	46	109	155
28	Nucral syr	fls	49	129	178
29	repass	Boxes	24	28	52
30	Rhemafar	Boxes	26	29	55
31	roverton syr	different cartoon	35	64	99
32	trobuges	Boxes	35	51	86

No.	Medicine name	Unit	EOQ	SS	Maximum inventory
33	Tropigesic	Boxes	63	176	239
34	Vadrol	Boxes	27	33	60
35	vitalgin	Boxes	35	53	88
36	xiltrop	Boxes	36	69	105
37	Zultrop forte	Boxes	25	27	52

4.2 Class Diagram

The class diagram Inventory Management Information System Drugs At Apotek Keluarga Warehouse PT. Abdi sure Anugerah can be seen in Figure 3.

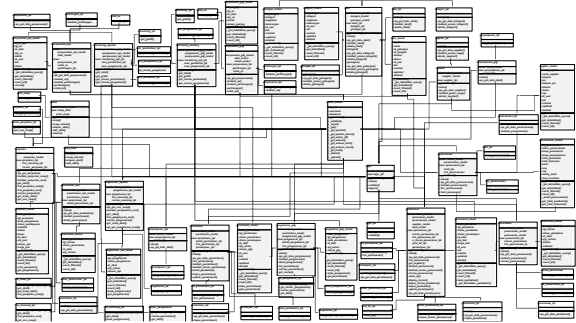


Figure 3.Class Diagram SIM Supplies

4.3 Relationship diagram

Relationship diagrams Inventory Management Information System Drugs At Apotek Keluarga Warehouse PT. Abdi sure Anugerah can be seen in Figure 4.

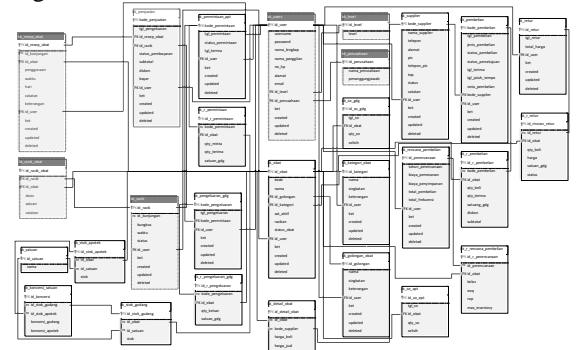


Figure 4. Relationship Diagram SIM Supplies

4.4 interface

Interface design in Inventory Management Information System Drugs at Apotek Keluarga Warehouse PT. Abdi Yakin Anugerah is built to meet the needs of the design required in the implementation phase of the design description to be made.

The design of the interface for warehouse assistant in inventory management information system is as follows:

1. Interface log in

The design of the interface to log in can be seen in Figure 5.

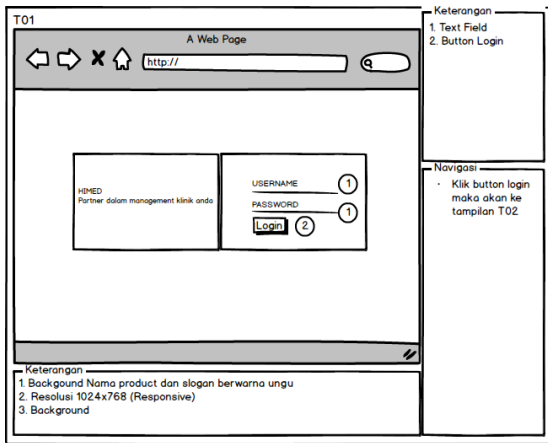


Figure 5. Designing Log in

2. The interface manage supplier data
Interface design supplier data management can be seen in Figure 6.

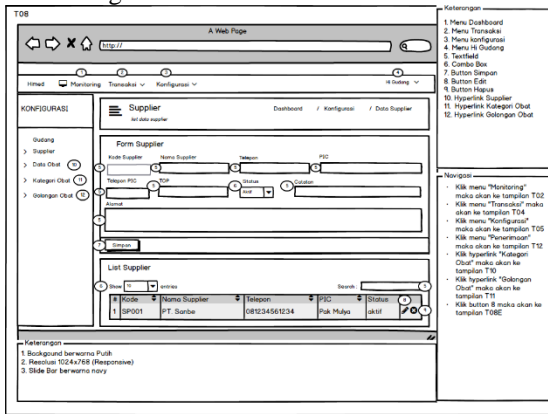


Figure 6. Designing manage supplier

5 Data management interface categories of drugs
Interface design data management categories of drugs can be seen in Figure 7.

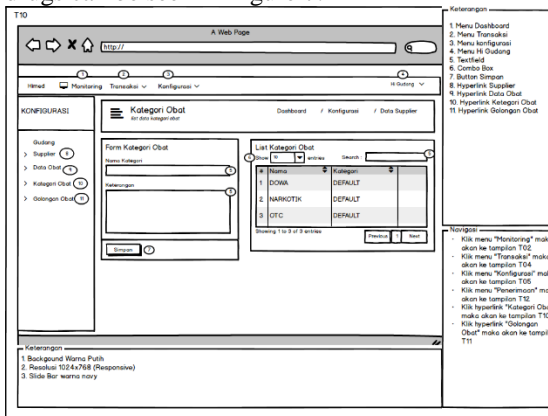


Figure 7. Manage Categories Drug Design

6 Data management interface class of drugs
The design of the drug class data management interface can be seen in Figure 8.

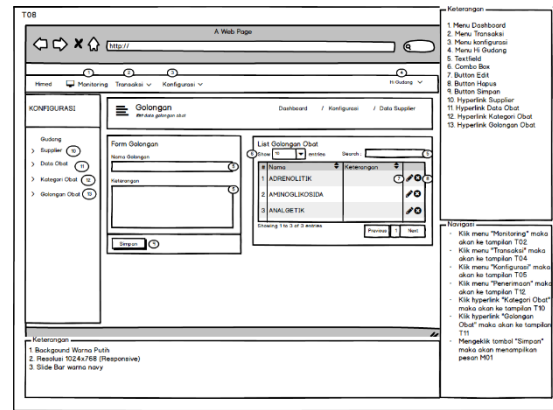


Figure 8. Urban Design Group Drugs

4.5 Testing System

System testing is performed to determine whether the system is built fit for use or not. Testing was conducted on the pages of Directors, Head of Warehouse, Warehouse Assistant, Pharmacist and Cashier using blackbox testing strategy and user receivers.

4.5.1 Conclusion Blackbox Testing

Based on the results of blackbox testing that has been done can be concluded that the system has been running as expected. From all that has been done in this test are expected to represent the testing of other functions in the system built.

4.5.2 Conclusion Test User Receivers

Based on test results user recipients has been done through interviews secara directly to all users including, Director, Head of Warehouse, Warehouse Assistant, Pharmacist and Cashier. The conclusion can be drawn that the system has been running as expected and can help facilitate each user in doing his job.

5. CONCLUSION

5.1 Conclusion

Based on test results obtained from studies conducted in the preparation of this thesis as well as referring to the purpose of the study that has been created, it can be concluded that:

1. Inventory management information system that is already built can help head shed at Apotek Keluarga in determining the number of bookings or purchases optimal.
2. Inventory management information system that has been built has been able to assist the head of the warehouse at the pharmacy in determining the appropriate time to make a reservation back to the supplier.

5.2 Suggestions

Based on the results that have been achieved in building the Inventory Management Information System Drug Warehouse Pharmacy PT. Abdi

Convinced This gift still has shortcomings, and therefore it is advisable to add things that can complement the future that is necessary further development of the manufacturing management information system mainly in terms of back-up automatically show the report to the overall data, and print report, so as to reduce the undesirable things such as data loss due to damage to the computer and so on.

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