



Analysis of Inventory Management System at Pharmacy of XYZ Hospital

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ABSTRACT: This research examines inventory management at the XYZ Hospital Pharmacy Installation in Bandung, with a special focus on medicines and medical devices. The background to this research is the significant increase in health costs and the importance of effective supply chain management to reduce unnecessary costs. Based on monthly stock and daily sales data from October 2023 to February 2024, this research uses quantitative methods to calculate optimal inventory levels, including Economic Order Quantity (EOQ), safety stock, and reorder point (ROP). This research also applies ABC analysis and cycle counting to prioritize inventory control. The research results show that the proposed inventory policy, especially the continuous review strategy, has the potential for significant cost savings for the XYZ Hospital Pharmacy Installation. For pharmaceutical products, achieving a 99% service level can result in savings of IDR 302,697,429, which is 48.17% of the average inventory level. For medical devices, potential savings reach IDR 70,602,064, which is 48.77% of the average inventory level. The total potential savings for all products is IDR 373,299,493. These findings highlight that hospitals currently do not have effective controls in managing inventory of single-use medical devices. Implementing strong inventory policies and procedures is critical to improving cost efficiency and optimizing inventory levels within an organization.

KEYWORDS: Drugs, Inventory management, Medical Devices, Pharmaceutical

INTRODUCTION

As of now, the government is attempting to give adequate public administrations to the whole community, one of which is within the wellbeing division. Public health administrations are required to proceed to supply satisfactory services so that the whole community gets most extreme benefit. In an exertion to progress quality and administrations within the wellbeing segment and to pick up the believe of the community, clinics attempt their best to serve and give all community needs related to therapeutic administrations and medication supply administrations.

Nowadays drug stores apportion numerous medicines to patients, which implies that apportioning is one of the most and most complex forms. Pharmaceutical organization incorporates picking and labeling solutions. When done physically, dispensing with blunders can happen at any time, without anybody taking note until the understanding encounters hurtful impacts. There are 134,431 cases of apportioning blunders each year in Britain and Ridges. Another consider appeared that there were 24% apportioning mistakes in community drug stores and 12.5% in clinic outpatient drug stores. Concurring to Anacleto, Perini, Rosa, and Cesar, 2007 supported organization mistakes were capable for 11% of 50% of pharmaceutical mistakes. The foremost common organization mistakes are off-base sedate, off-base measurements, off-base name, and off-base amount [1].

The essential center of the healthcare segment is to supply patients with the best quality of care. As the body's wellbeing costs proceed, an successful health supply chain must be accomplished to reduce a few of the superfluous costs [2]. Wellbeing organizations are currently developing into exceptionally complex organizations. As healthcare costs develop quickly, both practitioners and academics are seeking out for ways to address the problem. Whereas healthcare costs proceed to rise, healthcare organizations are required to supply high quality care. Hence expanding supply chain productivity, and wellbeing fetched investment funds can be accomplished. It is moreover specified in past investigate that 30-40% of healing center costs are went through in terms of coordinations exercises. As a few thinks about appear, executing successful supply chain administration (SCM) can diminish wellbeing costs altogether.

Concurring to the Republic of Indonesia Serve of Wellbeing Control no. 56/2014 healing centers are wellbeing benefit teach that give total person wellbeing administrations (Service of Wellbeing of the Republic of Indonesia, 2014). Hospital drug store administrations are one of the exercises that bolster wellbeing administrations and are an indistinguishable portion of the healing



center wellbeing benefit framework which is situated towards persistent care and the arrangement of quality drugs (Service of Wellbeing of the Republic of Indonesia, 2004).

Expendable restorative hardware and pharmaceuticals plays an imperative part in day by day clinic operations. These stores cover medications and single-use therapeutic hardware, which constitute a huge portion of clinic use, specifically around 40%-50% of the whole budget in numerous creating nations (Yudianti et al, 2021). Shopping for solutions and restorative gear requires a expansive budget in wellbeing administrations. A clinic is mindful for guaranteeing ideal utilize of accessible drugs and therapeutic gear pointed at accomplishing proficiency in taken a toll control. The point is to guarantee satisfactory supplies of required merchandise so that the supply of merchandise can be kept up [3]. Capacity implies cash that doesn't move and capacity too increments costs, counting holding costs and ordering costs, as well as misplaced openings to create a benefit [4].

Stock is company wealth which has an imperative part in commerce operations, so companies have to be carry out proactive management. Companies must be able to expect challenges that will happen in stock administration to attain the ultimate target, to be specific to play down the entire costs that must be brought about by the company for dealing with stock. The presence of stock may be a figure that triggers an increment in costs. Deciding as well much stock will moreover result in squander in holding costs, but in case it is as well small it'll result within the company losing the opportunity to form a benefit in case request is more prominent than the anticipated request. Controlling crude fabric supplies is exceptionally vital in an industry to create its commerce since it'll influence fetched productivity, smooth generation and the benefits of the commerce itself. The presence of stock is expected to assist the course of a company's generation handle.

Stock exercises have to be arranged utilizing suitable strategies in controlling stock so that the company maintains a strategic distance from squandered costs and the company can work more productively for future improvements. One strategy that can be utilized to control inventory is by utilizing the Financial Arrange Amount (EOQ) strategy. [5], which is utilized to decide the foremost economical ordering level. In carrying out control through EOQ it is based on the amount of products that can be obtained with minimal costs or what is called ideal obtaining. The reorder amount must be the same as the entire carrying taken a toll and add up to requesting taken a toll. EOQ can too be utilized to decide the foremost prudent requesting level [6].

The objective of stock administration is to decide the adjust between stock venture and client benefit [7]. There will be no accomplishing a moo taken a toll technique without a great stock procedure. All organizations have a few sort of arranging framework and stock control framework. Each fabricating and generation organization basically should pay consideration to stock arranging and control. Clinics must decide whether it is superior to purchase in large amounts or purchase within the required amounts. Once the choice is made, the following arrange is estimating request. At that point the operations supervisor decides the stock required to serve that request [8].

Stock administration is an critical issue in a company or organization. The smooth running of stock depends on the administration of the company or organization. How stock administration can screen a company's crude fabric stock so that it doesn't involvement stock outs or runs out when request is tall and doesn't involvement buildup when request is moo (Rashid, 2020). Stock administration must be able to control at an ideal level, decide sensible stock quality to meet needs utilizing existing and concurred strategies, considering the huge stock costs.

A clinic may be a wellbeing benefit institution that gives comprehensive person wellbeing administrations giving inpatient, outpatient and crisis administrations (Republic of Indonesia Law No. 44 of 2009). The hospital's fundamental assignment is to supply care administrations to patients. Most extreme benefit to these patients cannot be provided immediately without a total and steady sedate supply. So it is evident that hospital services are closely related to the drug store department.

The Hospital Pharmacy Installation (IFRS) is part of the therapeutic back benefit unit within the healing center. The part of IFRS is to supply medicate administrations as well as consumable restorative materials and hardware according to hospital needs. IFRS is additionally the unit that employments the foremost budget for sedate obtainment purposes. But on the other hand, IFRS may be a source of clinic income.

In 2008, clinic drug specialists around the world met in Basel, Switzerland, to create a vision articulation for drug store hone in clinics. The result was a arrangement of explanations that started with "the healing center pharmacist's overarching objective is to optimize quiet results through reasonable, secure, solid, fitting and cost-effective pharmaceutical use" [9].



Clinic drug stores apportion numerous solutions to patients, meaning that apportioning is one of the most and most complex forms. Consumptions incorporate picking and labeling of medications. When this can be done physically, apportioning blunders can happen at any time, without anybody taking note until the persistent encounters an antagonistic impact [5].

Pharmaceutical administrations are supporting administrations additionally the most income. Typically since more than 90% of wellbeing administrations in healing centers utilize pharmaceutical supplies (drugs, chemicals, radiological materials, consumable therapeutic hardware, therapeutic equipment and therapeutic gas), and 50% of all hospital pay comes from the administration of pharmaceutical supplies. So in the event that the administration of the drug store office isn't carried out and overseen well, it'll have a noteworthy affect such as a diminish in wage for the clinic itself [7].

The foremost critical perspective of pharmaceutical administrations is optimizing sedate and restorative gadgets utilize, counting arranging to guarantee the availability, safety, and viability of sedate and therapeutic gadgets utilize. This strategy of putting away drugs in clinics must be done suitably, since there are arrangements that must be followed to for each sort of medication. This is often where the part of stock administration gets to be exceptionally imperative

The stock framework at Hospital XYZ still should be ideal since sedate and medical equipment orders are made based on gauges. Dubious lead times result in unsteady stock conditions. Drug specialist colleagues frequently involvement challenges in deciding the least stock of a sedate and therapeutic hardware that must be met, when the drug and restorative hardware must be requested, and what the ideal arrange amount is so that stock costs can be decreased to a least level. Medicate and therapeutic gear supplies in drug stores must meet shopper needs, which alter over time. Improper and uncontrolled supplies can cause problems because on the off chance that the accessibility of the drug is inadequately, at that point it cannot meet needs, so it can decrease buyer fulfillment.

In this manner, administration ought to screen and oversee the stock of single-use therapeutic gadgets and pharmaceuticals carefully for stock administration. In any case, numerous clinics battle to precisely survey their stock levels, which can have negative impacts in the event that not fittingly dealt with. Stock administration frameworks work beneath three diverse conditions: deficiency, abundance stock, and typical stock. Intemperate stock alludes to a circumstance when the supply of medications surpasses the desired amount. Understock occurs when the genuine stock level is lower than the specified quantity. Ordinary stock is characterized as a stock level extend between 1% and 10ove the specified amount [10]. Deadstock alludes to products that have not been sold within the final three months, whereas ceased products are not sold or in stock and no purchasing/procurement. Within the case of XYZ Clinic, it is vital to note that the healing center has particular administrative details that apply. Be that as it may, these controls don't right now apply to stock administration frameworks. As a result, XYZ Clinic Drug store administration depends on judgment when requesting stock without taking into consideration the reorder point. At display on figure, the XYZ Pharmaceutical Healing center encounters the taking after dispersion of stock: For Figure 1.1 appears the stock status of drugs is 17adstock, 57% overloaded, 23% understocked, and 2tegorized as ordinary or worthy. Besides, for Figure 1.2 appears the stock status of restorative gadgets is 36adstock, 47% overloaded, 16% understocked, and 1tegorized as typical or satisfactory.

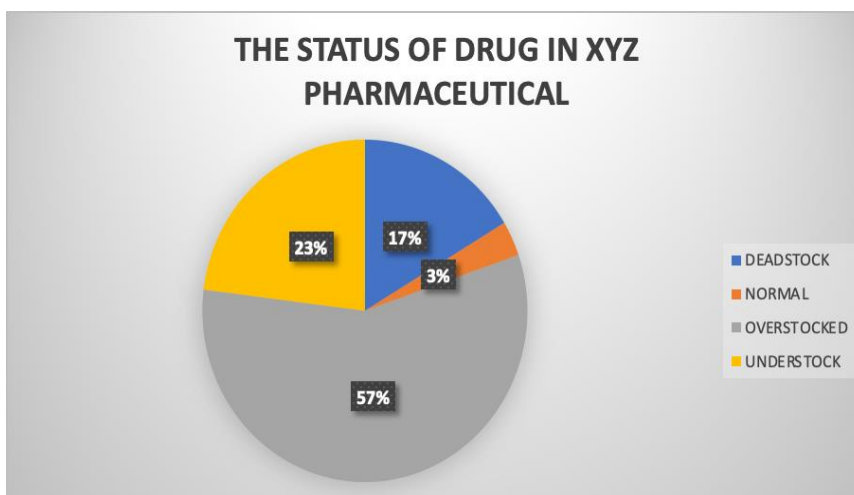


Figure 1.1 Actual Inventory Status of Drugs

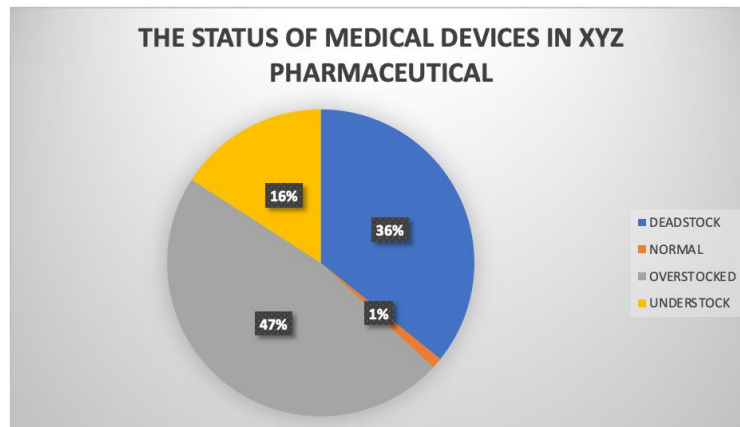


Figure 1.2 Actual Inventory Status of Medical Devices

This practice is primarily driven by the hospital's relatively new status and the absence of established stock regulations. Therefore, the ordering process mainly depends on the quantity of the previous order or the percentage increase of 10%-20%. In the hospital environment, disposable medical equipment and pharmaceutical inventory play an important role and have a specific purpose. It is critical for hospitals to avoid stockouts, especially considering the direct impact they have on patient care. Therefore, reducing the number of out-of-stock items becomes Hospitals have the opportunity to analyze the current situation to determine whether cost savings are possible and what inventory management service levels need to be improved.

RESEARCH METHOD

The main purpose of this chapter is to test the methodology that will be used in this investigation. The methodology can be divided into several stages, with the research focusing on five main stages: problem identification, literature review, data collection, data analysis, and conclusion & recommendation. These phases are important in ensuring the successful completion of the research, and each phase contributes to the research process as a whole. The stages are illustrated in Figure 3.1.

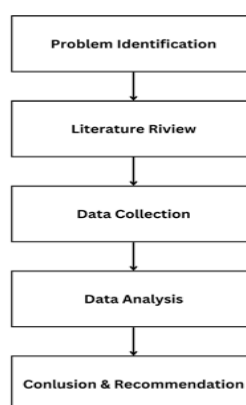


Figure 3.1 Research Methodology

A. Research sites

XYZ Hospital, located in Bandung, was initially a military hospital (ABRI) Level IV with 100 beds and has now transformed into a private general hospital. XYZ Hospital offers comprehensive facilities, including a 24-hour emergency unit, laboratory, radiology, pharmacy, and various inpatient care classes. The hospital's team of experienced specialists, trained medical staff, and professional support personnel work together to provide holistic care. The hospital is also involved in community health programs such as vaccination drives and free health check-ups, prioritizing patient satisfaction through continuous staff training and standard

operating procedures. The pharmacy at XYZ Hospital was chosen as the research subject due to its critical role in providing high-quality medications, efficient stock management, and comprehensive drug information services, offering valuable insights for enhancing overall healthcare delivery.

B, Data Collection

The author uses primary and secondary data to solve problems in this research. The author collected information about the procurement system and supply management system at XYZ Hospital Pharmacy using primary data. Subsequently, the author used secondary data to provide historical data as input for calculations. In this research, secondary information was used to solve this problem. Secondary data was used as a calculation input to display historic data. Historical data can also play a role in determining the actual condition of the hospital pharmacy. Based on hospital pharmacy reports, various categories of secondary and primary data were collected, including:

- a) Monthly stock data (expressed in Rp) for each medicine and medical device during October 2023 - February 2024 is used to calculate the average inventory level using inventory control techniques.
- b) Daily sales data for all medicines and medical devices during October 2023 - February 2024, this data is to assess the condition of inventory management in hospitals and calculate metrics such as economical order quantities, safety stock, and reorder points.
- c) Price data for each medicine is listed in Rupiah (IDR). This information is used to determine the value of inventory stored in the hospital warehouse.
- d) Interview the pharmacy manager directly at the hospital and through Zoom, to find out about the procurement and supply management systems at XYZ Hospital Pharmacy

C. Data Processing Analysis

The research design chosen for this study was quantitative, as it involved extensive numerical data analysis and explored various inventory control techniques, with quantitative methods considered the most appropriate approach (Heizer, 2017). Researchers will use Excel as a tool to calculate pharmacy stock in hospitals.

Researchers carried out data analysis which was divided into two parts, namely inventory stock data and sales data. Inventory stock data is actual data, while sales data is used to estimate inventory data. Estimated inventory data involves a more extensive process compared to actual data, because researchers aim to establish optimal inventory levels. Figure 3.1 below illustrates the steps to determine hospital condition in the research process.

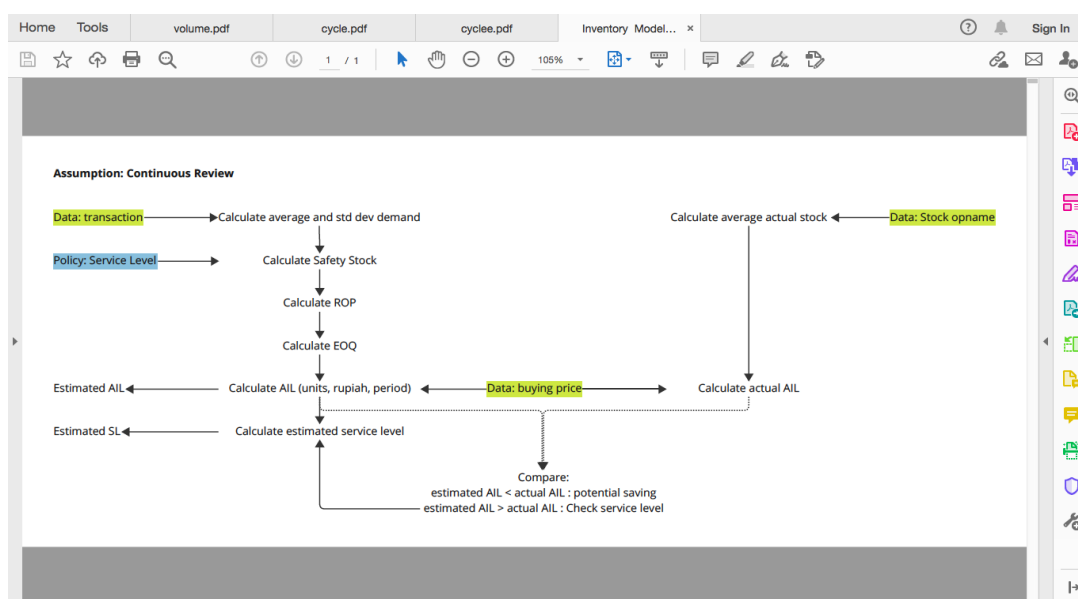


Figure 3.2 Data Analysis Process



D. ABC Analysis

ABC Analysis Method This research begins by collecting and entering data regarding the list of drug and medical equipment names, number of drug and medical equipment uses, and drug & medical equipment prices during October 2023-February 2024 using Microsoft Excel and then sealing the drugs and medical equipment based on their investment value. The investment value of drugs and medical equipment is calculated by multiplying the number of uses by the price of each drug and medical equipment.

E. Cycle Counting

Another method is cycle counting for warehouse management supervision. This method also uses ABC analysis to classify items into classes A, B and C based on priority. After carrying out the classification will continue with calculation frequency calculations, buffer percentage calculations, determining counting priorities, setting categorization based on color codes and ends with setting up the cycle counting monitoring dashboard.

F. Conclusion and Recommendations

After the analysis is finished, the conclusion seeks to succinctly summarize the research material and provide the findings derived from the data analysis. It is crucial to address each research question as initially posed in the study. Furthermore, suggestions were provided to delineate forthcoming strategies aimed at enhancing the operational efficacy of private hospitals in Bandung. The primary objective is to optimize the management of medicine and medical device inventory by striking a balance between the investment in inventory and the level of customer service.

RESULT AND ANALYSIS

A. Pharmaceutical Profile and Conditions

I. Pharmaceutical Profile

In understanding with Government Control No. 51 of 2009, pharmaceutical work is the make and quality control of supplies, administration of solutions, medicate administrations on doctors' medicines, medicate data administrations, and the improvement of drugs, restorative fixings and conventional medications. Solutions and therapeutic gadgets are of specific concern in pharmaceutical work. Pharmaceutical supplies, counting drugs and restorative gadgets, are an basic component in clinic administrations (Mauliana et al., 2022). Each healing center too has particular rules for overseeing pharmaceutical supplies that point to realize proficiency. Productive administration of pharmaceutical stock is basic for adjusting supply and request and lessening costs without compromising quality.

XYZ Healing center Pharmacy's supply administration framework needs distant better;a much better;a higher;a stronger;an improved">a higher operational standard of strategies for the productivity of the acquirement of merchandise. XYZ Clinic still gauges the drugs and restorative hardware required. From the comes about of interviews with XYZ Clinic, healing center specialists get the products, to be specific by selecting the drugs and wellbeing hardware needed by the healing center, arranging and assessing the number of drugs and restorative gadgets required and after that inquiring for the endorsement of the Head of the Clinic to be requested. Promptly until, the products are gotten and checked for capacity as stock in the drug store distribution center. In any case, with working frameworks, such strategies still frequently happen overstock and understock.

Based on the comes about of an meet with the drug store of XYZ Clinic, which clarified the conditions and data related to the acquirement prepare, the taking after data, within the form of Table 4.1, at the side other information, is given based on the researcher's suspicions and the comes about of talks with Hospital XYZ drug store.

Table 1: Additional Information in XYZ Hospital

Lead Time	1 days
Holding Cost	26%
Order Cost	1000
Service Level	99%
Number of Items	1720
Medicine	1273
Medical Devices	447



Extra data from the comes about of the meet with XYZ Healing center is that the lead time for stock conveyance is as a rule 1x24 hours or for one day on the off chance that there are no issues from the conveyance side. In the event that the arrange is made within the morning, the goods more often than not arrive within the evening. Another variable, concurring to the researcher's suspicion of capacity costs, is expected to be 26% of the unit cost (Heizer, 2017). The booking charge, which incorporates media transmission and exchange expenses, is IDR 1000 per booking; from the comes about of the talk with XYZ Clinic with respect to the healing center supply benefit handle, which is 99cause the Healing center continuously standardizes procedures within the acquirement of products, so that the wants of solutions or medical hardware for patients can always be met. There's no stock opening within the distribution center. Usually without a doubt a great esteem within the supply of administrations carried out by clinics. From the information given by the Healing center, XYZ Clinic gives 1720 things. 1273 for restorative things and 447 for restorative gadget things.

II. Pharmaceutical Conditions

In the analysis of an inventory management system, the service level (SL) is a measure of the probability that demand will be met without experiencing a shortage of stock. This service level can be calculated using the standard normal distribution (norm.s.dist) and the z-score formula with the following formula:

$$\begin{aligned}
 \text{AIL Actual} &= \text{AIL Estimated} \\
 \text{SL} &= \text{norm.s.dist}(z) \\
 z &= (\text{AIL Act} - 1/2Q) / (s \times \sqrt{L})
 \end{aligned}
 \tag{4.4}$$

s = standar deviation
 L = Lead Time
 Q = Economic Order Quantity (EOQ)

Table 4.2: Service Level of Drug

Status	Service Level
DEADSTOCK	48,64%
NORMAL	99,9987%
OVERSTOCKED	99,999997%
UNDERSTOCK	71,97%

Table 4.3: Service Level of Medical Devices

Status	Service Level
DEADSTOCK	45,06%
NORMAL	99,9999998%
OVERSTOCKED	99,9999993%
UNDERSTOCK	46,77%

Based on Tables 4.2 and 4.3 show the status and service level of the product stock level in the categories "Drug" and "Health Equipment" XYZ Hospital currently. The status column identifies four types of inventory: Deadstock, Normal, Overstocked, and Understock. The service level column shows the service percentage for each inventory status. The Deadstock type has a service rate of 48.64% and 45,06%, indicating that the demand still needs to be met. Normal has a servicing rate of 99.9987% and 99,9999998%, which indicates good availability. Understock has service rates of 71.97% and 46.77%, indicating frequent stock shortages. Moreover, there is a service level of >99.9% for the Overstocked type, which shows the abundance of medicines and health devices that are experiencing overstock. The XYZ hospital pharmacy's current state of service level shows some challenges in managing optimal supplies. Based on the analysis results, there are indications that the pharmacy has an overstocking problem on a particular

item, suggesting that the supply may need to be in balance with actual demand, thus resulting in high storage costs and the risk of the goods becoming obsolete.

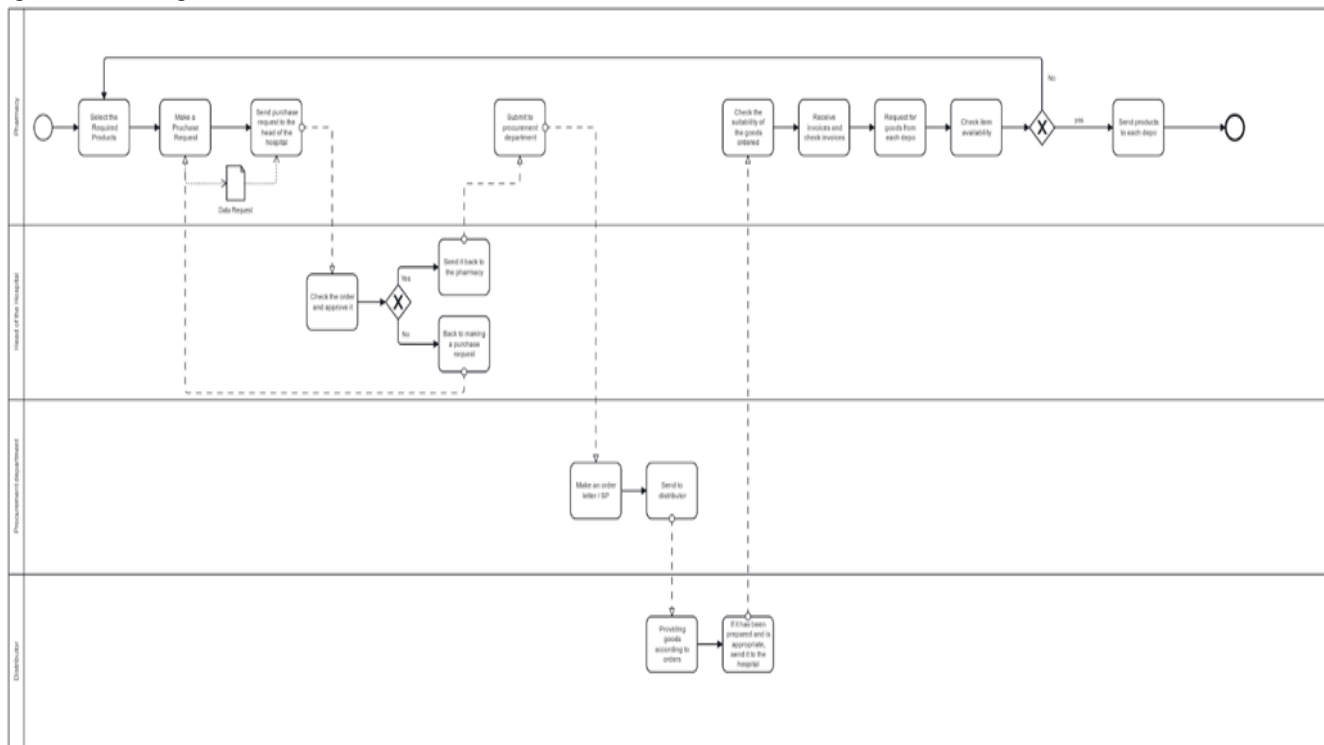


Figure 4.1 BPMN of Procurement and Distribution of good

In the procurement and distribution process at XYZ Hospital, there are four stakeholders involved: the pharmacy department, the hospital director, the procurement department, and the distributor. The following is an explanation of the BPMN workflow at XYZ Hospital:

1. The process begins with the pharmacy department selecting the necessary products and planning the quantities according to hospital policies. Once the products and quantities are determined, the purchase plan must receive approval from the hospital director. This approval is crucial to ensure that the procurement aligns with the hospital's budget and strategic policies.
2. If the purchase plan is approved, the document is forwarded to the procurement department. The procurement department is responsible for creating an official Purchase Order (PO) and sending it to the distributor. The distributor then receives the order and ships the products to the hospital according to the specified requirements.
3. Upon arrival at the hospital, the next step is for the pharmacy department to receive and inspect the products. They ensure that the items received match the order in terms of both quantity and quality. After the inspection, the invoice from the distributor is received, verified, and then input into the warehouse system for inventory record-keeping.
4. In the distribution process, the invoice that has been input into the warehouse system serves as the basis for each department within the hospital to submit their requests for products. Each department checks the availability of the items in the warehouse. If the items are available, they are dispatched to the requesting department. However, if the items are not available, the procurement department will create a new purchase request to fulfill the need

B. Data Sales Analysis

Sales data analysis was carried out to find out the estimated average inventory level (AIL) of pharmacies at XYZ Hospital. To find out, several stages are needed, including Calculating the Average and Standard Deviation, Safety Stock, ROP, and EOQ. Sales data is analyzed from weekly sales data from October 2023 to February 2024, with a total weekly of 22 weeks. This analysis focuses on 1720 items divided into two types: first, drugs, as many as 1273 items, and medical devices, as many as 447 items.



I. Calculate Average and Standard Deviation

Table 4.4: Example of Calculation Average and Standard Deviation Drug

Row Labels	Week (unit)																						Average	STDEV
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Adalat oros 30 mg Tablet (JKN)	37	90	180	60	96	74	60	180	60	90	97	7	90	90	90	60	90	150	168	205	127	91	99,64	49,80
Akilen Tetes Mata	0	1	1	0	0	2	0	0	2	1	0	2	0	1	0	1	1	0	0	1	0	0	0,59	0,73
Akilen Tetes Telinga	7	6	3	5	1	3	5	10	7	8	1	4	10	12	7	10	3	5	4	7	10	4	6,00	3,09
Alaxan FR Tablet	0	0	0	0	10	0	0	0	2	0	10	0	1	20	0	10	0	0	0	0	10	0	2,86	5,45
Albothyl Ovula	2	1	0	0	7	0	1	0	1	0	1	3	2	0	0	1	0	6	1	2	1	0	1,32	1,89
Aldisa SR Caps	184	220	198	180	254	160	315	280	152	307	166	356	401	155	143	212	273	196	99	163	243	195	220,55	75,52
Alganax 0,25 tab	218	274	72	28	119	76	77	0	167	226	42	263	70	39	49	182	41	119	1	112	119	84	108,09	81,31
Alganax 0,5 tab	237	168	96	24	71	140	70	105	18	91	0	117	0	56	21	84	0	28	0	49	49	0	64,73	62,14
Alganax 1 mg tab	0	28	30	0	0	28	30	0	0	28	0	44	0	28	0	0	0	28	0	0	0	0	11,09	15,35
Allopurinol 100 mg Tablet (JKN)	918	673	702	827	580	909	764	624	795	737	1088	986	630	566	865	867	1037	1083	519	649	1117	983	814,50	184,42

Table 4.4 shows some examples of average and standard deviations from the demand for medicines once a week. It can be seen that every day, there are different sales, such as the drug item Allopurinol 100 mg Tablet (JKN), which consistently has sales every day and has an average of 814.50 sales per 3 weeks. Sales consistency also occurred in other drug items such as Aldisa SR Caps, with an average sales of 220.55 per 3 weeks, and Adalat oros 30 mg Tablet (JKN), with an average of 99.64 per 3 weeks.

Table 4.5: Example of Calculation Average and Standard Deviation Medical Devices

Row Labels	Week (unit)																						Average	STDEV
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Umbilical Cord Clamp Sterile	1	5	5	3	5	9	6	2	7	9	6	9	3	3	5	5	12	5	3	3	13	4	5,59	3,13
Under Pads 60X90	30	32	41	30	24	63	50	27	33	62	49	44	29	34	49	32	67	42	30	37	77	44	42,09	14,44
Urine bag with hanger (nousmed)	32	37	32	28	30	32	42	29	33	31	34	28	23	28	28	45	33	22	20	16	15	12	28,64	8,16
urine collector	11	7	9	6	5	8	7	1	4	12	2	5	13	4	3	7	8	9	11	1	9	1	6,50	3,64
Urine Container 60 ml	77	86	98	76	73	73	67	57	61	59	53	55	89	62	70	71	63	73	71	63	65	47	68,59	12,11
Urologi DJ Stent	4	2	1	0	1	3	3	1	3	2	2	1	0	1	1	2	0	1	0	0	0	0	1,27	1,20
Vacutainer ungu 3 ml	0	182	230	192	196	267	253	216	302	289	260	241	217	207	133	214	291	309	311	345	337	294	240,27	76,51
verban 5 cm	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1	0	0	0	0	0,27	0,70
verband 10 cm	26	37	38	37	31	34	22	38	35	35	24	45	28	35	27	31	29	47	102	48	51	42	38,27	16,26
waslap	190	216	212	138	152	221	190	157	156	186	195	211	152	182	169	186	186	174	190	182	257	146	184,00	28,39

In Table 4.5, there are average values and standard deviations for medical devices that have an inventory of 447 items. It can be seen that several medical device items do not have sales every day, such as 5 cm verban, which has sales only one time in 1 week, with an average value of 0.27 and a standard deviation value of 0.70. From this data, a 5 cm verb is not needed much at XYZ Hospital. The Urology medical device DJ Stent also did not have sales several times in the last week and has an average value of 1.27 and a standard deviation of 1.20, which means that the variation in sales value is consistent with only 1-3 items every day.

II. Calculate Safety Stock

The results of the interview with XYZ Hospital showed that safety stock control is carried out every day either manually or based on a computer system. To further strengthen the process of controlling drug and medical devices safety stock, pharmaceutical warehouses must always pay attention to the receipt of drug and medical devices stock receipts and continuously record the entry and exit of drugs (Simamora et al., 2024). With this safety stock control, it is hoped that drug stocks can always be maintained. The calculation of stock safety is as follows:



Table 4.6: Perhitungan Stok Keamanan Obat

Row Labels	Average	STDEV	SS
Adalat oros 30 mg Tablet (JKN)	99,64	49,80	43,79
Akilen Tetes Mata	0,59	0,73	0,65
Akilen Tetes Telinga	6,00	3,09	2,71
Alaxan FR Tablet	2,86	5,45	4,80
Albothyl Ovula	1,32	1,89	1,66
Aldisa SR Caps	220,55	75,52	66,40
Alganax 0,25 tab	108,09	81,31	71,50
Alganax 0,5 tab	64,73	62,14	54,64
Alganax 1 mg tab	11,09	15,35	13,50
Allopurinol 100 mg Tablet (JKN)	814,50	184,42	162,16

The calculation of safety stock in Table 4.6 shows that each type of drug at XYZ Hospital has a varied safety stock. For example, Adalat Oros 30 mg Tablet (JKN) has a safety stock of 43.79, which shows the need for reserve stock to anticipate an increase in demand or delays in delivery. Allopurinol 100 mg Tablets (JKN) have the highest safety stock of 162.16, which may be due to higher demand or more significant variation in use. On the other hand, Akilen Eye Drops and Akilen Ear Drops have a safety stock of 0.65 and 2.71, respectively, which reflects a lower stock requirement compared to other drugs. Thus, pharmaceutical inventory management can ensure the availability of essential medicines by considering the safety stock that has been calculated so that services to patients remain optimal and the risk of running out of stock can be minimized

Table 4.7: Calculation of Medical Device Stock Safety

Row Labels	Average	STDEV	SS
Umbilical Cord Clamp Sterile	5,59	3,13	2,75
Under Pads 60X90	42,09	14,44	12,70
Urine bag with hanger (noused)	28,64	8,16	7,18
urine collector	6,50	3,64	3,20
Urine Container 60 ml	68,59	12,11	10,65
Urologi DJ Stent	1,27	1,20	1,06
Vacutainer ungu 3 ml	240,27	76,51	67,27
verban 5 cm	0,27	0,70	0,62
verband 10 cm	38,27	16,26	14,29
waslap	184,00	28,39	24,97

The second safety stock calculation on medical devices can be seen in Table 4.7, which shows that the value of safety stock for medical devices also varies for various medical items. For example, the Umbilical Cord Clamp Sterile has a safety stock of 2.75, indicating the need for reserves to deal with demand uncertainty. The 60X90 Under Pads has a sizable safety stock, which is 12.70, which reflects the high variation in demand or potential supply delays. Urine bags with hanger (noused) and urine collectors have safety stocks of 7.18 and 3.20, respectively. On the other hand, purple Vacutainer 3 ml has a reasonably high safety stock, which is 67.27, likely due to high usage or significant fluctuations in demand. Washcloths also have a reasonably large safety stock, which is 24.97. By understanding the value of this safety stock, pharmaceutical inventory management can more effectively regulate the availability of goods, ensure smooth operations, and avoid stock vacancies that can interfere with medical services.



III. Caculate Reorder Point (ROP)

Table 4.8 : Drug ROP Data Calculation

Row Labels	SS	DL	ROP
Adalat oros 30 mg Tablet (JKN)	43,79	14,23	58,02
Akilen Tetes Mata	0,65	0,08	0,73
Akilen Tetes Telinga	2,71	0,86	3,57
Alaxan FR Tablet	4,80	0,41	5,20
Albothyl Ovula	1,66	0,19	1,85
Aldisa SR Caps	66,40	31,51	97,91
Alganax 0,25 tab	71,50	15,44	86,94
Alganax 0,5 tab	54,64	9,25	63,89
Alganax 1 mg tab	13,50	1,58	15,08
Allopurinol 100 mg Tablet (JKN)	162,16	116,36	278,51

Based on Table 4.8, we can see different ROP values according to the needs and demands of each product. Adalat oros 30 mg Tablet (JKN) has an ROP of 58.02, consisting of safety stock (SS) of 43.79 and demand during lead time (DL) of 14.23. The Eye Drop Akilen has the lowest ROP, which is 0.73, indicating a very small need for reordering. In contrast, Allopurinol 100 mg Tablets (JKN) had the highest ROP of 278.51, with SS of 162.16 and DL of 116.36, indicating high demand and the importance of maintaining adequate stock. Other products such as Aldisa SR Caps and Alganax 0.25 tabs also have significant ROPs, of 97.91 and 86.94, respectively.

Table 4.9 : Medical Device ROP Data Calculation

Row Labels	SS	DL	ROP
Umbilical Cord Clamp Sterile	2,75	0,80	3,55
Under Pads 60X90	12,70	6,01	18,71
Urine bag with hanger (noused)	7,18	4,09	11,27
urine collector	3,20	0,93	4,12
Urine Container 60 ml	10,65	9,80	20,45
Urologi DJ Stent	1,06	0,18	1,24
Vacutainer ungu 3 ml	67,27	34,32	101,60
verban 5 cm	0,62	0,04	0,66
verband 10 cm	14,29	5,47	19,76
waslap	24,97	26,29	51,25

Judging from Table 4.9, which shows the results of the calculation of Reorder Points (ROP) for various medical devices, the variation in ROP values reflects the need to reorder each item. For example, the Umbilical Cord Clamp Sterile has an ROP of 3.55, consisting of a safety stock (SS) of 2.75 and a demand during lead time (DL) of 0.80. The Under Pads 60X90 has an ROP of 18.71, with an SS of 12.70 and a DL of 6.01. The product with the highest ROP is the 3 ml purple Vacutainer, which has an ROP of 101.60, indicating high usage or the importance of maintaining adequate stock. On the other hand, a 5 cm verban has the lowest ROP of 0.66, indicating minimal reordering needs. The 60 ml Urine Container and washcloth had an ROP of 20.45 and 51.25, respectively, reflecting the importance of consistent availability of the tools. By understanding these ROP values, inventory management can reorder in a timely manner to ensure the availability of necessary medical devices, avoid stock shortages, and optimize storage and ordering costs.



IV. Calculate the Economic Order Quantity (EOQ)

Table 4.10: Drug EOQ Data Calculation

Row Labels	Average	Price	EOQ
Adalat oros 30 mg Tablet (JKN)	99,64	IDR 5.347	86,33
Akilen Tetes Mata	0,59	IDR 56.851	2,04
Akilen Tetes Telinga	6,00	IDR 88.760	5,20
Alaxan FR Tablet	2,86	IDR 678	41,10
Albothyl Ovula	1,32	IDR 34.944	3,88
Aldisa SR Caps	220,55	IDR 7.912	105,59
Alganax 0,25 tab	108,09	IDR 3.115	117,81
Alganax 0,5 tab	64,73	IDR 4.694	74,27
Alganax 1 mg tab	11,09	IDR 6.914	25,33
Allopurinol 100 mg Tablet (JKN)	814,50	IDR 195	1292,58

Based on Table 4.10 of the calculation of Economic Order Quantity (EOQ), it can be seen that the management of the hospital's pharmaceutical drug inventory. Adalat oros 30 mg Tablet (JKN) has an EOQ of 86.33 units, which indicates the optimal amount that must be ordered each time to minimize inventory costs. Eye Drop Aquils and Ear Drop Aquils have EOQs of 2.04 and 5.20 units, respectively, indicating a more minor reorder need. On the other hand, Allopurinol 100 mg Tablet (JKN) has the highest EOQ of 1292.58 units, likely due to low price (IDR 195) and high demand (average 814.50). Other drugs, such as Aldisa SR Caps and Alganax 0.25 tabs, also showed EOQs of 105.59 and 117.81 units, respectively.

Table 4.11: Medical Device EOQ Data Calculation

Row Labels	Average	Price	EOQ
Umbilical Cord Clamp Sterile	5,59	IDR 6.866	18,05
Under Pads 60X90	42,09	IDR 10.962	39,19
Urine bag with hanger (noused)	28,64	IDR 9.414	34,88
urine collector	6,50	IDR 10.350	15,85
Urine Container 60 ml	68,59	IDR 5.623	69,85
Urologi DJ Stent	1,27	IDR 781.022	0,81
Vacutainer ungu 3 ml	240,27	IDR 3.628	162,75
verband 5 cm	0,27	IDR 2.526	6,57
verband 10 cm	38,27	IDR 2.816	73,73
waslap	184,00	IDR 3.902	137,33

The following is Table 4.11, which shows the results of the EOQ calculation for medical devices. We can see that the Umbilical Cord Clamp Sterile has an EOQ of 18.05 at a price of IDR 6,866, while the Under Pads 60X90 has an EOQ of 39.19 at a price of IDR 10,962. Urine bag with hanger (noused) has an EOQ of 34.88 with a price of IDR 9,414, while urine collector has an EOQ of 15.85 with a price of IDR 10,350. In addition, the 60 ml Urine Container shows an EOQ of 69.85 at a price of IDR 5,623, and the Urology DJ Stent has the smallest EOQ of 0.81 at a price of IDR 781,022. For 3 ml purple Vacutainer, the calculated EOQ is 162.75 with a price of IDR 3,628. As for the 5 cm verban, the calculated EOQ is 6.57 at a price of IDR 2,526, and the 10 cm verband has an EOQ of 73.73 at a price of IDR 2,816. Finally, the washcloth showed an EOQ of 137.33 with a price of IDR 3,902.



V. Calculate Average Inventory Level

Table 4.12: Drug AIL Data Perhitungan

Row Labels	Price	SS	EOQ	AIL (Unit)	AIL (Price)
Adalat oros 30 mg Tablet (JKN)	IDR 5.347	43,79	86,33	86,95	IDR 464.936
Akilen Tetes Mata	IDR 56.851	0,65	2,04	1,67	IDR 94.658
Akilen Tetes Telinga	IDR 88.760	2,71	5,20	5,31	IDR 471.624
Alaxan FR Tablet	IDR 678	4,80	41,10	25,35	IDR 17.185
Albothyl Ovula	IDR 34.944	1,66	3,88	3,60	IDR 125.847
Aldisa SR Caps	IDR 7.912	66,40	105,59	119,20	IDR 943.104
Alganax 0,25 tab	IDR 3.115	71,50	117,81	130,40	IDR 406.202
Alganax 0,5 tab	IDR 4.694	54,64	74,27	91,77	IDR 430.785
Alganax 1 mg tab	IDR 6.914	13,50	25,33	26,16	IDR 180.903
Allopurinol 100 mg Tablet (JKN)	IDR 195	162,16	1292,58	808,45	IDR 157.647

From Table 4.12, the amount and value of investment needed to maintain an optimal supply of various types of drugs can be analyzed. It can be seen that Adalat oros 30 mg Tablet (JKN) has a price of IDR 5,347 with an EOQ of 86.33 and AIL of 86.95 units, which means that an automatic investment of IDR 464,936 is required for optimal supply. Akilen Tedrop Mata has a price of IDR 56,851 with an EOQ of 2.04 and an AIL of 1.67 units, so it requires an investment of IDR 94,658. Akilen Te Tau Tau, with a price of IDR 88,760 and an EOQ of 5.20, requires an AIL of 5.31 units with a total investment of IDR 471,624. Alaxan FR Tablet, which has a price of IDR 678 and an EOQ of 41.10, requires an AIL of 25.35 units with a total investment of IDR 17,185. Albothyl Ovula, with a price of IDR 34,944 and an EOQ of 3.88, requires an AIL of 3.60 units with an investment of IDR 125,847.

Table 4.13: Medical Device AIL Data Calculation

Row Labels	Price	SS	EOQ	AIL (Unit)	AIL (Price)
Umbilical Cord Clamp Sterile	IDR 6.866	2,75	18,05	11,77	IDR 80.836
Under Pads 60X90	IDR 10.962	12,70	39,19	32,30	IDR 354.043
Urine bag with hanger (nousmed)	IDR 9.414	7,18	34,88	24,62	IDR 231.760
urine collector	IDR 10.350	3,20	15,85	11,12	IDR 115.105
Urine Container 60 ml	IDR 5.623	10,65	69,85	45,58	IDR 256.293
Urologi DJ Stent	IDR 781.022	1,06	0,81	1,46	IDR 1.141.047
Vacutainer ungu 3 ml	IDR 3.628	67,27	162,75	148,65	IDR 539.355
verband 5 cm	IDR 2.526	0,62	6,57	3,90	IDR 9.861
verband 10 cm	IDR 2.816	14,29	73,73	51,16	IDR 144.079
waslap	IDR 3.902	24,97	137,33	93,63	IDR 365.388

From Table 4.13, it can be seen that the Umbilical Cord Clamp Sterile has a price of IDR 6,866 with an EOQ of 18.05 and an AIL of 11.77 units, which means that an investment of IDR 80,836 is required. Under Pads, 60X90, with a price of IDR 10,962 and an EOQ of 39.19, requires an AIL of 32.30 units with a total investment of IDR 354,043. Urine bag with hanger (nousmed), with a price of IDR 9,414 and an EOQ of 34.88, requires an AIL of 24.62 units with a total investment of IDR 231,760. The urine collector, with a price of IDR 10,350 and an EOQ of 15.85, requires an AIL of 11.12 units with a total investment of IDR 115,105. Urine Container 60 ml, with a price of IDR 5,623 and an EOQ of 69.85, requires an AIL of 45.58 units with a total investment of IDR 256,293.



C. Calculate Data Inventory

I. Calculate Average Actual Stock

Table 4.14: Drug Calculated Average Actual Stock

Name of Drug	Monthly Stock of Drug					Average of stock /
	Jan-24	Feb-24	Oct-23	Nov-23	Dec-23	AIL (Unit)
Adalat oros 30 mg Tablet (JKN)	275	897	266	389	365	438,4
Akilen Tetes Mata	6	7	1	3	4	4,2
Akilen Tetes Telinga	28	8	4	7	9	11,2
Alaxan FR Tablet	178	168	231	219	208	200,8
Albothyl Ovula	19	9	6	15	8	11,4
Aldisa SR Caps	380	170	320	248	279	279,4
Alganax 0,25 tab	245	50	456	328	276	271
Alganax 0,5 tab	322	196	495	291	283	317,4
Alganax 1 mg tab	126	85	178	233	154	155,2
Allopurinol 100 mg Tablet (JKN)	969	1112	1317	1845	2114	1471,4

By knowing the average actual stock, companies can evaluate the efficiency of their inventory management, as can be seen from Table 4.14 that for Adalat oros 30 mg Tablet (JKN), the average monthly stock is from October 2023, which is 438.4 units. A similar process applies to all drugs on the list. Like other drug items, Allopurinol 100 mg Tablet (JKN), with a monthly stock count from October 2023 to February 2024, resulted in an average monthly stock of 1471.4 units.

Table 4.15: Medical Device Calculated Average Actual Stock

Name of Medical Devices	Monthly Stock of Medical Devices					Average of stock /
	Jan-24	Feb-24	Oct-23	Nov-23	Dec-23	AIL (Unit)
Umbilical Cord Clamp Sterile	40	24	33	37	67	40,2
Under Pads 60X90	97	136	149	93	430	181
Urine bag with hanger (nousmed)	148	79	62	49	210	109,6
urine collector	17	26	30	49	35	31,4
Urine Container 60 ml	273	202	292	361	372	300
Urologi DJ Stent	3	3	3	1	5	3
Vacutainer ungu 3 ml	637	700	690	676	409	622,4
verband 5 cm	20	20	25	22	22	21,8
verband 10 cm	138	168	158	133	170	153,4
waslap	576	904	159	623	695	591,4

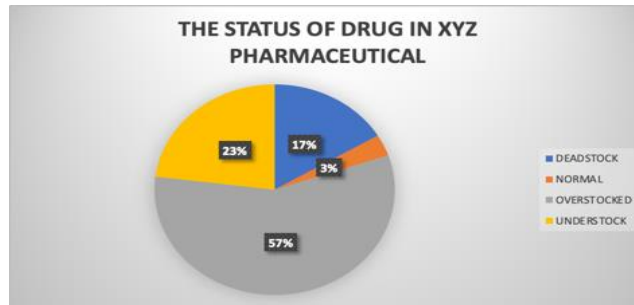
The Calculate Average Actual Stock process for medical devices can be seen in Table 4.15 and shows that for Umbilical Cord Clamp Sterile, the average monthly stock is calculated by adding up the stock from October 2023 to February 2024 resulting in an average stock of 40.2 units. Urine bag with hanger (nousmed), with a monthly stock from October 2023 to February 2024, yielded an average of 109.6 units.

II. Calculate Actual Average Inventory Level

The Calculate Actual Average Inventory Level (AIL) process is calculated in the form of a value (price) for each type of drug based on the average number of monthly stocks (units) and the price per unit. It can be seen in Table 4.16 that Adalat oros 30 mg Tablet (JKN) has an average monthly stock of 438.4 units at a price of IDR 4,206 per unit, so that AIL in the form of value is IDR 1,844,086. This process is applied to every drug on the list, such as Eye Drops, which has an average stock of 4.2 units and a price of IDR 35,388 per unit, resulting in an AIL of IDR 148,631. Likewise, Alaxan FR Tablet, with an average stock of 200.8 units and a price of IDR 537 per unit, yielded an AIL of IDR 107,830. This calculation of Actual AIL helps management to understand how much funds are invested in inventory. Another drug item, Allopurinol 100 mg Tablet (JKN), has an average monthly stock of 1471.4 units and a price per unit of IDR 146, resulting in AIL in the form of a value of IDR 214,236.

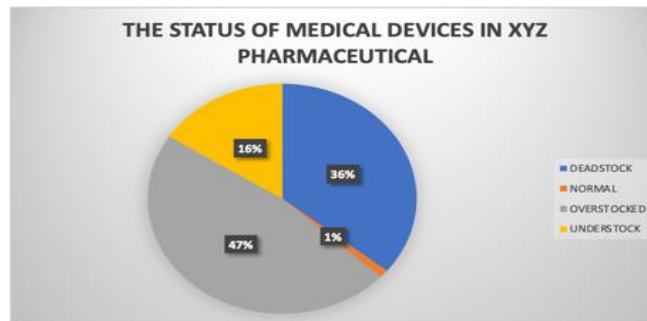
D. Comparison Between The Actual Condition and Proposed Inventory Management System

1. Comparison of Drug



All drugs will be subject to the calculation. Based on the earlier steps, the researcher has classified every 1,273 medicine items out there. Based on the pie diagram about the status of drugs in XYZ Pharmaceutical, it can be seen that most drugs are overstocked, which is as much as 57%. This shows that more than half of drug stocks have quantities that exceed actual needs, potentially leading to waste and additional storage costs. Furthermore, 17% of drugs are in a deadstock condition, which means they are unused and may be at risk of expiration. The normal status covers only 3% of the total inventory, signifying a match between the estimate and the actual in that amount. Meanwhile, 23% of drugs are understocked, indicating a stock shortage that could affect drug availability for patients. This data indicates the need for more effective strategies in inventory management to reduce overstocked and understock conditions and ensure that the proportion of drugs with normal status increases for stock optimization.

2. Comparison of Medical Devices



All medical devices will be subject to the calculation. The researcher has classified all of the 447 medical device items based on the earlier steps. Based on the pie chart below depicting the status of medical devices in XYZ Pharmaceutical, it is known that most medical devices are in an overstocked condition, with a proportion of 47%. This shows that almost half of all medical devices are overstocked. In addition, 36% of medical devices are categorized as deadstock, which means they are no longer used or needed. As many as 16% of medical devices are in understock, which means there is a need for more stock for such devices. Meanwhile, only 1% of medical devices are in normal condition, indicating a balance between supply and demand. This data indicates the need for more attention in inventory management to reduce the number of deadstock and overstock and ensure adequate stock availability to avoid understock.

E. Analyze Service Level

The researchers made assumptions about the level of service and calculated the savings potential at three different levels: 95%, 99%, and 99.9%. The analysis showed that there were significant savings opportunities in terms of monetary value. By improving the level of service, XYZ Hospital aims to improve patient satisfaction, ensure timely delivery of pharmaceutical products, and improve overall operational efficiency. This research focuses on determining the optimal level of service to a balance between meeting patient demands and minimizing supply costs. Through the analysis of scenarios of different levels of service, researchers can measure the potential savings associated with each level.



Based on these findings, it is proven that choosing a 99% service level is the best choice. The shift from a 99% service level to a 99.9% does not provide any significant improvement. Furthermore, given the amount of money needed to be allocated by the pharmacy management, the service rate of 99% proved to be more profitable than 99.9%. The detailed calculations showed that increasing the service level from 95% to 99% required an Rp cost. 13,212,361 for an increase of 1%. Similarly, raising the level of service from 99% to 99.9% costs Rp. 59,805,465 for an increase of 0.9%. Therefore, the researchers recommend a service level of 99% for XYZ Hospital.

F. ABC Classification

As discussed in Chapter II (2.6), ABC analysis divides inventory into three groups based on annual volume in dollar amounts. ABC analysis is an inventory application of the Pareto principle. The Pareto principle states, "there are some that are important and many that are trivial." The annual demand for each inventory item is calculated and multiplied by the price per unit to determine the annual dollar value of the volume in ABC analysis. Class A goods are those with high annual volume. Although these items may only represent about 15% of total inventory, they represent 70% to 80% of total usage. Class B is for inventory items that have medium annual volumes. These items represent approximately 30% of inventory items and 15% to 25% of the total value. Items that have a low annual volume are class C, which may represent only 5% of the annual value but about 55% of the total inventory items. The following are the results of analysis using ABC classification for drugs and medical devices.

The researcher has performed calculations on the 1064 items of drugs, a the results of the ABC classification based on inventory volume.

- Class A consists of a total of 160 items, which accounts for 15% of the total items. These items have a total value of IDR 375,341,416, representing 59.73% of the total monetary value.
- Class B consists of a total of 319 items, which accounts for 30% of the total items. These items have a total value of IDR 192,646,296, representing 28.04% of the total monetary value.
- Class C consists of a total of 585 items, which accounts for 55% of the total items. These items have a total value of IDR 60,399,292, representing 12.23% of the total monetary value.

The researcher has performed calculations on the 287 items of medical devices, and the Table 4.31 provided showcases the results of the ABC classification based on inventory volume.

- Class A consists of a total of 43 items, which accounts for 15% of the total items. These items have a total value of IDR 78,451,141, representing 54.19% of the total monetary value.
- Class B consists of a total of 86 items, which accounts for 30% of the total items. These items have a total value of IDR 53,990,616, representing 34.78% of the total monetary value.
- Class C consists of a total of 158 items, which accounts for 55% of the total items. These items have a total value of IDR 12,338,084, representing 11.04% of the total monetary value.

The ABC classification may yield different results depending on the particular issue at hand and the hospital's objectives. When making a decision between the ABC classifications based on inventory volume and value, XYZ Hospital Pharmacy should select the ABC class based on inventory volume for the drugs and medical devices. This makes inventory control easier by allowing fewer essential items in Class A. It is crucial to remember that ABC classifications must be reviewed and updated regularly because shifting sales trends may result in a different classification.

G. Cycle Counting

According to XYZ Hospital Pharmaceutical's cycle counting method, which uses the ABC classification based on inventory volume, management is obliged to check 16 distinct drugs items every day. This indicates that in order to maintain accuracy and control, the management's daily focus is on confirming the inventory levels of these particular items.

According to XYZ Hospital Pharmaceutical's cycle counting method, which uses the ABC classification based on inventory volume, management is obliged to check 6 distinct medical devices items every day. This indicates that in order to maintain accuracy and control, the management's daily focus is on confirming the inventory levels of these particular items.

Based on the past cycle tallying calculations, the drug store administration at XYZ Clinic ought to select a particular cycle tallying strategy for stock recording. Given that the number of items reviewed day by day remains steady, administration can make educated choices by considering the already conducted ABC examination. This investigation gives profitable experiences into the

classification and significance of stock items, allowing administration to select the foremost reasonable cycle tallying approach to screen and oversee stock viably. The ABC investigation categorizes things into three classes:

A, B, and C, each speaking to diverse levels of significance and turnover rates. By understanding each item's criticality and recurrence of utilize, administration can prioritize cycle checking endeavors in like manner. For occurrence, high-value and fast-moving things in course A might require more visit tallying, while lower-value things in classes B and C can be tallied less as often as possible. This custom fitted approach guarantees that stock levels are precisely kept up and are reasonable for the staff.

The cycle tallying strategy can also be adjusted with the hospital's operational plans to play down disturbances. By actualizing a efficient and persistent cycle checking handle, the drug store can guarantee that disparities are distinguished and corrected expeditiously, subsequently keeping up ideal stock levels. This proactive stock administration procedure improves the productivity of drug store operations and ensures that fundamental therapeutic supplies are continuously accessible, eventually contributing to made strides persistent care and operational taken a toll investment funds. By leveraging the point by point experiences from the ABC investigation and embracing a organized cycle checking strategy, XYZ Hospital's drug store administration can accomplish a more dependable and productive stock control framework. This key approach helps adjust stock accessibility and cost-effectiveness, guaranteeing the clinic reliably conveys high-quality healthcare administrations.

H. BPMN

In this segment, the creator will analyze the commerce prepare demonstrate and documentation (BPMN) of XYZ Healing center. The objective is to distinguish ranges for advancement to improve the viability and effectiveness of pharmaceutical stock administration at XYZ Healing center. Through this examination, the creator points to pinpoint particular forms that can be optimized to streamline operations, decrease costs, and guarantee a more proficient stock administration framework. Figure 4.7 outlines the unused BPMN of XYZ Healing center .

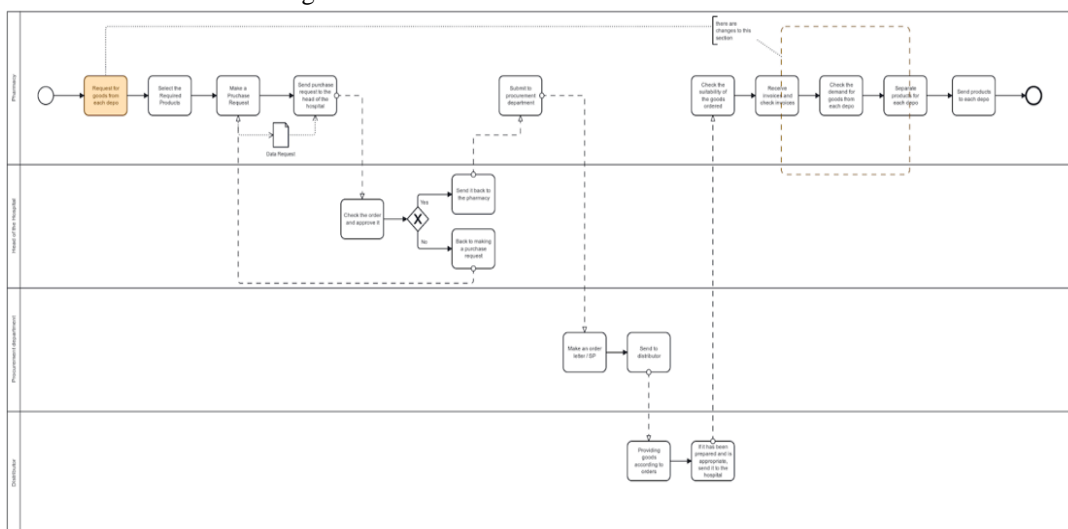


Figure 4.8 New BPMN of Procurement and Distribution of goods

Based on the examination, Figure 4.8 outlines the reexamined trade prepare for XYZ Drug store. The examination has distinguished a few vital changes to the trade prepare to refine and adjust it with the completely analyzed stock administration framework. These changes point to progress stock management's generally productivity and adequacy within the pharmaceutical segment. One of the noteworthy changes within the trade handle is repositioning the "ask for merchandise from each warehouse" step. Already, this step was at the conclusion, driving to unavailable things and requiring extra buy demands. Within the changed commerce prepare, the "ask for merchandise from each station" step is moved to the starting. This alteration lets the drug store know the required drugs and therapeutic hardware forthright, upgrading commerce prepare productivity and diminishing the chances of overstock or stockout



CONCLUSION

In conclusion, the inquire about conducted in this consider gives profitable bits of knowledge into how the Drug store at XYZ Clinic oversees its stock. Through an in-depth investigation, the analyst has drawn a few critical conclusions that can be utilized to improve the productivity and adequacy of the stock administration framework. The conclusions determined from this investigate include different basic perspectives, counting the taking after :

1. The examination of Normal Stock Level (Afflict) gives important bits of knowledge into the current state of stock administration at XYZ Healing center Drug store. Through Trouble calculations, it is clear that the organization is battling with intemperate stock issues. Particularly, a noteworthy parcel of XYZ Healing center Pharmacy's stock comprises of deadstock things. Out of a add up to of 1,273 drugs, 209 items (17%) drop into the deadstock category, 729 items (57%) are considered overloaded, 293 items (23%) are classified as understocked, and 42 things (2%) are categorized as ordinary stock. Besides, out of a add up to of 447 therapeutic gadgets, 160 items (36%) drop into the deadstock category, 211 items (47%) are considered overloaded, 71 items (16%) are classified as understocked, and 5 things (1%) are categorized as ordinary stock. This breakdown underscores the require for successful stock administration procedures to address these lopsided characteristics and optimize the in general stock framework. It is vital for drug store administration to preserve precise stock records to guarantee dynamic stock levels and dodge inert stock amassing.
2. The proposed stock arrangement, particularly the nonstop audit methodology, has the potential to surrender noteworthy taken a toll reserve funds for XYZ Clinic Drug store. For pharmaceutical items, accomplishing a 99% benefit level may result in reserve funds of Rp302,697,429, which constitutes 48.17% of the normal stock level. For restorative gadgets, the potential investment funds are Rp70,602,064, bookkeeping for 48.77% of the normal stock level. Hence, the full potential reserve funds over all items is Rp373,299,493. These discoveries highlight that the healing center right now needs viable controls for overseeing expendable therapeutic hardware stock. Actualizing vigorous stock arrangements and strategies is fundamental to move forward taken a toll proficiency and optimize stock levels inside the organization.
3. To improve the quality of its stock stock control administration, XYZ Healing center ought to prioritize precise stock record-keeping to oversee stock levels and adjust them with request viably. Cycle tallying is suggested as a predominant approach to conventional physical stock administration strategies. Cycle checking includes routinely tallying things, confirming stock records, and distinguishing errors, permitting for recognizing root causes of mistakes and executing remedial activities to guarantee the unwavering quality and exactness of the stock framework. The cycle checking strategy is more viable in keeping up exact stock records and can decrease the require for broad item assessments, make strides record exactness, and optimize stock control. Fitting cycle tallying based on stock classification through ABC examination, which categorizes things based on volume and esteem, will offer assistance oversee less things day by day. Also, cycle tallying guarantees that as it were dynamic drugs and therapeutic gadget things are included, disposing of dormant things not reasonable for quiet care. By embracing this method, XYZ Healing center can improve the precision and proficiency of its stock administration framework, guaranteeing way better stock accessibility and taken a toll investment funds.

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