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Implementasi Metode Pareto Abc untuk Pengendalian Persediaan Obat di Apotek Zhafirah

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Abstract: Apotek Zhafirah often experience difficulties in making decisions for drug procurement. This is due to a factor that must be considered by the dispensary manager, namely the number of sales of drug items. Pharmacy managers are required to find ways to control the right order so as to reduce the occurrence of drug accumulation. The system is designed by paying attention to user needs related to Pareto ABC analysis process, which is a method used for inventory planning analysis. The system implementation uses the Visual Basic 2010 programming language and the research method used in this research is the waterfall method. Waterfall method is able to analyze the needs used to find out from the weaknesses of the old system, then make a design and continue with the design of the new system. By using Pareto ABC method, the results showed that drug data from January to December 2022 for the type of drug acarbose 50Mg consisted of Group A (March, June, July, August, September), Group B (January, April, May October) and Group C (February, November, December) while the amount of procurement was 9,642.

Keywords: Pareto Model, Inventory, Drug

Introduction

Information technology today has developed rapidly and its use has penetrated into various aspects of human life(Susilawati & Supriadi, n.d.). Today many individuals and companies use information technology to help with work or tasks in everyday life. One of them is by applying a Computer Based Information System (CBIS) where the system is flexible, interactive, adaptable, which was developed to support solutions to specific unstructured management problems(Rindawati & Andriani, 2022).

In the field of health and medicine such as in pharmacies, the measure of success can be seen from good service to consumers by controlling a good inventory system(Fole et al., 2024). Inventory control is the key to the company's success with the aim of balancing supply and demand(Khasanah & Kurniawati, 2023). Inventory that is not managed properly so that it experiences a shortage or excess of goods can cause losses for the pharmacy and can also interfere with service to consumers(Asana et al., 2020). Too much inventory will incur high storage costs and is inefficient, because these costs can be used

by pharmacies for other and more important costs(Andawaningtyas & Karim, 2020). In addition, the large inventory of goods stored can also increase the risk of damage or expiration(Nofrika et al., 2021).

Zhafirah Pharmacy is a pharmacy that sells various types of medicines of all kinds(Oktaviani et al., 2022). Controlling drug inventory in the Sendang Farma pharmacy warehouse requires more control because there are hundreds of drugs of various types. Of the several types of drugs available at this pharmacy(Maharani et al., 2022), there are several types of drugs such as headache drugs, skin drugs, anti-septic drugs, and anti-biotic drugs(Vanesa & Helma, 2023).

Of the many types of drug inventory can be controlled by analysing inventory control(Agung et al., 2024). One way to analyse inventory is with the Pareto ABC (Always, Better, Control) method in knowing the priority of drug items used in pharmacies, namely by looking at the cumulative percentage of the amount of use (use value)(Ayuningputri et al., 2022), the cumulative percentage of the amount of investment (investment value), and the total score of use value and investment value (critical index value)(Darsini & Triwardana, 2021).

Methodology

The research method used in this research is the waterfall method. With the waterfall method being able to do a gradual analysis(Permana & Donoriyanto, 2024). Needs analysis is used to find out from the weaknesses of the old system, then make a design(Kafidzin et al., 2023) of the design and continue with the design of a new system which includes program code. After the new system is complete, the system is tested(Kafidzin et al., 2023). If there are no errors, then the system will be implemented and system maintenance(Octaviani & Imaroh, n.d.).

The research stage carried out will be described by a flow chart as shown below:

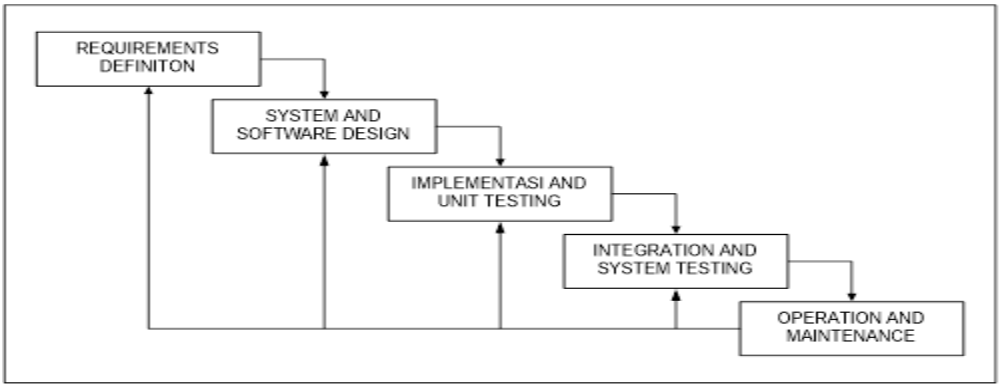


Figure 1. Waterfall Diagram

Result And Discussion

The Pareto Model system application in supporting drug procurement decisions at Zhafirah which has been designed according to the proposal is named App.Pareto.Exe. Where this application has been completed and can be used to assist Zhafirah management in analysing the use and supply of drugs in pharmacies so as to produce a management decision in terms of drug procurement for the following year(Salam & Rusmana, 2021).

This application has been successfully built according to the needs required by the system, so that this application is expected to be able to support and assist related parties in the data processing process and produce fast, effective and accurate information(Kafidzin et al., 2023).

The test carried out on this application is to use the black box technique, as previously explained in Chapter III. This black box technique is a testing technique that focuses on the output results of the response, or simply to find out if there are errors or functions that do not run as expected(Alfiansyah & Hasin, 2023). The purpose of this test is to ensure that the software built has reliable quality, which is able to present the main study of the analysis, design and coding specifications of the software itself. The following is a black box testing table. The data used in testing this application is drug data in the Zhafirah pharmacy in 2017(Alifka & Apriliani, 2024).

Table 1. Black Box Testing

Test Type	Test Description	Test Type
User Login	Checking User is registered in the database	*Black Box*
Data Input	Input medicine type data	*Black Box*
	Drug Data Input	*Black Box*
	Drug Usage Data Input	*Black Box*
Pareto Process	Pareto Model Analysis Process	*Black Box*
Report	Pareto Mode Result Report	*Black Box*

Table 2. Login Testing

Test Case and Results (Normal Data)			
Input Data	What to expect	Observation	Conclusion

Username :admin Password : 12345	Enter the main menu of the application.	Can enter the main menu display	[x] accepted [x] is rejected

Table 3 False Login Testing

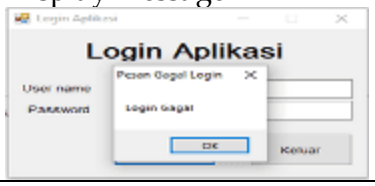
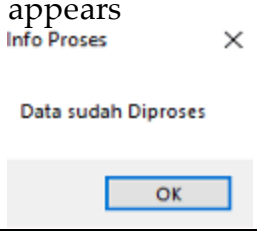
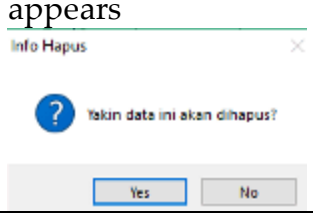
Test Case and Result (Incorrect Data)			
Input Data	What to expect	Observation	Conclusion
Username : admin	Unable to log into the system	Display message 	[x] accepted [x] isrejected

Table 4. Testing Data Input Filling

Test Case and Results (Normal Data)			
Input Data	**What to expect**	**Observation**	**Conclusion**
Add	the data entry form is empty	Form for data entry is empty	[x] accepted [x]is rejected
Correction	Data can be changed and the data in the database also changes	Data in the database is edited / changed	[x] accepted [x]is rejected
Save	Data is stored in the database	Data is saved in the database	[x] accepted [x]is rejected
Delete	Data in the form and database is deleted	Data in the criteria form and database is deleted	[x] accepted [x]is rejected
Cancel	The data in the form is empty again	Cancel the data to be entered	[x] accepted [x]is rejected
Exit	Close the form	Close the form	[x] accepted [x]is rejected

Table 5. Testing The Pareto Mode Analysis Process

Test Cases and Results			
Inpu Data	**What to expect**	**Observation**	**Results**

Select the year and drug code that has not been processed	Display data from the pareto mode analysis process	Display the intended data	[x] accepted [x]isrejected
Select the year and Drug code that has been processed	Display data validation message	A message box appears 	[x] accepted [x]isrejected
Select the year and drug code to be deleted	Display data validation message	Validation message appears 	[x] accepted [x]isrejected

Conclusion

Based on the results of the implementation and testing that has been done, it can be concluded that:

1. The ABC Pareto analysis model has been successfully implemented and tested using the Visual Studio.Net 2010 programming language using drug usage data at Zhafirah pharmacy.
2. The test results show that the system created is in accordance with the needs and the results of the recommendations are able to support decisions for drug procurement at Zhafirah pharmacy.
3. The results of the evaluation of drug procurement at Zhafirah based on the Pareto ABC method for acarbose 50mg type drugs are 9642. As for the group category, it consists of:
   a. Group A consists of 5 months (March, June, July, August September) with a total usage of 2,423.
   b. Group B consists of 4 months (January, April, May, October) with a total usage of 1,064

c. Group C consists of 3 months (February, November, December) with a total usage of 1,10.

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