Building IT-based Pharmacy: Computerized Pharmacy Management

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Abstract. This study aims to produce computer-based systems that allow pharmacists to perform their work in pharmaceutical management. This research used the descriptive method to analyze how pharmacies Cibadak Farma handled the drug supplied management activities, sales transactions, purchasing drugs, and reporting manually. Data collection methods used consisted of field research conducted by observation, questionnaires, and interviews. The method used prototyping system development. The results show that building computer-based management system pharmacies Cibadak Farma able to handle the processing of drug supplies, processing transactions and making transaction reports based on a particular period to be effective and efficient work.

1. Introduction
Pharmacy is a field of business selling drugs that it has sorely needed. [1] Drug is any substance which has a physiological effect when ingested or otherwise introduced into the body [2] Transaction processing techniques are deeply ingrained in the fields of databases and operating systems and are used to monitor, control and update information in modern computer systems [3].

One of the researchers discussing the pharmacy management system is Thomas Kapp [4] he describes pharmaceutical drug management systems, providing pharmaceutical drug management software for doses of patient-specific drugs, drug interaction analysis, order generation, and patient data matching. When the drug is added to the patient, the system detects if the drug is a drug dose that requires the correct treatment of therapy and also identifies if the drug will cause drug interaction problems for the patient, reducing the possibility of misjudgment clinically. This system examines the issue of drug interactions resulting from medications, food allergies, and the patient's medical condition. An on-screen order can then be generated. Through a therapeutic management module of pharmaceutical drug management software. A clinical professional can access the list of available drugs, advice for medicines, medications and medical aid file information, infusion calculator, records to record patient events, access to patient data matching databases to seek therapy for patients with medical conditions similar to specific patients, and other therapeutic tools, all from the screen of computer systems running the software.

Tarter describes a computerized health care account for securities and collectible purchasing management systems. [5] The invention is a computerized method and system for evaluating and purchasing their accounts, assessing the creditworthiness of creditors and lenders such as insurance companies, insured companies, healthcare organizations, eligible providers, government agencies,
collection of accounts receivable, securitization receivables, manage funds, and process and reconcile claims and payments.

Hoffman describes a pharmaceutical transaction system that identifies pharmaceutical goods containing radio frequency identification labels (RFID) [6] One form of the method includes RFID labels related to pharmaceutical items, readers to read RFID labels for RFID label identification information, and computers to determine prescription information associated with RFID label identification information.

For the above references, there is no information about applying computer-based systems in pharmaceutical management. This research used the descriptive method to analyze how pharmacies Cibadak Farma handle drug supply management activities, sales transactions, purchasing drugs, and reporting manually. As we know, sales must be calculated carefully. [7-10] Data collection methods used consisted of field research conducted by observation, questionnaires and interviews while the process of development used method of prototyping system development. The results show that when building computer-based management system pharmacies Cibadak Farma able to handle the processing of drug supplies, processing transactions and making transaction reports based on a particular period with computerized to be effective and efficient work.

2. Experimental method
The type of research used in this study was to produce the computer-based on management, pharmacy on Cibadak Farma pharmacy. The method used in this research is the descriptive method. The technique was a problem-solving procedure that investigated by describing the state of the subject or object in the study could be people, institutions, society, and others based on facts. The design of the researchers for the design of information is essential for planning and research design so that the research carried out could be systematic. Library Studies Collecting data by collecting literature, journals and the corresponding papers adopted for studying the documentation of the areas that used for the development of applications. Observation Techniques of data collection by conducting research and direct review of the problems taken. In taking data, we used several ways. Data collection used Primary Data Sources. In this study, we collected data by using the method as follows: Direct face-to-face, the technique of collecting data directly at the source by using questions orally to the subject of research. This study used sources secondary data or data obtained from researchers and existing sources. We used the method of prototyping system development easier in describing the specification of customer needed in detail. So Customer satisfied with the system generated. There are several steps in Model Prototyping Newly defined system requirements as detailed as possible. It usually involved interviewing some users representing all departments or aspects of an existing system. The initial design made for the new system. The first prototype of this new system built from the preliminary design. It was usually a small-scale system, and there was an approximation of the characteristics of the final product. The user evaluated the first prototype, notes its strengths and weaknesses, what needed to add, and what shall remove. Developers collected and analyzed speech from users. The first prototype is modified, based on user-provided comments, and a second prototype of the new system created. The second prototype evaluated in the same way as the first prototype. The previous steps repeated as many times as needed, until the user satisfied that the prototype represents the desired end product. The final system built, based on the final prototype. The last order evaluated and tested thoroughly. Routine maintenance did and used the method in interview research by asking directly to the lecturer related to the physics of development and the object of study.

3. Results and Discussion

3.1. Analysis of Current System
The service system conducted by Cibadak Farma Pharmacy has a problem. The frequent problems in the process: The process of queuing-service queues is still poorly understood. As well as recording
transaction's sales, recording pharmacy, to the making of the report even often go wrong because the system used is conventional.

a. Flowmap running system
Flow map depiction is in progress:
1. The customer will prescribe the medicine to the pharmacist.
2. Pharmacists will check the inventory of drugs in the message
3. If it is not available, then recipe in return, it available drug order will be given at the cashier.
4. The customer pays and the cashier record the transaction.

b. Context Diagram
Explanation of the ongoing context diagram:
1. The pharmacist will receive and store order data from the customer.
2. Drugs will be given to the customer (See Figure 1).

![Figure 1. Context Diagram.](image)

c. Data Flow Diagram (DFD)
Description of Data Flow Diagram (DFD):
1. Customers make reservations on pharmacists.
2. Pharmacists check the stock of medicines
3. Customers make payments at the cashier.
4. Cashier records, drug sales transactions.

3.2. Evaluate the running system

| No. | Problems                                               | Solution                                                                 |
|-----|--------------------------------------------------------|--------------------------------------------------------------------------|
| 1   | The process of recording transactions and drug stock checking is still done manually | System Creation is directly connected to the database so that automated records are stored in the database and checking does not need to go inside and outside of the warehouse |

3.3. Proposed System
Based on the results of the discussion above, to achieve the expected goals, then we suggest Cibadak Farma pharmacy makes a computerized system to be effective and efficient work.

a. Flow map of the proposed system
1. Customers prescribe orders to the pharmacist
2. Pharmacists to check the stock of drugs in the database
3. If it is available, the cashier will make a transaction and create an invoice, and the system will automatically save the transaction proof to the database
4. Customers pay
b. Context Diagram
   Proposed Context Diagram Description:
   1. The system will receive customer data and stored in the database
   2. The system provides drug data to the customer (See Figure 2).

   ![Figure 2. Context Diagram.](image)

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   Figure 2. Context Diagram.
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c. Relationship Table (Database)
   For database design explain the relationship between existing tables in Cibadak Farma Pharmacy. Include Entity Relationship Diagram. (See Figure 3)

   ![Relationship Table (Database).](image)

   **Figure 3. Relationship Table (Database).**

3.4. Trial Program
   Below is a view of the management system application at Cibadak Farma Pharmacy.
   a. Display Login Form
      To be able to access this application, the user must login first. This login page will appear when the application was first opened or when the user has not logged in. (See Figure 4).
b. Display Transaction Purchase
Explanation of the picture above is the form used to perform the data if the purchase by filling all the columns on the form. At the time this form is stored, it will automatically be stored in the purchase table and the Purchase Details table. Data on the number of stocks in the stock table of goods will automatically increase the number of items that have been purchased (See Figure 9)

c. Display Sales Transaction
Explanation of the above picture Similar to the purchase transaction process, the sales transaction when the process of storing sales data takes place, automatically also will reduce the amount of stock of goods in the warehouse. (See Figure 10)
4. Conclusion

From the description of the implementation and testing of the application program management system in Cibadak Pharmacy with Information System, except that the transaction data recording process will be effective and efficient. This Information System can help correct data writing errors. The Object Sales Information System is expected to help so that pharmacists can quickly in the process of searching data. The information that can be developed in this Journal is: for this Information System can be developed further to make the system more complicated according to requirement and get the maximum result.

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