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Web-based System for The Procurement and Monitoring of The Ordering Goods at PT. Pura Barutama Rotogravure Unit Cylinder Department

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ABSTRACT

Procurement in the company is carried out to fulfill the needs of the company. While monitoring the order of goods aims to monitor the purchase process until the goods arrive. PT Pura Rotogravure Cylinder Department requires several items for production purposes. In the current process of Procurement, the orderer does the process of Procurement to the Procurement admin manually. The purpose of this research is to design a web-based system that is expected to facilitate the orderer in the process of Procurement and monitoring orders. The method used starts from data collection by collecting primary and secondary data sources. Primary data sources include interviews and observations. While secondary data sources include literature and documentation studies. For system development using a waterfall system and system design using UML (Unified Modeling Language). The modeling includes Business Usecase, System Usecase, Class Diagram, Entity Relationship Diagram, to Table Relations. The hope of this system design is to facilitate programmers in making and developing a website-based system to be implemented at PT Pura Rotogravure Cylinder Department.

1. INTRODUCTION

The development of information technology is currently growing very rapidly which causes many companies/ agencies to think about providing faster and more accurate information. One of the developments in information technology is the use of computerized systems which currently almost all companies / agencies use it and produce information that can provide the right decision. So that almost all people who have businesses privately or companies / agencies utilize technology to support their business activities in order to simplify and speed up the operational processes in the relevant agencies and companies.

An information system (IS) is an interconnected set of components used to collect, store, process and transmit data and digital information. At its core, it is a collection of hardware, software, data, people and processes that work together to transform raw data into useful information. An IS supports a variety of business objectives, such as improved customer service or increased operational efficiency[1].

Procurement is the process of buying or otherwise obtaining goods or services, typically for business or government purposes and usually on a relatively large scale. Often confused with purchasing, Procurement represents a more strategic and less purely transactional process[2]. In business, the Procurement process can be a vital part of a company's strategy because the ability to obtain sufficient quantities of materials or services at an acceptable price can determine if operations will be profitable. Similarly, government agencies must pay close attention to Procurement in order to remain within budget. Procurement budgets typically allot a specific amount that managers can spend to procure the goods or services they need[2].

A cycle of activities that includes collecting, reviewing, reporting, and acting on information about a process that is being implemented. Monitoring in terms of the relationship to performance management is an integrated process to ensure that the process is running according to plan. Monitoring can provide information on the continuity of the process to determine steps toward continuous improvement. In practice, monitoring is carried out when a process is in progress. The level of study of the monitoring system refers to activities per activity in a section, for example, the process of Procurement from suppliers by the purchasing department. The indicator that becomes the monitoring reference is the output per process[3].

At PT Pura Rotogravure Company, the Cylinder Department has implemented a desktop-based information system. However, not all sections can access the Information System. The production department of the Cylinder Department needs information on the materials needed for production, be it Chemical Auxiliaries, Machine Spare Parts and other items. As for now, the production Procurementadmin still records goods that have entered or have come from the warehouse using Microsoft Excel. Where the Procurement admin must print a report on the receipt of auxiliary materials and spare parts once a week and give it to the Laboratories, Technicians, and Production Foreman.

In addition, when the Laboratories, Technicians, and Production Foremen need goods, Procurement is still manual using a book. Because it is still manual, the order book changes places so that it often happens that the item order book is lost or stacked with other documents. And also if the order has been made, the orderer needs to ask the purchase process to the Procurement Admin verbally.

Based on the problems that the authors describe above, the Cylinder Department requires the design of an information system for ordering and monitoring production goods using computerization or web-based. It is hoped that the result of designing a system is a system design that makes it easy for programmers to create websites that can be implemented according to the needs of the Purchasing Admin, Laboratories, Technicians and Production Foremen starting from Procurement, monitoring orders until the goods arrive.

2. RESEARCH METHODOLOGY

This research methodology consists of three main stages: data collection, system development, and system design.

2.1 Data Collection Method

The writers gather data sources using the following methods in order to obtain data that is genuinely accurate, pertinent, legitimate, and trustworthy:

1. Primary Data Sources
   A primary data source is an original data source, that is, one in which the data are collected firsthand by the researcher for a specific research purpose or project. Primary data can be collected in a number of ways. However, the most common techniques are self-administered surveys, interviews, field observation, and experiments[4].However, in this research the author uses interviews and observation:
   a. Interview
      Direct, in-person question-and-answer sessions with study participants or data sources are used to collect data. Interviews with the Production Foreman, for instance.
   b. Observation
      Data is gathered by watching and documenting directly occurring events, such as the Procurement process from the Production Foreman to the Procurement Section.
2. Secondary Data Sources
   Secondary data research, or secondary data analysis, is probably the most widely overlooked genre of documentary research. It might also be termed the core genre of documentary research[5]. However, in this research the author uses literature study and documentation study.:
   a. Literature Study
      Collecting data from books that are in accordance with the theme of the problem, for example recording goods ordering books.
   b. Documentation Study
      Gathering information from books, the internet, and other information sources

2.2 System Development Method

The development method applied in this research is the development of the waterfall method. The System Development Life Cycle (SDLC) method of the waterfall model is one of the approaches to development for systematic and sequential software ranging from environmental analysis, design of the application to be made, code in making the application, and testing of the application itself, and application maintenance to keep an application running[6]. The stages carried out in system development using the waterfall method are as follows:

1. Software Requirement Analysis
   The process of collecting needs is carried out intensively to specify software requirements so that it can be understood what kind of software is needed and expected by users as well as the limitations in the software. This information can be obtained through interviews and direct observation methods. The information is analyzed to obtain documentation of user requirements which will be used in the next stage.
2. Design
   Software design is a multi-step process that focuses on the design of creating software programs including data structures, software architecture, interface representations, and coding procedures.
3. Program Code Generation
   The design created in the previous step needs to be incorporated into a software program in this programming stage. A computer program that adheres to the design created during the design stage is the end product of this step.
4. Testing
   Testing makes ensuring that every component has been tested and concentrates on software in terms of lojik and functionality. This is done to reduce mistakes and guarantee that the final product is what was intended.
5. Support or Maintenance
   This stage, which is the final one in the waterfall technique, is where software may change after it has been provided to the user. Errors that arise and go undetected during testing or the need for the software to adjust to a new environment can both cause changes. The development process can be repeated at the support or maintenance stage, beginning with the analysis of specifications for modifications to already-existing software, but not for software creation.

2.3 System Design Method

The design method that the author uses in designing a system that is Information System for Ordering and Monitoring Production Goods at Pt. Pura Rotogravure Web-Based Cylinder Department is the Unified Modeling Language or UML. UML (Unified Modeling Language) is a visual modeling method (Tools/model) as a means to design and or create object-oriented software and provides a standard for writing a system for developing a software that can convey some information for the software development implementation process.

3. RESULTS AND DISCUSSION

3.1 Business Use Case

A Business Use Case is one in which the design scope is business operations. It is about an actor outside the organisation achieving a goal with respect to the organisation. The business use case often contains no mention of technology, since it is concerned with how the business operates[7]. In this research the business process is still manual where it starts from the orderer writing in the order book, then confirming the order to the Procurement admin until the order is processed. After that the Procurement admin needs to update the order info manually to the orderer until the goods arrive. Then make a report in Microsoft Excel which will be submitted to the Head of Section. The business use case diagram at the system design stage is depicted in Figure 1 below.

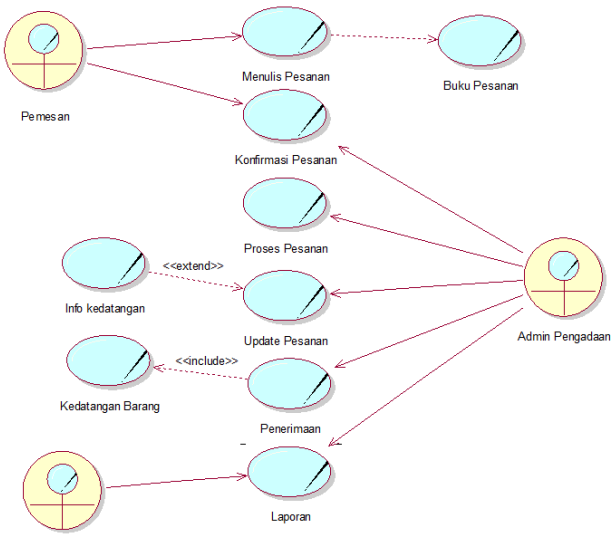


Figure 1. Bussiness Use Case

3.2 System Use Case

System Use Case is a Use Case Diagram that only describes the processes that occur in the system. From the business use case process above, the system use case process can be described from the Login Process, Making Master Goods and Master Units and placing Orders, Monitoring Orders to Receiving Goods. The system use case diagram at the system design stage is depicted in Figure 2 below.

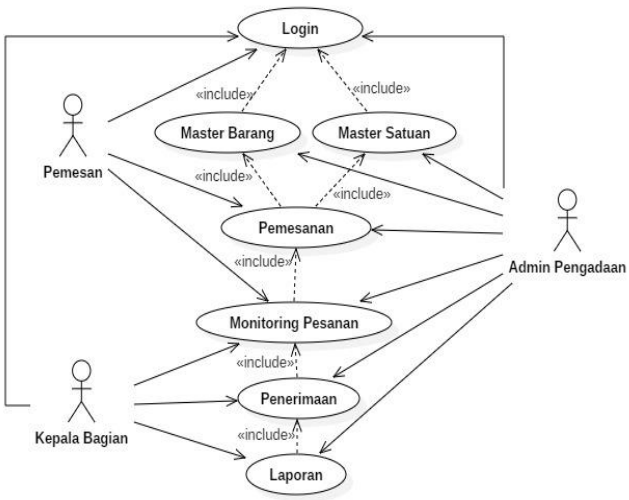


Figure 2. System Usecase

3.3 Class Diagram

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects[8]. The class diagram at the system design stage is depicted in Figure 3 below.

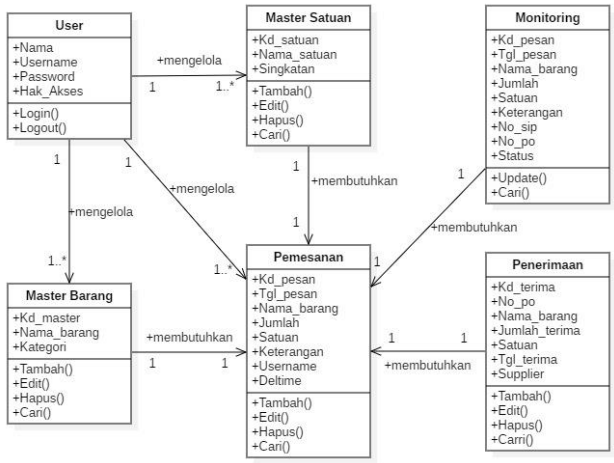


Figure 3. Class Diagram

3.4 Entity Relationship Diagram

Entity Relationship Diagram (ERD) is a conceptual data model that views and represent the real world as entities and relationships. A basic function of ERD used visually to represent data objects. A relational database that contains the classes of an application will be highly applicationspecific while a relational database used by many more applications[9]. The class diagram at the system design stage is depicted in Figure 4 below.

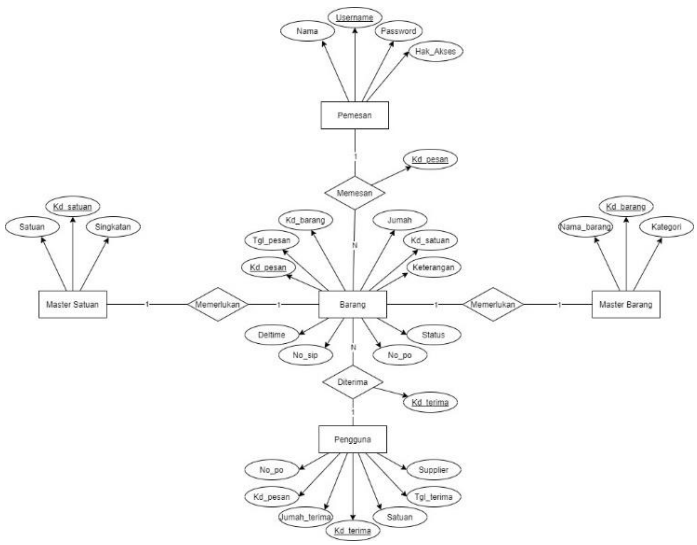


Figure 4. Entity Relationship Diagram

3.5 Table Relationship

Based on the Entity Relationship Diagram formed above, a table relationship can be arranged as in Figure 4 below.

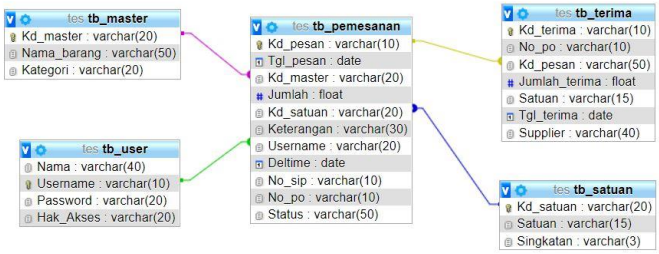


Figure 4. Table Relationship

3.6 Program Interface

The system/program certainly has a User Interface that will be accessed to perform various data management actions and related information. The design of the User Interface of the Information System for WEB-Based Ordering and Monitoring Production Goods at PT Pura Barutama Rotogravure Unit Cylinder Department is as follows:

1. Login

   The login page is used by users to enter the website according to the access given to their username and password. This page is shown in Figure 5 below.

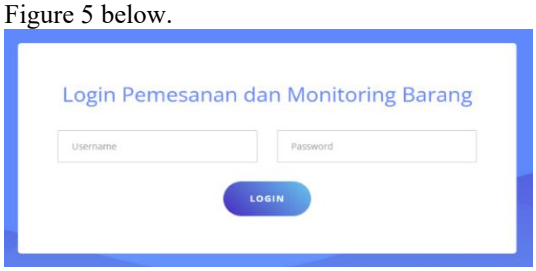


Figure 5. User Login Page

2. Dashboard

   The dashboard page is the main page of the system where it contains information and quick access to select menus according to user access rights. There are 3 access rights in the design of this dashboard page.

   a. Admin Dashboard

      Admin can access all menus starting from Ordering, Item Master, Unit Master, Monitoring, and Receiving.

   b. Ordering Dashboard

      The orderer can only access the Ordering and Monitoring menu. The design of the order dashboard page is shown in Figure 5.3 below

   c. Section Head Dashboard

      The Head of Section can only access the Monitoring and Acceptance menu.

   The design of dashboard page is shown in Figure 6 below.

Figure 6. Dashboard Page

3. Procurement

   The order data page is used to manage item order data. The design of the goods order data page is shown in Figure 7 below.

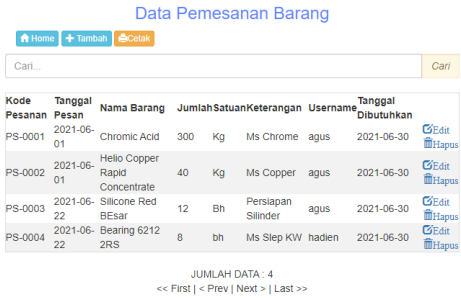


Figure 7. Procurement Page

4. Item Master

   The item master data page is used to manage item master data. The design of the item master data page is shown in Figure 8 below.

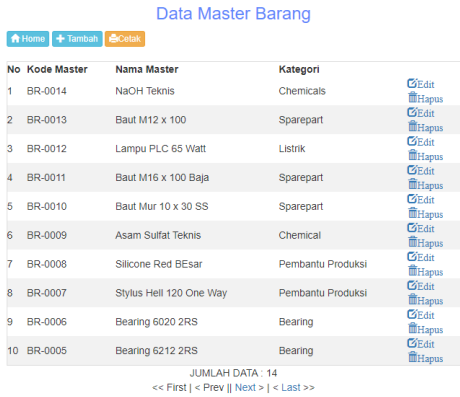


Figure 8. Item Master Page

5. Unit Master

   The item master data page is used to manage item master data. The design of the item master data page is shown in Figure 9 below.

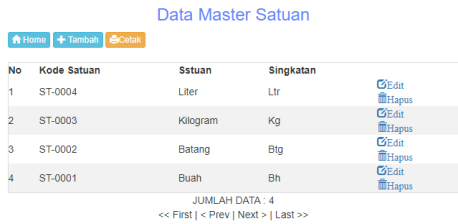


Figure 9. Unit Master Page

6. Order Monitoring

   The order monitoring data page is used to update and view monitoring of goods orders. The design of the item order monitoring data page is shown in Figure 10 below.

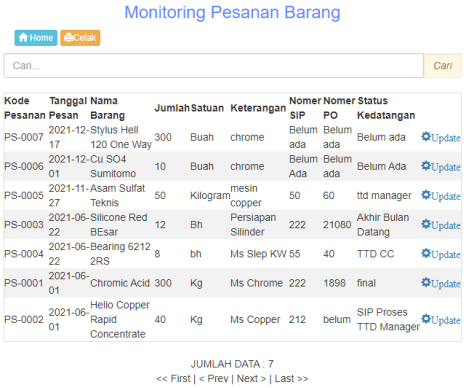


Figure 10. Order Monitoring Page

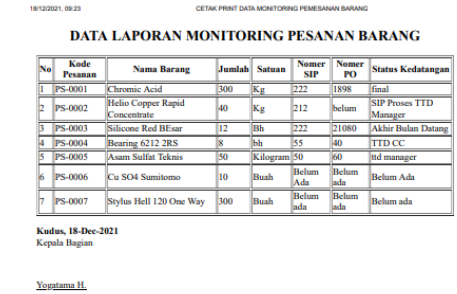
7. Goods Receipt

The receipt data page is used to manage goods receipt data. The design of the goods receipt data page is shown in Figure 11 below.

Figure 11. Goods Receipt Page

8. Report

The report page is used to view report data on ordering or receiving goods. The design of the goods order monitoring report is shown in Figure 12 below.


18/12/2021, 09:23 CETAK PRINT DATA MONITORING PEMESANAN BARANG

DATA LAPORAN MONITORING PESANAN BARANG

No	Kode Pesanan	Nama Barang	Jumlah	Satuan	Nomer SIP	Nomer PO	Status Kedatangan
1	PS-0001	Chromic Acid	300	Kg	222	1898	final
2	PS-0002	Helio Copper Rapid Concentrate	40	Kg	212	belum	SIP Proses TTD Manager
3	PS-0003	Silicone Red BEsar	12	Bh	222	21080	Akhir Bulan Datang
4	PS-0004	Bearing 6212 2RS	8	bh	55	40	TTD CC
5	PS-0005	Asam Sulfat Teknis	50	Kilogram	50	60	ttd manager
6	PS-0006	Cu SO4 Sumitomo	10	Buah	Belum Ada	Belum ada	Belum Ada
7	PS-0007	Stylus Hell 120 One Way	300	Buah	Belum ada	Belum ada	Belum ada

Kudus, 18-Dec-2021
Kepala Bagian

Yogatama H.

Figure 12. Report Page

4. CONCLUSION

Based on the above research, the design of a web-based Ordering and Montoring Information System for Production Goods is expected to make it easier for programmers to create and develop a website-based system to be implemented at Pura Rotogravure, Cylinder Department, which was originally a manual data collection to be web-based with the aim of facilitating Procurement and monotoring orders precisely, quickly, and efficiently.

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