Design and Development of Coffee Production Information System to Support Coffee Production Productivity in Farmers Group

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Abstract. The purpose of this study is to create an information system that processes the resulting data of coffee plantations produced in Laksana Village Farmers Group (Kelompok Tani), Majalaya, Bandung district with the type of coffee produced are Arabica coffee. The main problem that exists at this time is the lack of information about raw materials in the warehouse, so that sometimes the production process is constrained. Entities involved in this system are the production department, the warehouse section, farmers, and farmer group officers. The system approach method used is prototype and system development method using Object Oriented, with a tool for depicting system design using the Unified Modeling Language (UML). While the application program of the information system is made on a desktop-based. With this information system, the stock of raw materials will be accessible to all entities involved and the information produced will be more accurate. The implementation of the information system produced in Laksana Village Farmers Group applied to solve the problem of lack of information availability in raw material of production that slow production activities down. The inner entities involve production entities, warehouse and farmer group officers on this information systems are connected in one integrated database, which facilitates information accurately is acceptable.

1. Introduction
The current information technology development has significantly influenced life in the world especially Indonesia, where businesses and government agencies have used information systems to facilitate the processing of data and data storage so that it can produce accurate information. The use of technology is one of which information technologies that have evolved and introduce changes into revolutionary basic business procedures [1]. The development of information technology helps to accelerate and enhance the accuracy of data into useful information [2]. One use of information technology by using computers as a means for faster processing data, precise, and accurately produce information that has been useful to its users [3]. In business, it is generally known that the planning and implementation of the information system pertains to business strategies aimed at improving ease with every activity in it [4]. Therefore, many of these advanced businesses are using computers as tools for data processing. Careful planning and the clear use of needs are among the factors of the success of an information system on a business [5].

In design, this information system has a difference from research done by other researchers on similar themes, different research is done on the problem. In previous researchers, the problem was that there was no record-keeping of detailed orders that led to an absence of data for how much each day of production capability [6]. While the results obtained by others researcher is to create an information system of agricultural WebGIS-based so information system can be used mobile and the range of that information system is broad [7]. In this research, the information system made on
desktop-based, and the range of the information system just for the department officers of the Laksana Village Farmer Group, so production activities can work without the constraint by the lack of information about raw materials availability.

The purpose of this research is to develop computerized use of information systems in business [8] by utilizing computer as a means and specifically to figure out the problems of the coffee production information systems at Laksana’s village farm groups. The system approach method used is prototype and system development method using Object Oriented, with a tool for depicting system design using the Unified Modeling Language (UML). To create the design of the information systems of production that are then tested as to whether the information systems designed met the demand for coffee production at Laksana’s village farm groups or not. Implement of production information systems at Laksana’s village farm groups to help operate on production such as accurately knowing the raw materials available. With the implementation of this information system of coffee production, the problems can be solved in the operation of coffee production at Laksana’s village farm groups that given the integrity of the warehouse department, production department, and admin to a desktop system based on Local Area Network (LAN), the informed accuracy of information is guaranteed.

2. Method
The method used in this research utilized method of approach to a prototype system. While the method for system development used in this research is development method of Object-Oriented. For the visual design in this research of the information system used Unified Modeling Language (UML).

3. Results and Discussion
The results obtained in this research is an information system that capable of managing information about the raw materials, which produces increased production activities. With the application of this information system, the information provided about the raw materials of production is more accurate and minimizing obstructed of production activities where the entities involved are connected in one computerized database.

The results obtained by other researchers is both create information system in agricultural, however, the other researchers purposes to create an information WebGis-based to build into agricultural portal that help to share useful information with managers, businesses, and farmers [7].

3.1 Use Case Diagram
Use case diagram is a function provided by the system as units exchanging messages between units or actors [9]. The use case diagram design on this information system is shown in Figure 1.
The following are descriptions of actor on use case diagram:

1. Consumer
   The parties who deal in the purchase of products from the farm groups.
2. Farmer
   The parties who supplies coffee as a base production given directly to the warehouse department from the farms groups.
3. Admin
   The one who took control of the system ordering part of the product done by consumers against the farms groups.
4. Production Officer
   The one who took control of the farm groups coffee production operations.
5. Warehouse Officer
   The parties who received the farm products that farmers sent to the farm groups.

3.2 Software Requirements
The supporting software is needed to implement the information systems:
- Developer requirements
  1. Windows 7 (Minimal)
  2. Software Editor Netbeans IDE 8.2
  3. JDK 8.0
  4. XAMPP Control Panel Versi 3.2.1
  5. Web Browser
- User requirements
  1. Windows 7 (Minimal)
  2. XAMPP Control Panel Versi 3.2.1

3.3 Hardware Requirements
The supporting hardware is needed to implement the information systems:
1. Procesor intel i3
2. Memory 4GB
3. Hard Disk100GB
4. As a well as input and output devices such as monitor resolution 1024 x 768, mouse, keyboard, and printer.

3.4 Interface
The purpose of this research is to computerized the design of information systems to assist with the operating operations of production by accurately knowing the raw materials of production. Increased the interest in coffee consumption makes computerized information systems needed to know how many products are sold each day [10]. To operate the production of information system requires logging in first to the system, login form display is shown in Figure 2.
Once the login is done then the next step of information system application display is a main menu. Main menu display is shown in Figure 3.

In Figure 3, it shown the main menu view, where its functionality is accessible due to a login account. To carry out the first operational activity of the production, the consumer would be ordering for a farm worker done by admin. Hence, the admin of the information system opened the master’s data and selected the customer form, the display is shown in Figure 4.

In Figure 4, it contains ID Konsumen that means consumer ID where that is automatic discharge and Nama Konsumen is meaning for consumer’s name. A consumer form is shown where the admin had entered the consumer data, admin kept the data and clicked the process button, and then the view for the next step is shown in Figure 5.
In Figure 5, it shown an order form where the admin spared a coffee type at the field of order or meaning in the Figure 6 is the order and the amount of coffee that the customer orders. The admin stores the data where if the supply of the order exceeds that of the product, it appears pop-up, which says there is not enough product. Besides, if the amount of order below stock production is available then the system will print a receipt. The admin could see if there is any product available by clicking on the product check button where the display is shown in Figure 6.

In Figure 6, the production form shown where the admin can only see the availability of the product on the table, while adding data and editing of production data can only be done by the producers. Moreover, the production department will provide the raw materials needed first in order to produce coffee which the display is shown in Figure 7.
In Figure 7, it is shown the form of raw materials production is needed to do that production that is done by the production department or the head of production that accents information systems, where when the quantity of raw materials required exceeds the supply of raw materials available. After that, the system will display pop-ups the raw materials no meets when the user clicks the save button. The production department can see raw materials by clicking the stock check button on which the display is shown in Figure 8.

In Figure 8, it is shown the form of the raw material supply, production department can only see at the availability of raw materials on the table. Supply the raw materials to warehouse department, where the system is operating operations can be accessed by warehouse department or warehouse head.

4. Conclusion
The implementation of the information system in Laksana Village Farmer Group can result the accurate information about raw materials availability so that minimizes production activities obstructed by the lack of information about raw materials availability. The integrated of production entities, warehouse and farmer group officers in one database makes information accurately acceptable.

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