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Information Systems Estimated Demand for Certified Seed

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ABSTRACT

The availability of certified seeds is a very important strategy to maintain food security. When farmers plant their farms with certified seeds, it can increase the production yields grown by farmers. To answer the availability of sources according to the needs of farmers or consumers, it is necessary to design an information system for forecasting the demand for certified seeds, with a methodology *Rational Unified Process* (RUP) so that this method can be useful to identify the system that is running and can describe the system to be built. Meanwhile, to produce an estimate of the demand for certified seeds, a linear regression approach will be used which will be included in the design of the system. The design of this system will produce a function to assist producer farmers in estimating certified seed production, assisting the availability of certified seed information for consumers, and assisting the PSBTPH Installation in the Subang Region in carrying out evaluation and monitoring.

I. Introduction

In disseminating information, attention must be paid to the processed data and the information to be conveyed, to whom the information is conveyed because information has a quality value according to who, what and how the information was obtained. Knowledge has a quality value that can be influenced by several things: relevant, accurate, timely, and economical [1].

Certified seeds are seeds planted and reproduced by registered producer farmers and have gone through a certification process and passed standard field tests and laboratory tests supervised by supervisors through the Service Unit for Supervision and Certification of Food Crops and Horticulture Seeds [2].

Disseminating information requires developing an information system that can process a set of certified seed data to produce valuable and useful information for its users according to the level of needs of its users or recipients of the data [3].

In the design of the information system for forecasting the demand for certified seeds at the Service Unit for Supervision and Certification of Seeds for Food Crops and Horticulture Region III Subang, a Rational Unified Process (RUP) method will be used so that it can identify the current system and describe the system to be built [4] .

This study also used a linear regression approach to generate estimates of certified clean demand. Linear regression is a statistical method used to determine the effect of one or several variables on one variable [6].

II. Methods

The stages in the development of an information system for forecasting demand for certified seeds at the Service Unit for Supervision and Certification of Seeds for Food Crops and Horticulture

using the Rational Unified Process (RUP) methodology [7], this methodology is an iterative system or software development approach that focuses on architecture (architecture-centric) and more focused on the case [8].

The stages in the RUP methodology are:

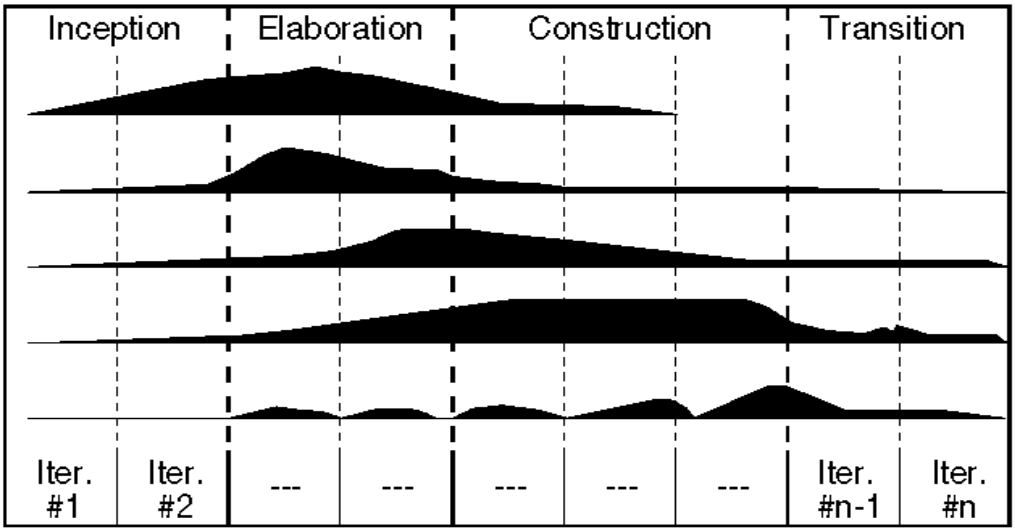

Figure 1. Steps in the RUP Methodology

The stages in the RUP methodology are [9]:

a. Inception
   This stage focuses on modeling the required business processes, business modeling, and defining the system requirements to be created.
b. Elaboration Expansion / Planning
   This stage is more focused on system architecture planning. This stage can also detect whether the desired system architecture can be made or not. Detection of risks that may occur from the architecture created. This stage is more at the location of system analysis and design and system implementation, which focuses on system prototypes.
c. Construction
   This stage focuses on developing system components and features. This stage is more on the implementation and testing of the system that focuses on the performance of the software in the program code. This stage produces a software product called Initial Operational Capability Milestone requirement or initial operational capability limit.
d. Transition
   This stage is more on the implementation or installation of the system to be understood by the user. This stage produces a software product called Initial Operational Capability Milestone requirement or initial operational capability limit. Activities at this stage include user training, maintenance, and testing of the system to meet user expectations.

Software products are also adapted to the requirements specified at an early stage, If all objective criteria are met, it is considered to have met the limits/milestones for product launch. Product Release Milestones and software development is complete [10] [11].

III. Result and Discussion

The first thing to do in this research is to determine a mind map related to designing an information system for forecasting the demand for certified seeds by making a min map. With this min map, it can help plan and solve problems and develop a thought map for the research to be carried out (Tony Buzan, 2008). The following is a Mind Map of the Information System for the estimated demand for certified seeds.

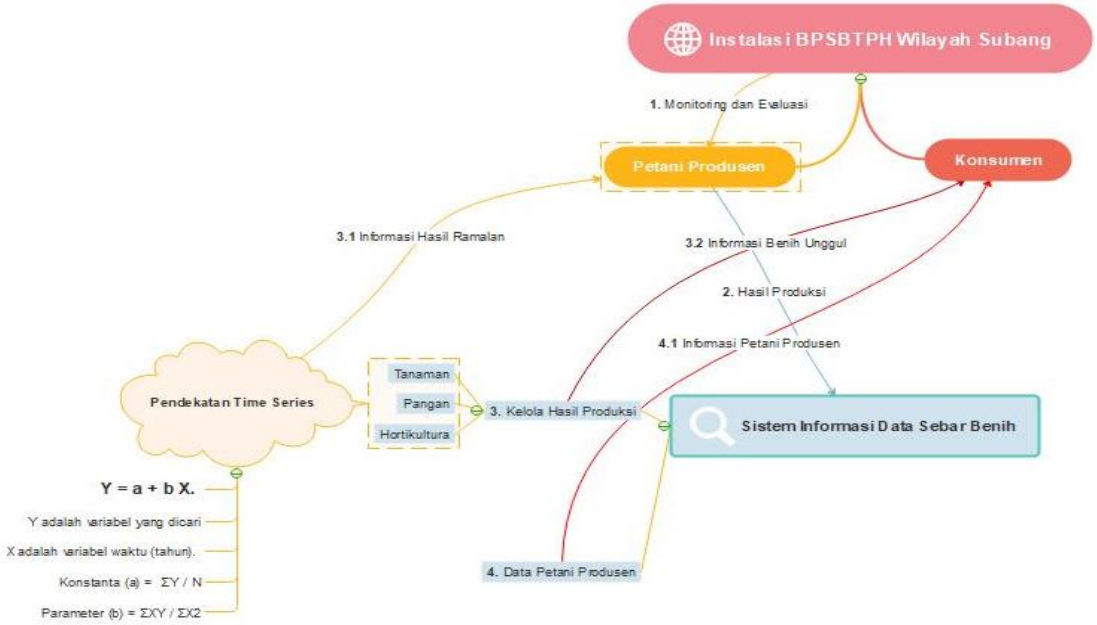

Figure 2. Mind Map Information System for Certified Seed Demand Estimation

The picture above can illustrate how the research map of the information system estimates the demand for certified seeds. The installation carries out a monitoring and evaluation process for producer farmers through an information system for forecasting seed demand, where producer farmers manage production and sales data and their own producer farmer data.

The data that producer farmers have managed will be needed by consumers related to the information produced, namely information on superior seeds, information on production results, and producer farmer data about their profiles. In addition, the data that has been processed by producer farmers will be entered into the program using a linear regression method to produce an estimate of the demand for seeds from seed users or consumers, and producer farmers need this information to produce certified seeds in the future.

In making this seed demand forecasting system, a model called a use case diagram is needed, where this use case diagram is a model that can describe the behavior (behavior) of an information system that will be made, in this case an estimate of seed demand. In addition, users are made to determine what functions will be in the system and access rights to these functions [12]. The following is a use case diagram on the information system for forecasting seed demand. Certified.

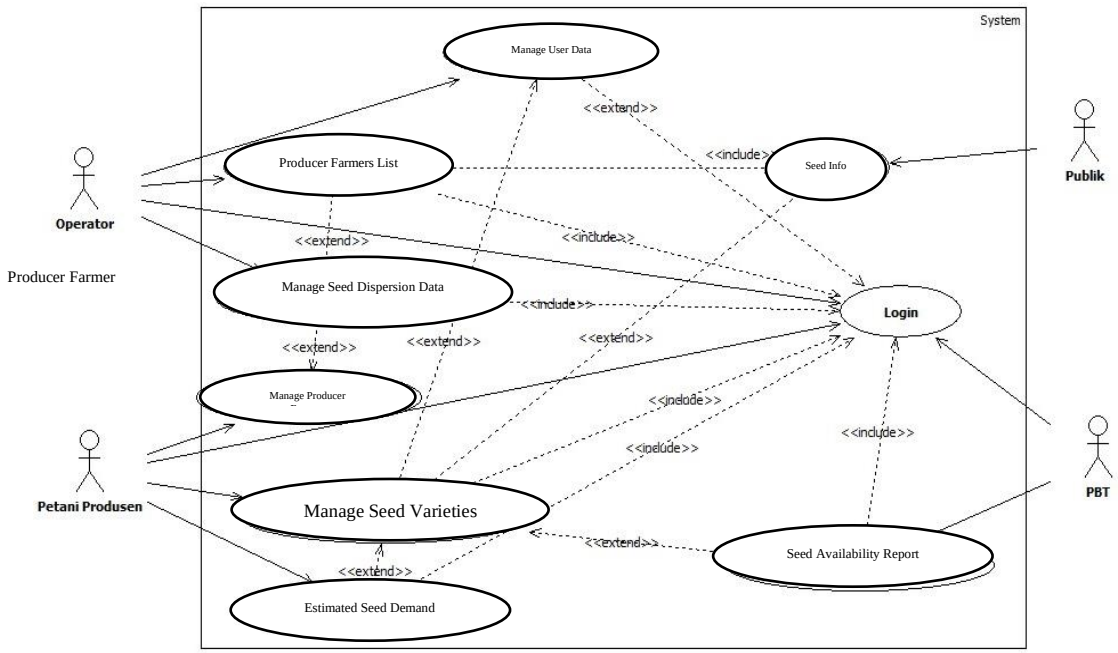

Figure 3. Usecase Diagram of an Estimated Demand for Certified Seed Information System

The use case diagram above illustrates that there are nine main functions conceptually in the information system for forecasting seed demand, namely the system can manage user data, manage login activities, manage producer farmer data, manage Seed Varieties, manage seed distribution data, manage seed info, report seed availability and forecast demand for seeds.

The research on information systems for forecasting seed demand using the RUP method, which is limited to three stages, namely Inception, Elaboration, Construction, produces a design of several interface pages, one of which is the interface page for forecasting seed demand as shown below.

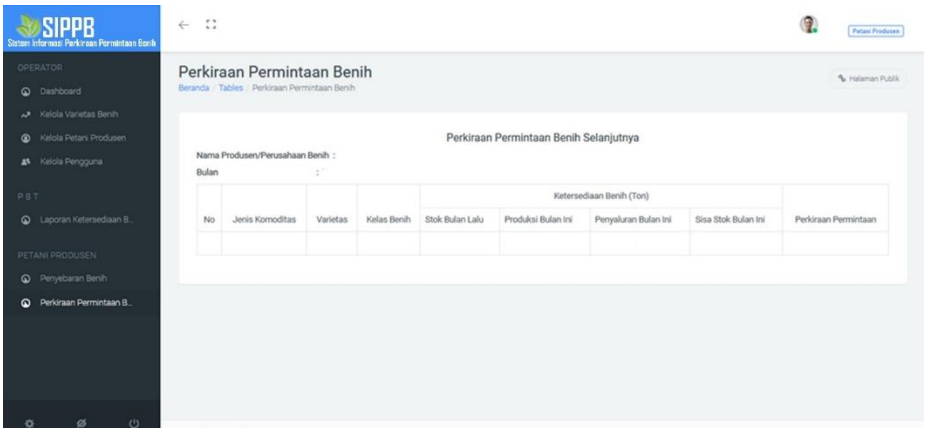

Figure 4. Interface for Estimating Demand for Certified Seeds

The image above produces a display that can provide information to producer farmers related to the estimated demand for the next certified seed, which contains several variables, namely: type of commodity, variety, seed class, stock last month, production this month, distribution this month, remaining stock this month and future demand forecast.

V. Conclusion

From the description and design of this research, it can be concluded that the existence of a certified seed demand forecasting system can help producer farmers to determine how much certified seed will be produced so that it can be traded according to the needs of consumers. From the PSBTPH Region III Subang installation side, it can be assisted in evaluating and monitoring the existence of certified seed stocks available to producer farmers. Finally, consumers can see information on the availability of seeds for each producer farmer

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