



DESIGNING WAREHOUSE INVENTORY MANAGEMENT APPLICATION WEB-BASED ON BATIK SINUWUN SME WITH THE AGILE SCRUM DEVELOPMENT METHOD

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ABSTRACT

In this era, technology develops rapidly. More adequate and modern technology displaced old technology and indicates high competition. This competition requires changes in the management of a particular business in order to keep up with developments and take advantages of the application of technology. Sinuwun Batik is SME engaged in the production of batik clothes and selling batik clothes. The increasing number of requests and various types of SME make Batik Sinuwun overwhelmed in regulating the supply of raw materials for production, because there is no warehouse record. This study aims to design a website-based application that can help Batik Sinuwun SME to manage warehouse inventory.

This inventory application is designed using the Agile Scrum Development method. The stages of making the system begin with collecting the required data by eliciting user needs, this data is the basic data in determining the features of application. This application is made based on websites using the PHP framework CodeIgniter and MySQL as data storage. The application system is tested using the Blackbox Testing method and ISO: 9126.

The result of this research is a website application to simplify the management of raw materials in and out of the warehouse so that the latest stock of raw materials can be found, but it can also minimize recording errors due to manual calculations.

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obtain a list of features that are needed by users.

2. Sprints

Sprints are units of work to fit the time specified in the time-box. During this process, there was no additional features. In this study the design and programming of the application was conducted for 4 weeks.

3. Scrum Meetings

This activity is a routine meeting held every day to evaluate what is being done, the problems, and the target completion for the next meeting.

4. Demo

Demonstrating software improvements to the user and evaluated by the user.

Meanwhile, to achieve the research objectives, stages to be conducted in this study are as follows:

1. Input Stage

This stage is the process of collecting the data required for the application design process, to obtained inventory data in the warehouse with the actual amount.

2. Process Stage

This stage is to managing the data obtained, then processed into an

application design with the Agile Scrum method, which created the database first as the main data storage. It will be detailed into 4 diagrams; use case diagrams, activities diagrams, sequence diagrams, and deployment diagram to explain the relationship between software and hardware in application operation. Furthermore, the application development is based on a diagram design used CodeIgniter Framework.

3. Output Stage

Testing the application through the Blackbox method and ISO:9126 is the application of inventory in the warehouse which will help Batik Sinuwun SME to managing the inventory of goods.

III. RESULTS AND CONCLUSIONS

A. Data Processing

To identify system requirements, elicitation of user needs is conducted through interviews with user applications. After passing the elicitation stage of user needs, the final results of the elicitation of user needs are obtained. The final draft elicitation is shown in the table 1 below:

Table 1 Final Draft Elicitation

Functional	
No.	Requirements Analysis: I want the application to get
1	There is access to Admin login.
2	Admin can display the main page menu (Management User).
3	Admin can input the master data.
4	Displays the Home page.
5	Displays the Entry of goods.
6	Displaying Outgoing items.
7	There are functions to Add, Update, and Delete data from incoming goods.
8	Displays the amount of raw material stock.
9	Displays the incoming goods report.
10	Displays outgoing goods reports.
11	There is logout access to Admin.
Non-functional	
No.	Requirements Analysis: I want this web application to be able to
1	Security report guaranteed
2	Easier to search warehouse data
3	Can be used on Windows Operating Systems
4	Runs properly

In table 1 are features in the system that are really needed by the user and can be done by the application maker. In this final elicitation

result, there are 11 functional system features and 4 non-functional system features that will be made.

A.1. Database Design

Database design is made based on the elicitation stage of user needs in the previous stage, as well as based on the theory of the purpose of inventory which there is a human interaction structure, tools control method and control arranged to achieve the following goals (Adelia, 2011):

- Supporting activities and work routines in a section within a company.

- Supporting decision actions for individual and inventory control departments.
- Supporting the preparation of internal reports as well as external reports.

Therefore, database design is obtained in the following Figure 3 below:

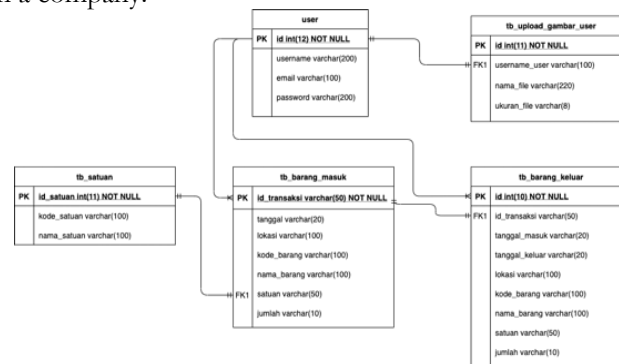


Figure 3 Database (Data Storage)

A.2. Use Case Diagram Design

Use Case describes the actors in the system (Mulyani NS, 2016). In this system there is only

an actor, the warehouse admin involved in the application as in the Figure 4 below.

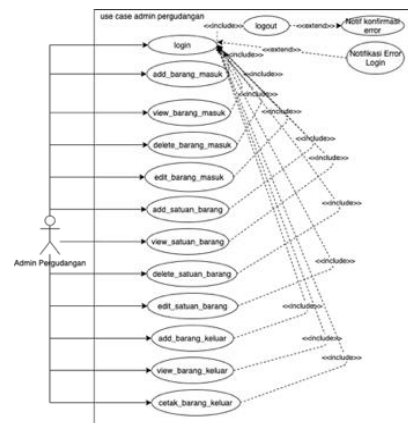


Figure 4 Use Case Diagram

B. Results and Discussion

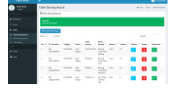
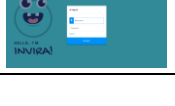
Based on the results of the tests, the warehouse inventory management application is running well according to user needs. The

results of system testing can be seen in table 2 to find series of input conditions that match the program requirements (Laurie, 2006).

Table 2 Blackbox Testing

No	Scenarios	Test Case Test	Expected	Results Testing Results	Description
1	User does not fill in the username and password then chooses login button		System will deny login access by displaying the message "Please fill in the field"		Succeed

2	Wrongly filling in the username and password		System will deny login access by displaying the message "Username has not been registered"		Succeed
3	Displays the Home page after successful login		System will display the Home page or dashboard properly		Succeed

No	Scenarios	Test Case Test	Expected	results Test Results	Description
4	Successfully save data input goods		Incoming goods data input stored in the database		Succeed
5	Successfully created outgoing goods from warehouse		Outgoing goods reducing stock inventories		Succeed
6	Successfully Add, Update, and Delete incoming goods table		Successful Saving, Modify, and Delete data in the incoming goods table		Succeed
7	Successfully displaying stock raw goods		Stock of raw goods is displayed completely		Succeed
8	Successfully logged out from system		Successful to exit from application		Succeed

In addition to testing the system also using ISO: 9126 to evaluate software quality (Banjarnahor, 2018). The analysis is as follows:

1. Functionality, this application has been created and according to the user needs because at each stage of manufacture confirmed by the user.
2. Reliability, the application in testing practice has minimal errors because it has been tested.
3. Usability (Ease of User), the use of features is easy to understand because the user is directly involved in the application creation process.
4. Efficiency, the application can be used by

new user because there is a manual book as a guide to using the application.

5. Maintainability, maintenance activities is not needed yet, because the usage time is still short, which is less than a month and there is no problem.
6. Portability, applications can be accessed anywhere and anytime, so it can be accessed with a personal computer, laptop, or smartphone.

To evaluate the warehousing system after the application, interviews are conducted with users, there are several differences in warehousing systems, as in the table 3 below:

Table 3 Differences in systems after the application

No.	Old System	New Application System
1	Additional human resource is needed for physical checking in the warehouse to find out the raw materials availability	User can check directly through the application without physical checking so it can save human resource

2	It is necessary to manually recalculate to find out the amount of raw material inventory when needed	Amount of raw material inventory has been recorded in the application. It isn't need manual calculation.
3	It takes between 15 minutes to more than 2 days to find raw materials.	It only takes approximately 3 minutes to find raw materials.
4	Raw materials can run out at any time without being monitored, thereby reducing the productivity of SME	Reducing the risk of running out of raw materials with a system that can be monitored
5	The process of checking the number of raw materials can only be done during working hours so limited in time and place.	The process of checking the number of raw materials can be accessed from anywhere and anytime without limitation of time and place
6	There are no reports of entry and exit of raw materials	There are reports of entry and exit of goods with easy access

In table 3 above shows that there are several benefits for Sinuwun Batik SME. With this application is proven to increase the level of efficiency and effectiveness of Sinuwun Batik SME, especially in the warehousing section.

IV. CONCLUSION

The result of this study is the warehouse inventory management application website with the Agile Scrum Development Method from the initial process of collecting user requirements until the application is completed and has passed the Blackbox testing and ISO: 9126, so the application can run without problems and features according to user needs. In addition, this application can help Batik Sinuwun SME to manage inventory easier in their warehouses as well as improve the efficiency and effectiveness of warehousing, for example efficiency time when user searches stock of goods previously reaches a minimum of 15 minutes, with this application becomes less than 3 minutes.

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