HUMAN RESOURCE DECISION SUPPORT SYSTEM DESIGN IN MAINTENANCE DEPARTMENT OF XXL COMPANY USING WATERFALL METHOD

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ABSTRACT

Decision Support System is a system that used to support the decisions of an organization. XXL Company must guarantee the operations, but in fact when performing operational activities, the work that done by the employees are not match with the employee skills and background. The absence of an competence evaluation of employees caused difficulty in determining the assignment.
Waterfall method used for the development system. This system is a web based PHP using the CodeIgniter as the framework and MySQL as a database. The results of this research is a system that has a function to support decisions in the field of Machinery and Laboratory.

***Keywords**: Decision Support System (DSS), Assignment, Assessment, Waterfall.*

1. INTRODUCTION

1.1. Research Background

In operational activity, XXL Company divide all the activities into directorate, department, division, and field that integrated one of another. One of them is maintenance department. Task of this department are to establish and guarantee operational activity in production site. Maintenance department need a competent human resource to run the company, but in reality the workforce in this company is too old. Figure 1 describe the workforce in XXL Company.

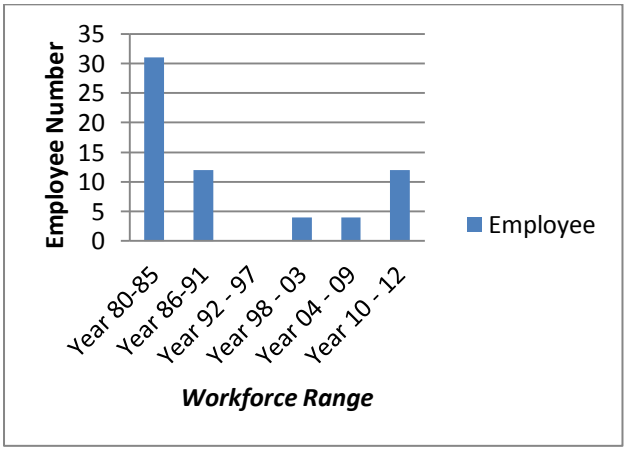

Figure 1. Workforce

Beside of the workforce problem, XXL Company in daily also do assignment to the maintenance operator to do the task that given, including corrective and preventive maintenance. The man who responsible to do such thing is a supervisor. Everyday supervisor give a task to the operator, but the assignment usually based on subjectivity of the supervisor. The implication of the decision is that there is a possibilities that there is a gap of workload from one operator to another. The other implication is that when that operator is not available the supervisor must wait the operator is finishing the task before giving new task to this operator.

Another problem in this department is there is no evaluation process for the employee, evaluation is the important thing to do in organization. no evaluation means that the supervisor is hard to determine whether the employee is suitable for the task that is given or not.

The right thing that company can do is using a system that can determine and help supervisor to assign the task based on the employee competence and skill that combined with employee historical record.

2. THEORETICAL BACKGROUND

2.1. Decision Support System

Gorry and Scott-Morton (1989) define DSS as a interactive computer-based system that is used to help the decision maker to use data and any model for problems with unstructured decision.

Goal of DSS is to help the decision amker choose all the possibilities and alternatives using all available model. The main characteristic of DSS is the ability to solve unstructured problem.

2.2. Waterfall Method

Waterfall method is the most model that is used in software development. This model approach systematically and step by step.

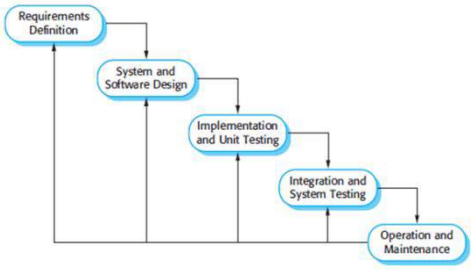

Figure 2. Waterfall Method Phase(Source : Sommerville, 2009, p.30)

3. RESEARCH METHOD

This research is the extended from the previous research about human resource information management system in XXL COMPANY. This research objective is to create a decision support system that can simplify supervisor task in maintenance department to take a decision of assignment and evaluation of employee.

3.1. Requirements Phase

In this phase, literature study and field study is conduct.

3.2. Analysis & Design Phase

This phase consist of analysis that related to the objective of this research.

3.3. Coding & Testing Phase

This phase is focus on coding and programming the system. The system use PHP Codeigniter as framework and MySQL as the database.

3.4. Result Phase

The next phase is to test the system, is the system meet the requirement or not including the advantage and disadvantage of the system.

3.5. Conclusion Phase

This phase consist of the conclusion of the research.

4. RESULT AND DISCUSSION

4.1. Analysis and System Design

In Maintenance Department there are two user which are supervisor and operator by default, the task of user is in table 1.

Table 1. User Role

Role	Task
Super Admin	a. Control all the system b. input new user
Admin	a. manage the data in maintenance department
Supervisor	a. Assign and Assesed the employee b. Recommend need of employee
User	a. Access profile and work order. b. See the competence evaluation

The decision support system was design to help the needs that connected to the human resource. From analysis, the system facilities are:

1. Manage Employee Data.
2. Manage Organization Structure.
3. Manage Job List.
4. Manage Job Expertise.
5. Determine the assign task.
6. Assessment data input.
7. Determine the training that employee should do.

Use case diagram is a diagram that used to model the business process as the point of view from the user. Use case diagram for database submodule is shown in figure 3.

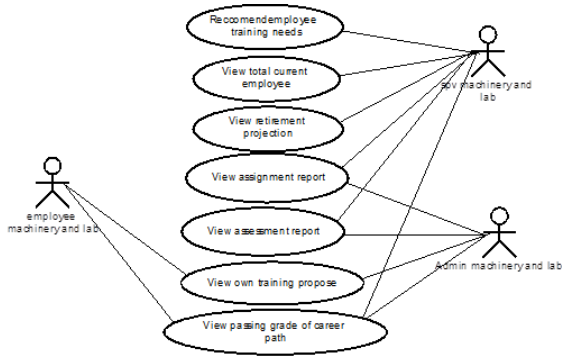

Figure 3. Use Case Diagram Example

Figure 4 show the structure menu from the system.

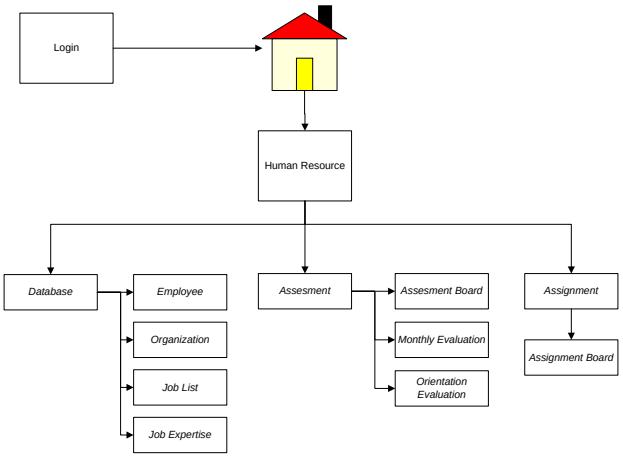

Figure 4.Layout Menu

The system can determine the possibilities of which employee should do the task based on criteria of the task, such as electrical, electronical and mechanical. To assign the employee first of all the system need a criteria in the system, after that when supervisor choose the parameter, the system calculated the parameter which bring the result of the possibilities.

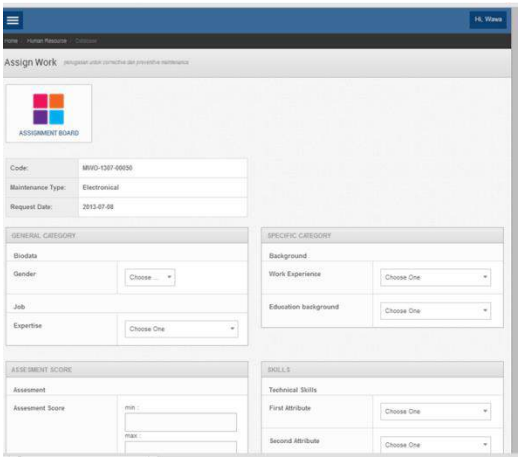

Figure 5. Assign Work Appearance

To evaluate the employee, the system needs competency data and the weight, so when the supervisor input the score of the evaluation, the system automatically processing the input and give the calculation result.the result is created by multiplying the weight with the value that supervisor input into the system. Each value indicates the competence that the employee have in the current month.

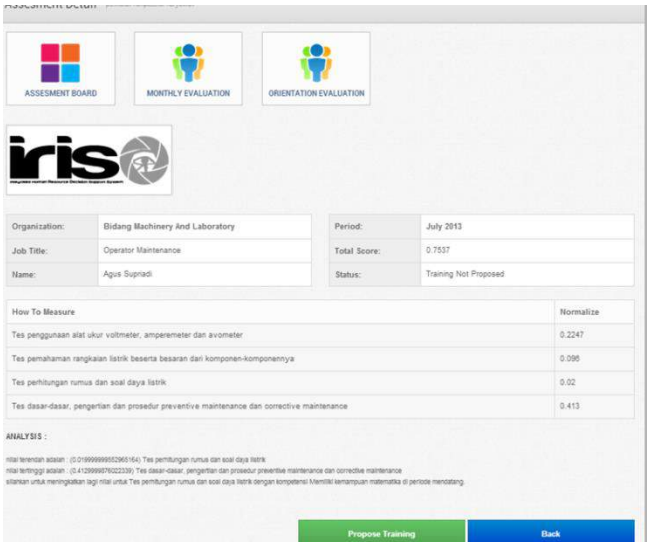

Figure 6. Evaluation Employee Appearance

4.2. Testing

The testing is done by using blackbox and user acceptance test method to know is the system is suitable or not. Form the testing, the system running good and as expected.

The advantage of the system are :

1. System can facilitate more flexible web based activity.
2. System help employee data storage and employee historical record.
3. System easy to develop because using framework.
4. System has user previleges.
5. System has appearance that comfort and easy to use.

The disadvantage of the system are :

1. This system is restricted only in maintenance department.
2. System not using validation form.

5. CONCLUSION

From the analysis, design and testing we can conclude that human resource decision support system is realized into web based

application using MySQL as database and PHP Code igniter as framework. There are privileges in the system such as supervisor, administrator, super administrator, and operator. Supervisor can assign the task from the system using criteria and competence and the supervisor also can evaluate directly from the system.

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