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Real Time Unit Monitoring Information Systems Using The Waterfall Method PT. Andhana Kirana Yasa Jakarta

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Abstract

PT. Andhana Kirana Yasa is a company engaged in car accessories installation services. The speed in the production process and the quality of products produced become the main value to compete with competitors. But to achieve the desired quality there are still problems that are experienced, first reject the unit of production and second, there is a cripple unit (no part), which is the unit in the production process but the stock parts are exhausted in the warehouse, so that accessories cannot be installed. The existing problems if not handled quickly and precisely cause a decrease in productivity. The installation service company has been given a maximum target lead time of 1 unit (car) for 3 hours. To overcome this problem a monitoring application system / program is needed which monitors the unit's production conditions directly so that when an obstacle occurs it can be effectively dealt with. This application program is created using the waterfall method which has the manufacturing stages starting from Requirement Analysis, System Design, Implementation, Integration and Testing, Operation and Maintenance. The programming languages used are HTML, PHP and Java Script, MySQL as a database, and Sublime Text Editor as an editor. The purpose of making the application program is to monitor the unit production directly against problems that occur and produce data that is used to evaluate employee performance.

Keywords: *Installer Company, Monitoring, Waterfall.*

1. Introduction

The development of an information system is carried out with the aim of changing the manual process to computerization so as to improve performance and make it easier to manage [1] and to obtain realtime information on the distribution process [2]. PT Andhana Kirana Yasa (AKY) is a company engaged in the installation of car accessories, in collaboration with PT. Toyota Astra Motor (TAM) as a business partner. And PT. Toyota Astra Motor itself is the sole agent company for the brand holder (ATPM) of TOYOTA vehicles which makes a part related to the procurement and installation of accessory parts, namely the Port Installation Option (PIO) part. It is in this PIO section that PT. Andhana Kirana Yasa carries out production to install Toyota car accessories.

With a web-based information system, the company can get information more quickly so that project work can be completed according to project work targets [3] and it is hoped that this information system can help in making decisions and supervising the project being carried out. If there are errors and delays when calculating, processing values that take a lot of time and require a lot of energy can be minimized. To solve the above problems, we need a system that has the ability to manage value calculations that can be accessed online via the internet network [4]. With the application of the Web-based Production Process Monitoring Information System application, it is hoped that it can provide facilities for users to streamline time and costs in their duties as monitoring activities that occur [5]. The monitoring system is a system designed to provide feedback

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when the program is running its function. Feedback is intended to provide information on the state of the system at that time [6].

Lead time data or processing time is data on the total production time of the unit (car) starting from the Receiving Post, installing accessories in the Production Line until the time of leaving the unit at the Final Inspection Post. If the unit is immediately declared ok at the Final Inspection, the recording of the production lead time has ended, but if the status of the unit is repaired, the unit will be sent to Stall Repair and the recording of the production lead time will continue until the unit repair process ends and has been declared as an ok unit. Irregular work patterns lead to mistakes made by workers, both small and large scale mistakes, so that they have an impact on the company [7]. So that if upnormal or non-standard data is found, an evaluation and improvement can be done immediately. In the field of management, management information systems are offered with the aim of facilitating the management of assets so as to produce reliable, relevant, timely, tested and understandable information [8].

In the business world, to be able to survive the competition that comes not only from domestic companies but also from abroad, companies are increasingly required to be able to cultivate a product that has strong competitiveness to survive and dominate the market [9]. Advances in computer technology have had a tremendous impact on all aspects of business activities. The advantages that can be seen clearly from using this computer are speed, accuracy, and ease in processing data into information [10]. By using the usecase diagram method, the PHP programming language, with the MySQL server, in order to achieve an effective, efficient activity in supporting the activities of this company [11].

2. Research and Methodology

2.1. Monitoring

According to Casely & Kumar (1987) in [12] the definition of a monitoring system can vary but basically the principles used are the same, namely "Continuous assessment of the function of project activities in the context of implementation schedules and and the use of project inputs by target groups in the context of expectations. -draft expectations. Monitoring is an integral project activity, an essential part of good management practice and therefore an integral part of day-to-day management.

2.2. UML (Unified Modeling Language)

According to Widodo and Herlawati in [13] “UML stands for Unified Modeling Language which means standard modeling language. There are several types of diagrams in UML as follows:

a. Use Case Diagrams (Use Case Diagrams)
   Static. This diagram shows a set of use cases and actors (a special type of class). This diagram is especially important for organizing and modeling the behavior of a system that users need and expect.
b. Activity Diagrams
   Dynamic. An activity diagram is a special type of status diagram that shows the flow from one activity to another in a system. These diagrams are especially important in modeling the functions of a system and emphasizing the flow of control between objects.
c. Component Diagram
   Static in nature. This component diagram shows the organization and the dependence of the system / software on pre-existing components. This diagram relates to class diagrams in which components are typically mapped into one or more classes, interfaces and collaborations.
d. Deployment Diagram
   Static in nature. This diagram shows the run-time configuration of the application. Load the nodes and the components inside. Deployment diagrams are closely related to

component diagrams where this diagram contains one or more components. This diagram is very useful when our application is acting as an application running on multiple machines (distributed computing).

2.3. ERD (Entity Relationship Diagram)

a) Definition of ERD

Menutut Al-Bahra in [14] “Entity Relationship Diagram (ERD) is a diagram that shows information created, stored, and used in business systems". Entity Relationship Diagram (ERD) is a data description that is modeled in a diagram that is used to document data by determining what each entity contains and how the relationship between one entity and another.

b) Components of ERD

1. Entity (Entity)
   A collection of objects or something that can be distinguished or can be defined. In ERD, the entity is represented by a rectangular shape. Example: Place (room, building, office, field, campus)
2. Relationship (Relationship)
   A relationship that occurs between one or more entities. Relationships are named with root verbs. So that it makes it easier to read the relation (can be active or passive voice). In ERD, the relation is depicted as a rhombus. Example: Students take courses and people drive cars.
3. Relationship Degree
   Relationship degree or relation degree is the number of entities that participate in a relationship.

3. Results and Discussion

3.1. Analysis Stages

A. Operator page

A.1.Operators can log in with an account that has been created.

A.2.Operators can see the start page / dashboard that contains charts or displays of complete production results per month or per day, such as PPO unit status ok, cripple (no part), repair (reject production) and other supporting graphic details.

A.3.Operator can add (input) data unit (car) in Receiving.

A.4.Operators can add (input) data units (cars) to Final Inspection according to the judgment quality (ok, cripple or reject).

A.5.Operators can add (input) data units (cars) in Repair.

A.6.Operators can view and search unit transaction data with receiving status (not final), ok status, cripple status (no part) and repair status (reject production).

A.7.Operators can print unit (car) data transaction reports.

B. Operator page

B.1.Admin can log in with an account that has been created.

B.2. Admin can process transaction data (receiving transaction, final inspection and repair transaction).

B.3. Admin can process User data.

B.4. Admin can process model data.

B.5. Admin can process color data.

B.6. Admin can process part data.

B.7. Admin can process cripple data.

B.8. Admin can process trouble repair data.

B.9. Admin can process the repair description data.

B.10. Admin can view and print unit (car) data transaction reports.

3.2. Use Case Diagram

a) Use Case Operator

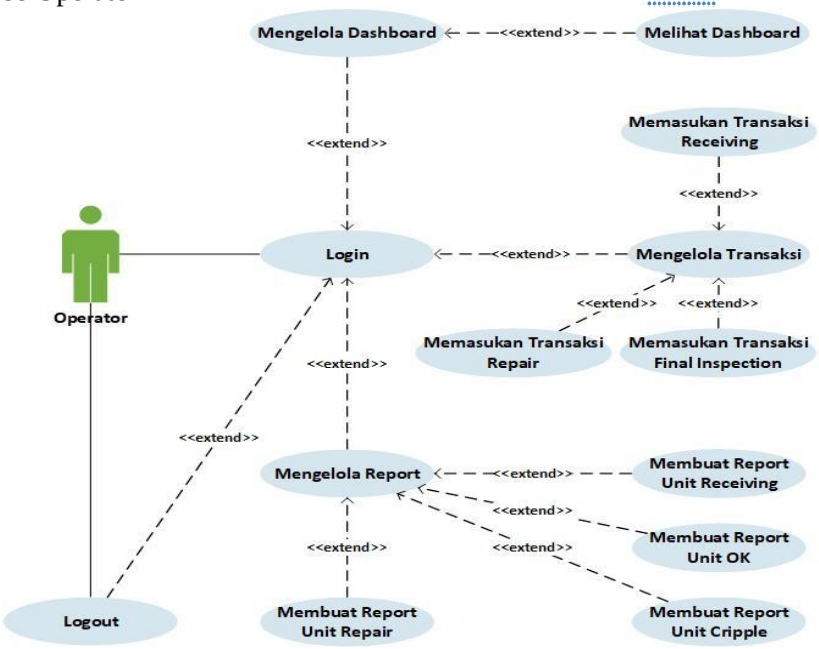

Figure 1. Use Case Diagram Operators

The picture above shows that the operator logs into the Post Production Options system, selects the receiving menu for incoming unit data input, selects the final inspection menu for data unit input ok, cripple or reject and selects the repair menu for input data unit reject.

b) Use Case Admin

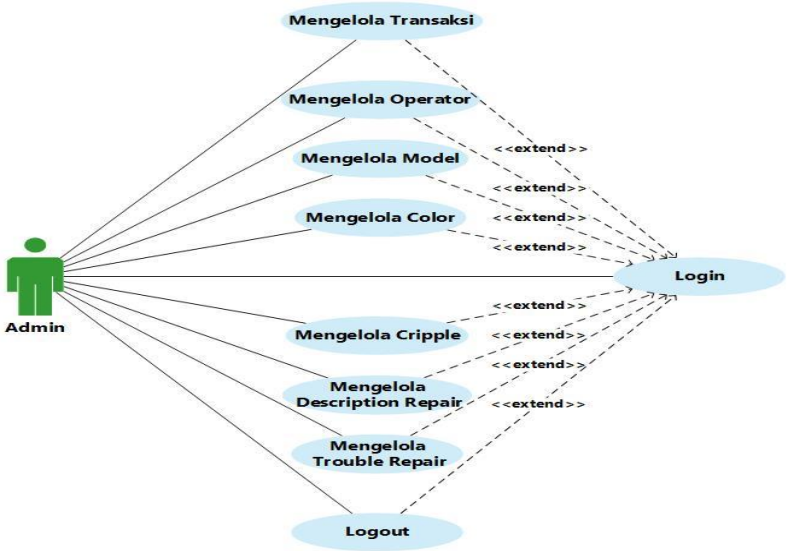

Figure 2. Use Case Diagram Admin

The picture above shows the admin login to the Post Production Options system. Admin can add, delete, change all transaction data (receiving, final inspection and repair). Admin can add, delete, change all master data (user, model, color, cripple, trouble repair and repair description). Admin can view and print unit (car) data transaction reports.

3.3. Entity Relationship Diagram

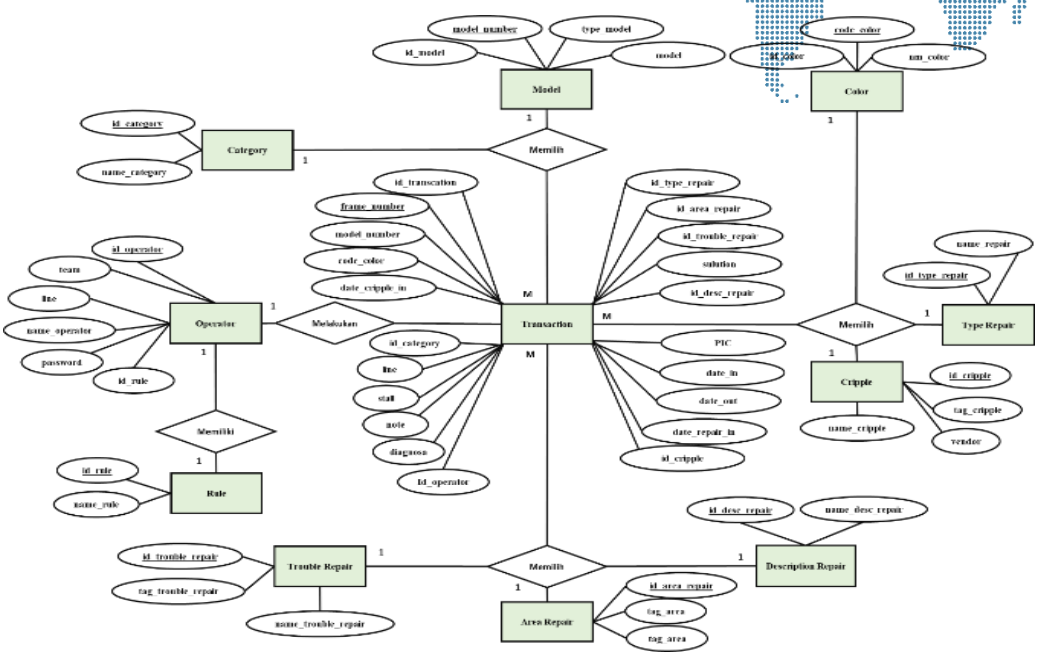

Figure 3. Entity Relationship Diagram

3.4. Logical Record Structure

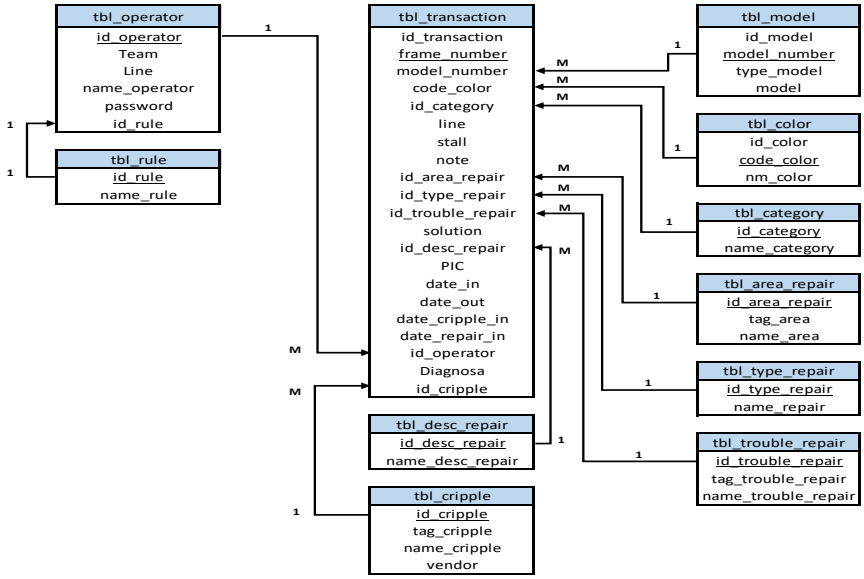

Figure 4. Logical Record Structure

3.5. Activity Diagram

a) Activity Diagram of Receiving Transactions

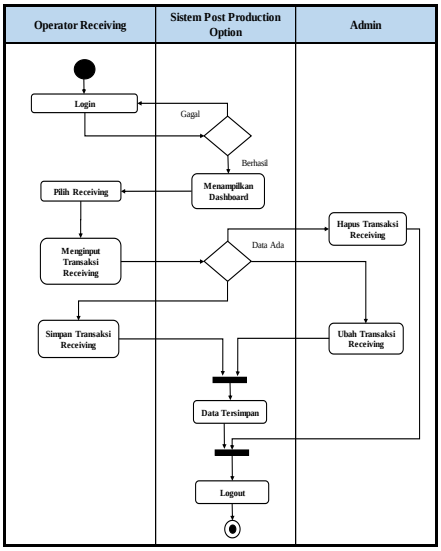

Figure 5. Activity Diagram of Receiving Transactions

b) Activity Diagram of Final Inspection Transactions

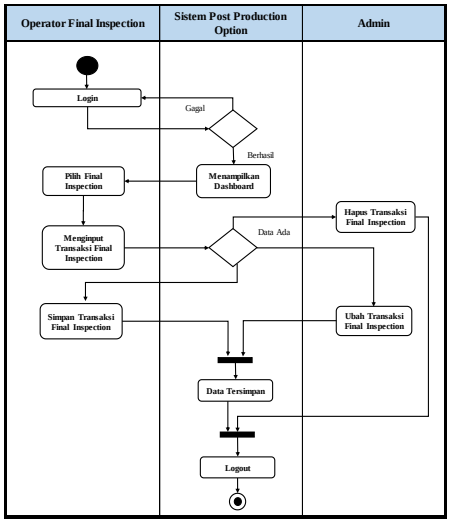

Figure 6. Activity Diagram of Final Inspection Transactions

c) Activity Diagram Transaction Repair

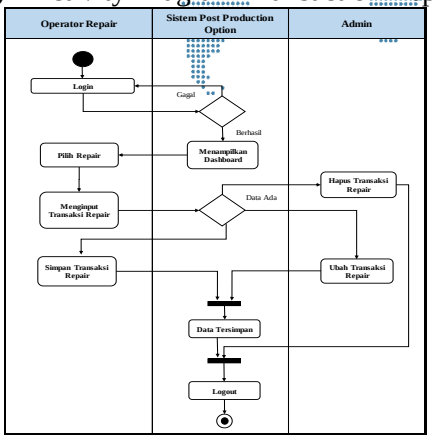

Figure 7. Activity Diagram Transaction Repair

d) User Data Management Activity Diagram

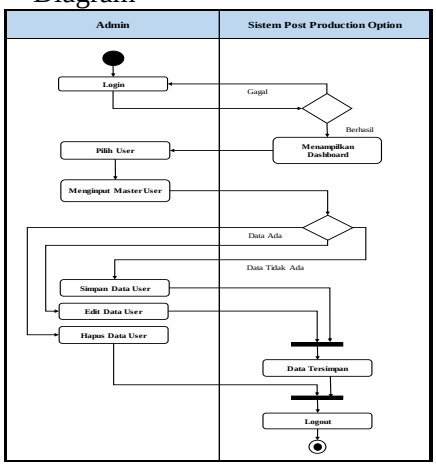

Figure 8. User Data Management Activity Diagram

e) Activity Diagram Data Model Management

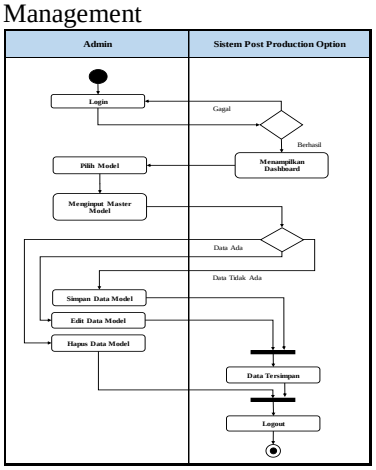

Figure 9. Activity Diagram Data Model Managemen

f) Activity Diagram of Data Color Management

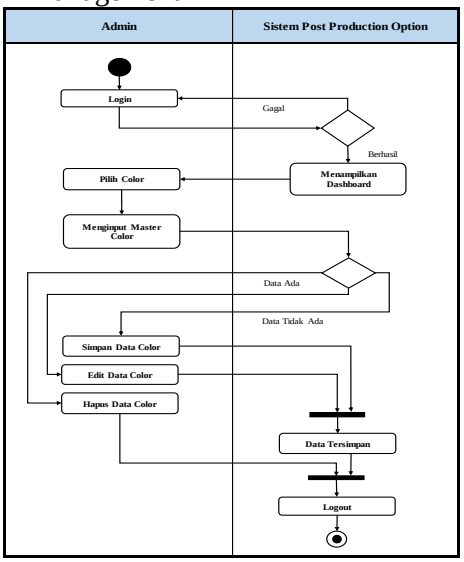

Figure 10. Activity Diagram of Data Color Management

g) Activity Diagram of Cripple Data Management

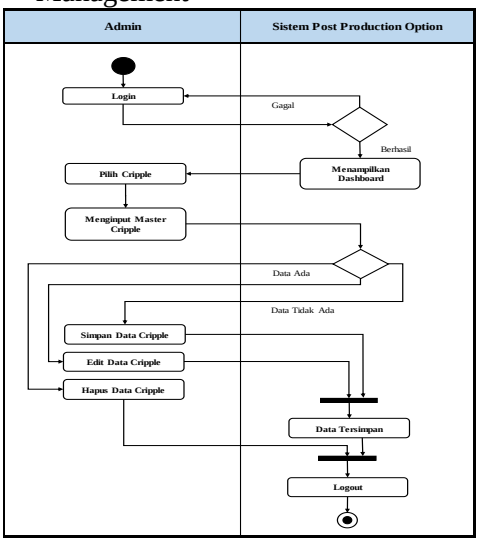

Figure 11. Activity Diagram of Cripple Data Management

3.6. User Interface

a) Login Page

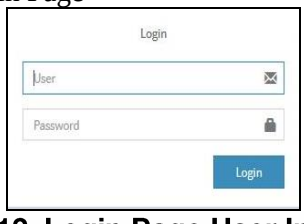

Figure 12. Login Page User Interface

b) Main Page

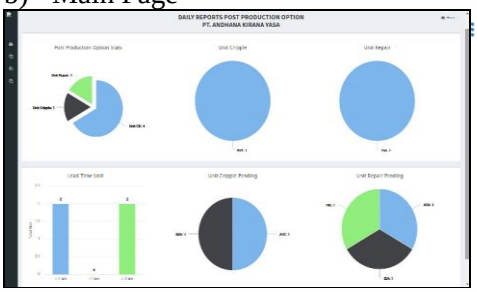

Figure 13. Main Page User Interface

c) Receiving Transaction Page

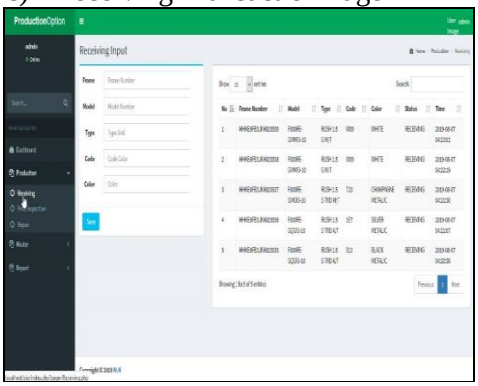

Figure 14. Receiving Transaction User Interface

d) Final Transaction page

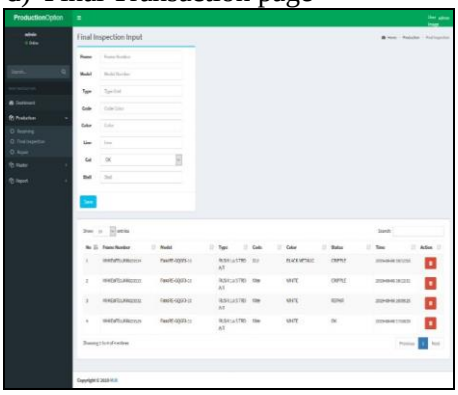

Figure 15. Final Inspection Transaction User Interface

e) Repair Transaction page

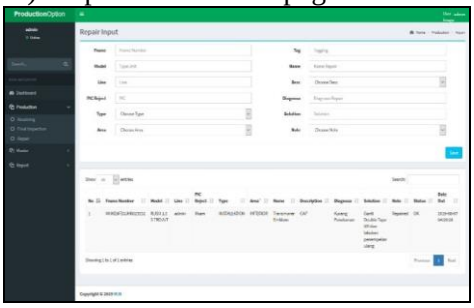

Figure 16. Repair Transaction User Interface

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f) User Data Page

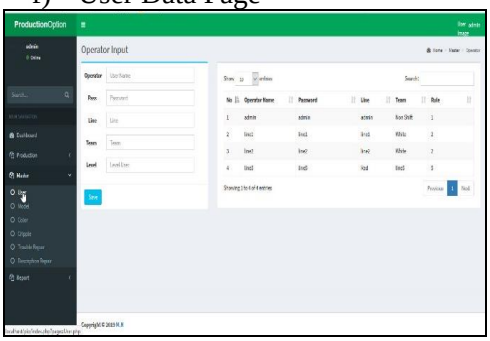

Figure 17. User Data User Interface

g) Data Model page

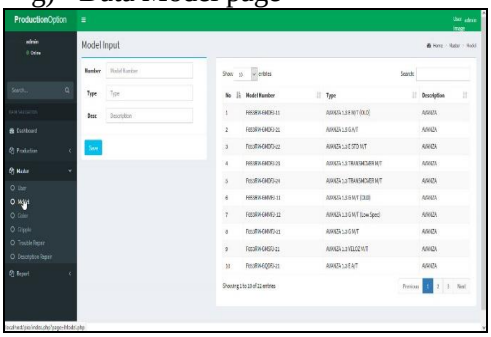

Figure 18. User Interface Data Model

h) Data Color Page

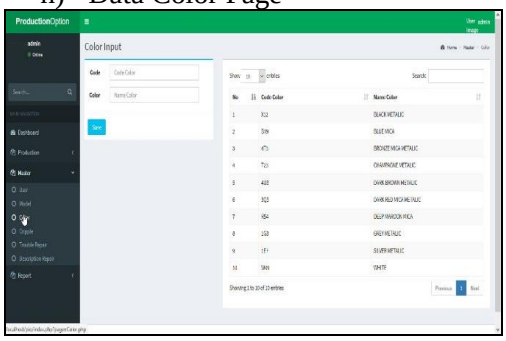

Figure 19. User Interface Data Color

i) Cripple Data Page

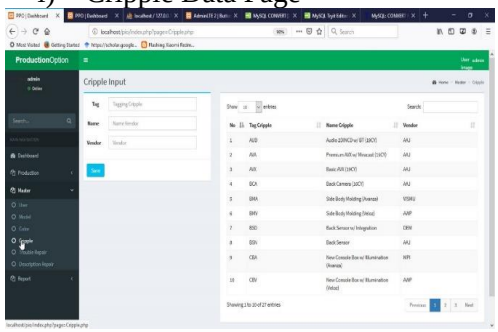

Figure 20. Cripple Data User Interface

4. Conclusion

The conclusion of the study, entitled: "Real Time Monitoring Information System for Unit Production Using the Waterfall Method at PT. Andhana Kirana Yasa "as follows:

a) This website-based application makes it easy for work leaders to directly monitor the progress of unit (car) production achievements, such as the achievement, status of the unit (car) and the lead time (lead time) of the unit (car) from receiving to final inspection. So that if there is a condition of upnormality such as a reject unit and cripple unit, it can be handled directly.

b) Make it easier for operators to make reports on production results (receiving, final Inspection, repair and cripple). Providing repair unit data (containing the name of the rejecting operator) which will be used by the work leader as a data source to evaluate the performance of production operators.

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