



WAREHOUSE RENTAL APPLICATIONS DEVELOPMENT AT MULTI INDAMIL STIA HUTAMA

¹Rahmat Tulloh and ²Indra Ranggadara

^{1,2}Faculty of Computer Science, **MercuBuana University**

Jl. Raya Meruya Selatan, Kembangan, Jakarta, 11650

141813120145@student.mercubuana.ac.id, indra.ranggadara@mercubuana.ac.id

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Abstract –In a company or vendor of inventory systems, it is necessary to carry out the productivity of a company, but it requires a large cost to build it. Multi Indamil Stia Hutama builds a system of inventory or warehousing to help vendors carry out their business needs and problem solving in manufacturing. Web application that can support the process of entering and leaving goods. SDLC Waterfall method is a method that the author chooses to develop from a web application that the author has built with this method the author is helped to do that is by making a warehouse rental system as a solution to monitor or regulate the entry and exit of goods effectively and efficiently. Already using this system with data of more than a thousand products per day. In designing a warehouse rental inventory system uses the UML (Unified Modeling Language) design process in order to identify a system development. Then the results obtained from this warehouse leasing system can help vendors in managing their products to help the productivity of their companies so that vendors no longer need to create a system and build a physical warehousing system for transactions and leasing their own products by the system provide by the company. Product management is easy because it has available shelves and product settings so that the operator of a company or vendor who hires can monitor the data in and out of goods per day with guaranteed data integrity so that there is no error recording an item or product coming out or entering the warehouse because it has been recorded in the system database owned by the company.

Keywords: Application; Database; Rental; SWOT; UML;

I. INTRODUCTION

Multi Indamil Stia Hutama is a company that provides a system of inventory leasing or warehousing in the form of shelves arranged to supply goods or products to vendors in fulfilling productivity, especially for monitoring goods in and out per day. At present this company does not have an application for leasing because leasing is done using only an order system by telephone, therefore it the rapid development of ICT [1] to make a system design for developing warehouse rental application as a solution for the mobility of a company or vendor that requires a system that can monitor goods out in use the web application. The use of a web application system is not limited to the warehouse head only. The other hand this application could help to [2] all staff in the company can access the inventory database system, such as access to and out of company goods. In this system staff who do not have an account can register through the warehouse head. In this design with the UML approach as the basis for designing. UML the method is used to model a system that uses an object-oriented concept. The UML is a language that has become a standard in the industry for visualizing, designing and documenting software systems [3] and for development use SDLC. Then Based on the background described above, the outline of the problem is how to design a web-based application that can monitor warehouse rental data.

With the design of applications that are made so that product management is easy because there are already available shelves and product settings so that the operator of a company or vendor who hires can monitor the data in and out of goods per day with guaranteed data integrity so that there is no error recording an item. In order for the research conducted to be more directed in accordance with the objectives of the research, and to facilitate the collection and processing of data analysis and to draw conclusions, the scope of the research is limited and assumed (1) This application is designed not to regulate payments for ongoing transactions. (2) The application that is built does not accept leasing space for the foreseeable future, can only conduct warehouse rentals for the time being (3) Only can be accessed by employees and clients who have access rights (4) Applications can only be accessed through a web browser and mobile web with internet access (5) Does not explain the entire corporate structure.

II. THEORY FUNDAMENTAL

A. System Definition

Hutahaen[4] said that under the system is a network of procedures that are interconnected, gathered together to carry out activities or to carry out certain targets. Another definition from Hardiman [5] of system theory is a theory that tries to explain order. The word system itself comes from Greek to system which means arrangement. The system can be defined as a whole in the sense of unity that is more than just the sum of its parts, a number of elements and also the relationships between them with each other.

B. Information Definition

According to Tata Sutabri[6] defines information is data that has been classified or processed or interpreted for use in the decision-making process. Processed data is not necessarily enough to become information. To be an information, then the processed data must be really useful for the users. To be useful, information must be supported by three pillars, namely:

- a) Right to the Person or Relevant: relevant means that information has benefits for the wearer because the relevance of information systems for each person to one another is different.
- b) Timely: Timely, means that the information coming to the recipient of the information may not be too late. Because the outdated information is no longer useful.
- c) Right Value or Accurate: Accurate means that information must be free from errors and not misleading.

C. Information System

According to Tata Sutabri[6], defining information systems is a system within an organization that brings together the daily transaction processing needs that support the organization's operational functions that are managerial with the strategic activities of an organization to be able to provide reports needed by certain outside parties. provide information for all levels in the organization whenever needed. This system stores, retrieves, changes, manages and communicates information received using information systems. Based on the above theories, we can conclude that information systems are a collection of components can be human, software, hardware, communication networks and interconnected data sources that collect and deliver data and information by providing feedback media to convey a purpose.

III. METHODOLOGY

According to Sugiyono[7], the research method is basically a scientific way to obtain data with specific purposes and uses. Based on this there are four key words that need to be considered, namely the scientific method, data, goals and uses. Whereas according to Darmadi[8], the research method is a scientific way to obtain data for specific purposes. The scientific method means that the research activities are based on scientific characteristics, namely rational, empirical, and systematic. Based on the explanation above, it can be concluded that the research method is a scientific way to obtain data with specific purposes and uses.

A. Collecting Data Method

The collecting data used in this research are[9]:

- 1) **Interview:** interview is a meeting of two people to exchange information and ideas through question and answer, so that meaning can be constructed in a particular topic .
- 2) **Observation:** observation is a complex process, a process composed of various biological and psychological processes. Two of the most important are the processes of observation and memory
- 3) **Documentation:** document is a record of past events. Documents can be in the form of writing, images, or monumental works from a person. Documents in the form of writings such as diaries, history of life (life histories), stories, biographies, regulations, policies. Documents in the form of images such as photos, live images, sketches and others. Documents in the form of works such as works of art, which can be in the form of pictures, sculptures, films and others. Document study is a complement to the use of observation and interview methods in qualitative research.

B. Population and Sample

The population of this research is all employees in Multi Indamil Stia Utama, and this research the sampling use from sub division inventory and warehousing with the following on below:

Table 1. Sampling from Population

| No | Sub Division | Total Employee |
|----|----------------------|----------------|
| 1 | Manager | 1 people |
| 2 | Supervisor | 3 peoples |
| 3 | Product Maintenance | 20 peoples |
| 4 | Staff Administration | 4 peoples |

From the samples we took by interviewing several people in different divisions, we interviewed several speakers. We chose the criteria of product maintenance staff who were able to manage the expenditure and receipt of goods in large quantities. From the interviews we conducted, the number of items that could be accommodated per day was around 1000 products with around 300 products, then the results product quantity and product variant reports are recapitulated and reported to supervisors, from the manager's side there are no complaints and are able to manage products in and out of the day in large numbers.

C. Research Step

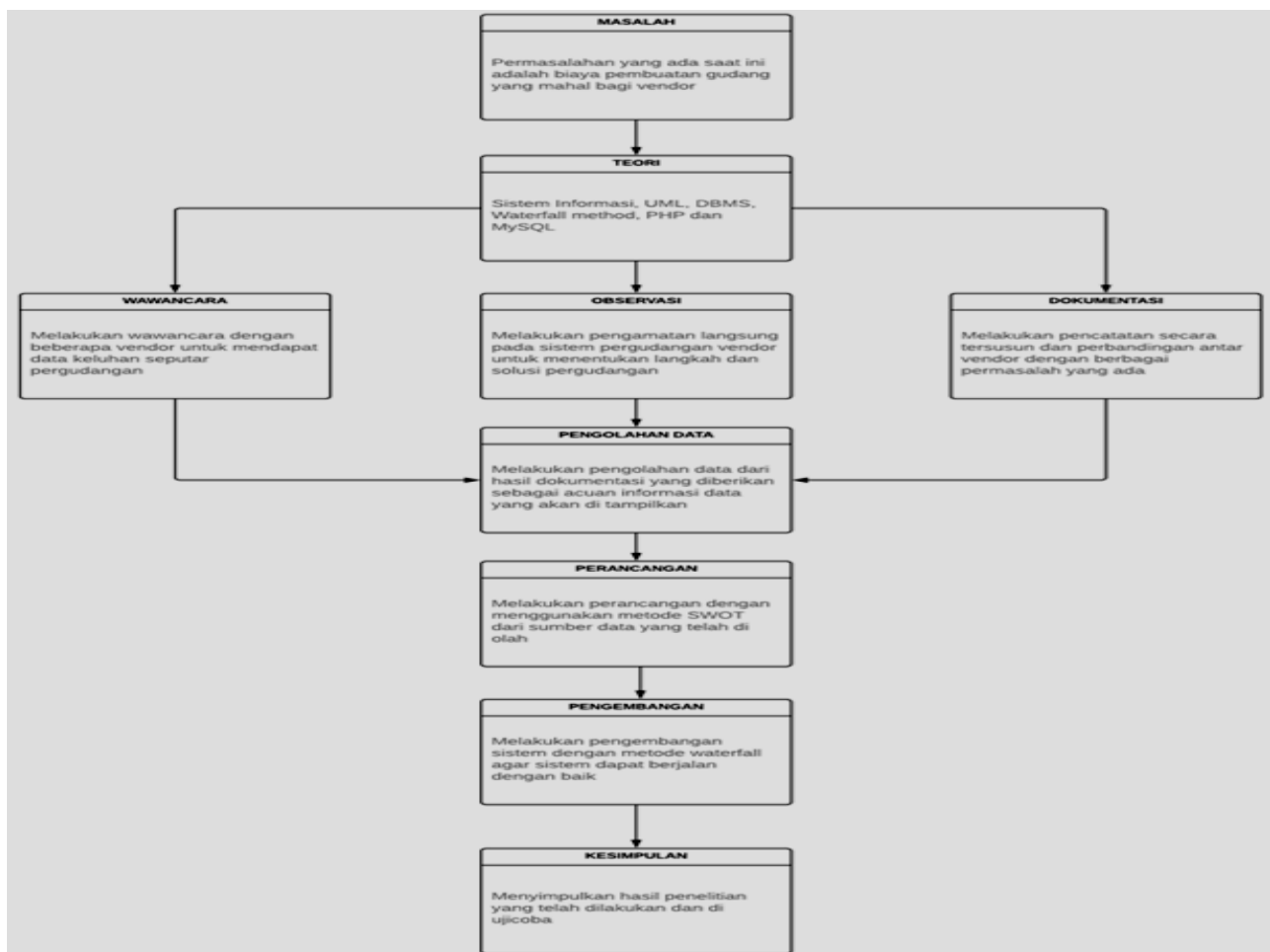


Figure 1. Research Step

Figure 1 explain, the first step is to determine the topic to be examined, then determine the formulation of the problem from the chosen topic and make a literature review that comes from the theory of books or journals. Then studying previous research also compares with the research we do and makes the goals and benefits of the research conducted.

To further collect research data by looking for primary data, namely by observation or interview. Look for secondary data from books and journals. And analyze the data that has been collected using the SWOT method and create a design method with UML and determine the development method with SDLC with the waterfall model. The final step is to make results and discussion of the research carried out and conclusions and suggestions from the research that has been done.

D. Designing Method

The writer is using the UML (Unified Modeling Language) as a design method; the method is used to model a system that uses an object-oriented concept. The UML is a language that has become a standard in the industry for visualizing, designing and documenting software systems [3].

E. Analysis Method

Business can be identified by using analysis to identify strengths, weakness, opportunities, and threats that can be identified by SWOT analysis. SWOT analysis compares between external Opportunities and Threats factors with internal Strength and Weakness factors [10].

F. Development Method

SDLC Model (System Development Life Cycle) Waterfall is often also referred to as a linear sequential model or classical life path. The Waterfall Model provides a sequential or sequential software lifecycle approach in analysis, design, coding, testing and maintenance [11].

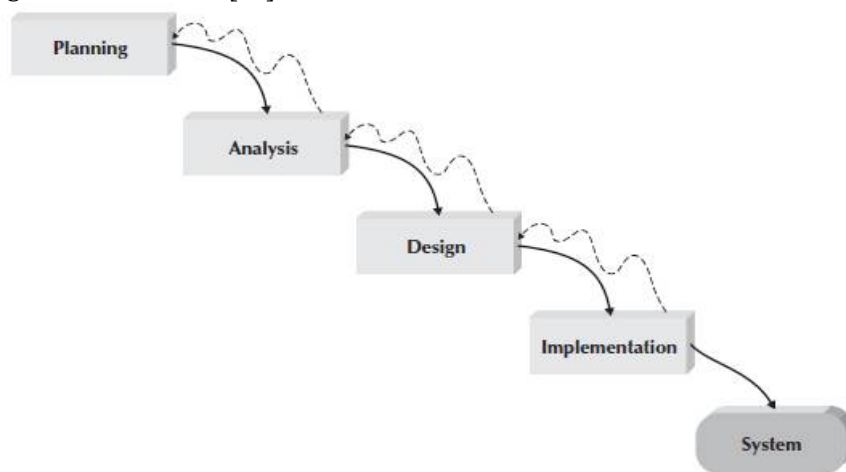


Figure 2. SDLC Scheme

In principle, each step in the Waterfall method produces one or more approved documents. The next stage cannot begin before the previous stage is completed. Following are the stages of the Waterfall method:

- a) **System Planning:** The planning process is the earliest process that must be carried out before dealing with existing problems. In this plan, data collection is also needed which is needed by the system, which will then be processed further in the analysis process. This data collection is obtained by observing the running system and also interviewing the subdivisions involved in system development
- b) **Software Requirement Analysis :** At this stage of the software requirements analysis, an understanding of system development will be carried out while identifying what information needs are needed and what outputs are expected. At this stage an understanding of the processes that occur in managing customer data is also carried out, as well as the scope of the system scope to be developed along with its application. In this research the author uses the Windows 8 Operating System with an Intel i7 processor and 4GB RAM and uses Google Chrome version 55.0.2883.87 m (64-bit) to run this application.
- c) **System Design:** At this stage the makes an application design to determine software requirements from the needs analysis stage to the design representation so that it can be implemented into a program at a later stage. In this research, the author will use UML (Unified Modeling Language), Use Case Diagrams, Activity Diagrams, Sequence Diagrams, and Class Diagrams.
- d) **Implementation:** At this stage the makes an application design to determine software requirements from the needs analysis stage to the design representation so that it can be implemented into a program at a later stage.
- e) **Testing:** At this stage the will test the system that has been made. Testing focuses on software in a logical and functional manner and ensures that all parts have been tested. This is done to minimize the possibility of errors and ensure that the output produced is as desired. For the testing phase later the compiler will use the Black Box method

IV. RESULT AND DISCUSSION

A. Analysis of Current Process

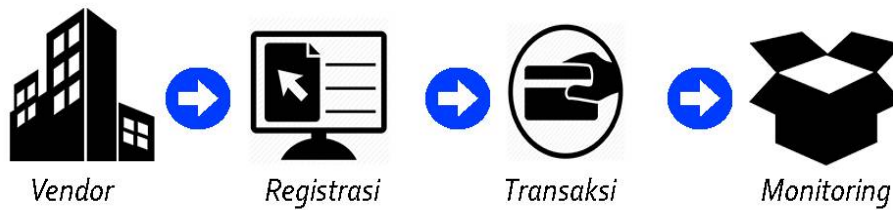


Figure 3. Analysis of the running process

Multi Indamil Stia Hutama has procedures for vendors who want to rent a warehouse, here is an explanation of the procedure:

- a) Vendors who want to rent warehouses must register first through the web of Multi Indamil Stia Hutama
- b) Then the vendor registers and fills in company profile data
- c) After successful registration, vendors are required to pay warehouse rental fees
- d) The vendor waits for the validation process from the admin side
- e) After validation, the vendor is given access rights to manage the product in the warehouse that has been rented

For the next discussion we go into Analysis of a system, which we will discuss is the SWOT Method. Because this SWOT analysis is often used and is very familiar in solving a problem

Table 2. SWOT Analysis

| No | Aspect | Current Business Process | System Proposed |
|----|---------------|---|---|
| 1 | Strengths | <ul style="list-style-type: none"> - Easy product monitoring. - integrity of valid item logins - regulation of large-scale products - easy transaction | <ul style="list-style-type: none"> - Add the number of admins to monitor transactions - Add product and rack codes - Rack distribution for large and small scale |
| 2 | Weaknesses | <ul style="list-style-type: none"> - Distribution of goods Large quantities really need to be properly recorded on the system - Encoding of items that are not unique causes data confusion | <ul style="list-style-type: none"> HR on monitoring items must be available for rack checking and transactions |
| 3 | Opportunities | <ul style="list-style-type: none"> -The cost of making warehouses is expensive, but can be the basis for making solutions by developing applications - For startup vendors it does not become a big loss if the company collapses | <ul style="list-style-type: none"> For the target market at least addressed to startup vendors / agents |
| 4 | Threat | <ul style="list-style-type: none"> - Theft of goods by tenants / employees - Goods in and out of damage during the trip will be an issue for those who rent out warehouses | <ul style="list-style-type: none"> Proper processes or procedures are needed to ensure that road damage is not the responsibility of renting out warehouses |

B. Requirement Analysis

When identifying problems from a vendor / startup that will lease a warehouse, it is then carried out to make an analysis for the system requirements to run effectively and efficiently, namely:

- a) Creating a web application that can be accessed by vendors.
- b) Designing shelving so that it can be managed easily.
- c) Create a dashboard for monitoring incoming and outgoing data for vendors. Make a daily report for goods in and out for vendors

Supporting features in the application that can support and fulfill the need for document management to be more efficient and effective.

- a) Dashboard menu: vendors can monitor the number of items entering and leaving in a day
- b) Product menu: Vendors can input any product data that they will put in the warehouse along with the quantity

- c) Inbound Menu: Detail list of items entered per day along with their quantity.
- d) Outbound menu: Details of items that come out per day along with their quantity
- e) Transaction Menu: History of warehouse rental payments that have been paid.
- f) Invoice Menu: Bills for vendors for subsequent rental fees

C. Use Case Design

Based on the analysis of the need to create a system, it is necessary to describe a design of a system to facilitate the development process. This warehouse leasing system will use system design methods using the UML (Unified Modeling Language) method. In this design analysis, several stages will be made, the designing with Use Case Diagrams, Sequence Diagrams, and Class Diagrams, here the sample designing.

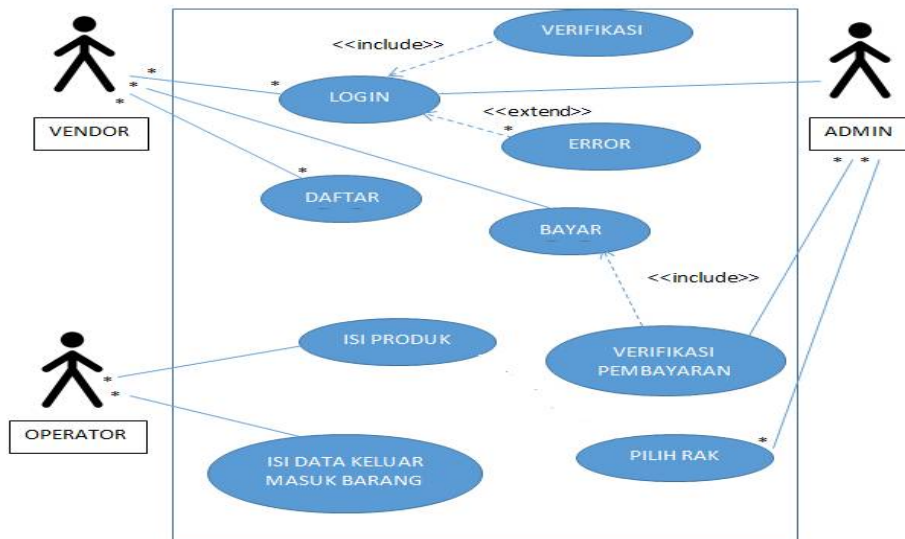


Figure 4. Use Case Diagram

Figure 4 can see that there are 3 actors involved in the system, namely vendors, operators and admin, then we see there are several entities for registration and payment from vendors, admin only verifies the payment data that is done to then choose the shelf for the vendor.

D. Database Structure

In the implementation phase, what is done is the implementation process of the results of system design. The results of this stage are from a system that processes data and information that has been going well. The following describes and prepares the database implementation of the design that has been made:

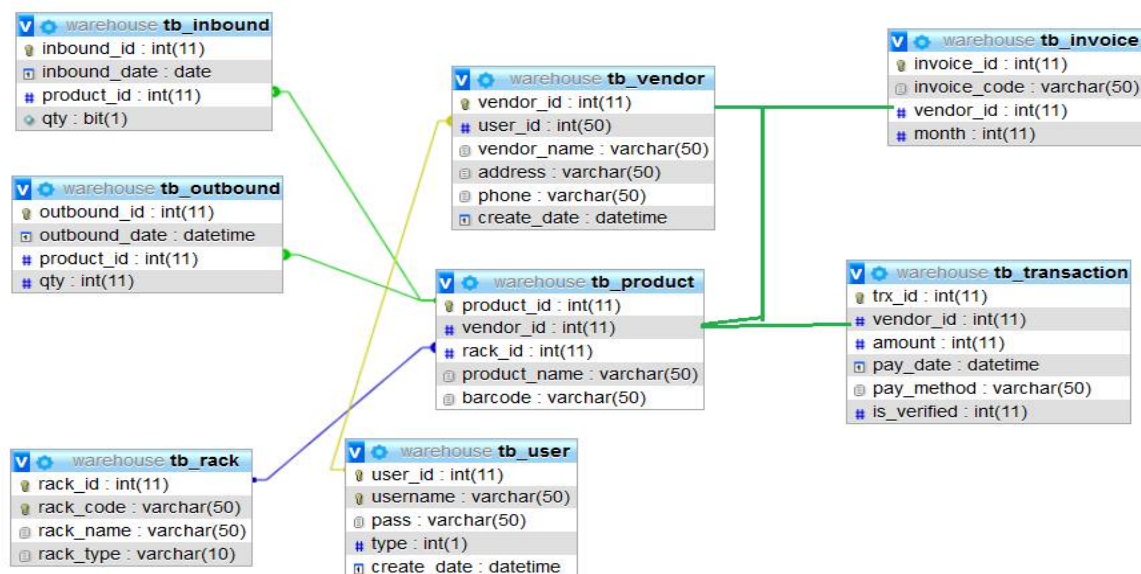


Figure 5. Database Structure

E. User Interface

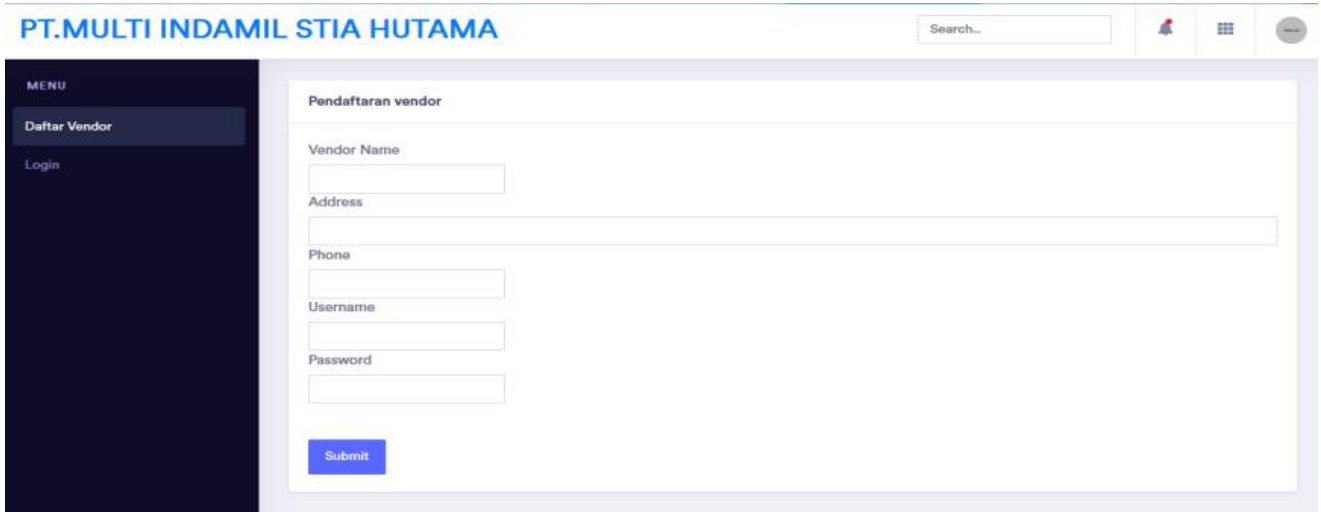


Figure 6. Registration for Vendors

Figure 6 show an application page for registration for vendors who want to rent a warehouse at Multi damil Stia Hutama and to get a login on the website must type the website address of this application then the web browser will direct directly to the login page.

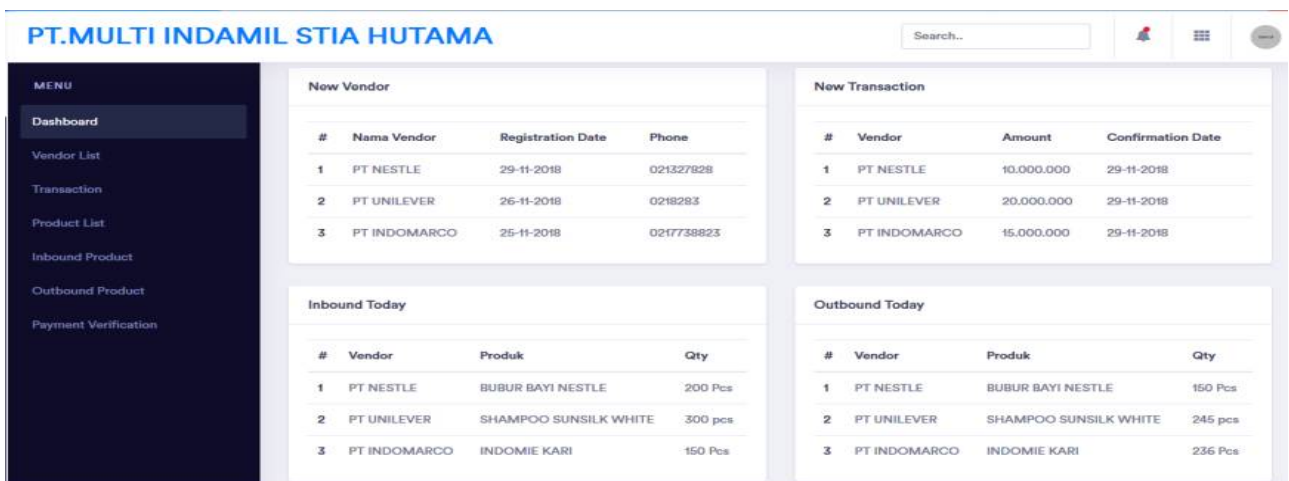


Figure 7. Dashboard

Figure 7 show the main page display or dashboard containing a new vendor, new transaction, out bound or inbound. To enter this page must log in with the registered admin or vendor data first.

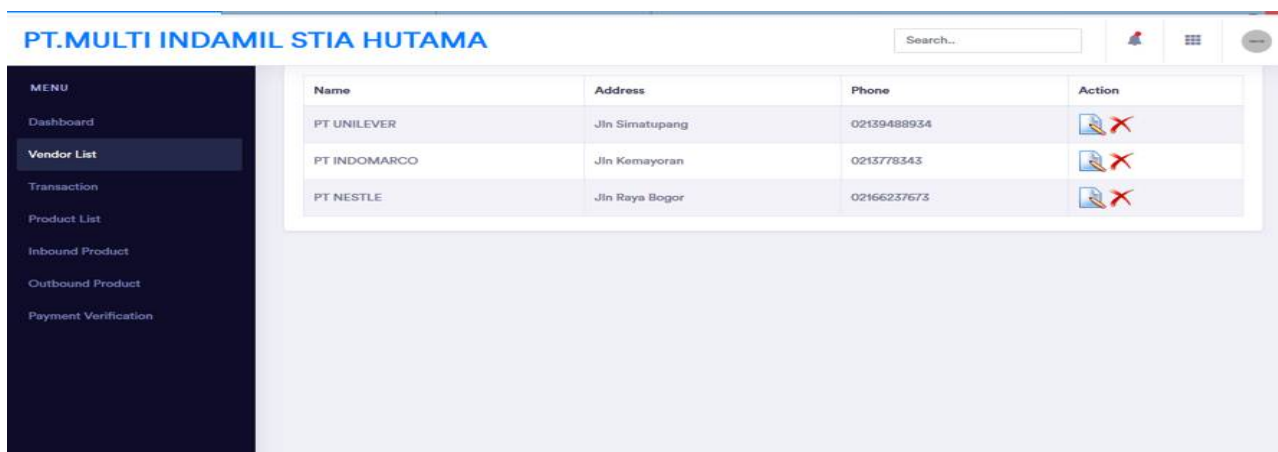


Figure 8. Vendor List

Figure 8 show a display of the application page that displays vendors who have registered or have collaborated. to see this page must be logged in as an admin user.



| Name | Date Paid | Amount | Verified |
|--------------|------------|------------|----------|
| PT UNILEVER | 29-11-2018 | 10.000.000 | ✓ |
| PT INDOMARCO | 29-11-2018 | 20.000.000 | ✓ |
| PT NESTLE | 29-11-1987 | 15.000.000 | ✓ |

Figure 9. Vendor List

Figure 9 show a transaction page application that has been verified and done by the admin user.

F. Scenarios and Test Results from the Application

The scenario and the results of testing this application using the black box testing method..

| No | The tested interface | Testing Scenario | Expected results | Test result |
|----|--|---|---|-------------|
| 1. | Initial View | Admin opens the browser and enters the application's website address. | Display the login page | Success |
| 2 | Display Dashboard | Admin login by entering username data and password | Admin login then redirect directly to the dashboard page | Success |
| 3 | Display Vendor List | Admin pressed the vendor list button | Displays pages of vendors who are actively renting warehouses | Success |
| 4 | Transaction view | Admin pressed the Transaction button | Displays a verified transaction page | Success |
| 5 | Product Display | Admin presses the product button | Display product pages that have been filled in by the | Success |
| 6 | Display of inbound / outbound products | Admin presses the inbound / outbound button | Displays the product's outbound / inbound pages, which are goods in and out | Success |
| 7 | Display of verification payment | Admin presses the verification button payment | Displays unverified payment data | Success |
| 8 | Payment verification | Admin verifies payment | Verify the payment which will then appear on the | Success |

Namely software testing in terms of functional specifications without testing the design and program code. Therefore the authors use the method of black box testing to facilitate the author in testing applications that have been built without testing the design and coding but only testing how the application has been running in accordance with the process that has been planned and desired by all parties. The following is a scenario and application testing using the black box testing method

V. CONCLUSION

Based on the results of the implementation of the design that has been done, then the conclusion of this research:

- 1) Design of Warehouse Rental Application at Multi Indamil Stia Hutama has been successfully carried out by using SWOT analysis on business processes before and its proposals as well as the design method of UML (Unified Modeling Language) contained in various kinds of diagrams to simplify describing the characteristics of this application.
- 2) Warehouse Rental Application at Multi Indamil Stia Hutama has been successfully carried out using the waterfall development method; this built application successfully made product management and made an output for warehouse rental information needs. effective and efficient, so that vendors no longer need much money to build their own warehousing system

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