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Information and Communication Technology to Support Supply Chain Management

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ABSTRACT

Distribution activity is a complex process. It is not only limited to physically distributing products, but also includes information channels, payments and promotions. The need for a distribution management system is unavoidable. Most of the manufacturing suppliers, principals and distributors, retailers face challenges in managing inventory, ensuring goods availability, efficiency in warehousing, increasing the ability to reach customers. The purpose of this research is to build a goods distribution management system in processing data and information to support good supply chain management, in the sense that the resulting information can be processed quickly, efficiently and can reduce the occurrence of various errors, in an effort to provide convenience in providing information and managing the process of recording data in the form of a set of activities. In the software development method, the waterfall method is used, in which this method is divided into several stages, analysis, design, coding and testing. The conclusion of this study refers to the formulation of the problem and research objectives, that's: distribution management system has been produced to support supply chain management; the system can help and accelerate existing business process mechanisms by adding supply chain management features and sales and expenditure reports.

KEYWORDS: *Distribution, Supply Chain, Information Technology*

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INTRODUCTION

Revolution 4.0 has occurred on a global scale and technology 4.0 has dramatically impacted the economy and society in Indonesia. In particular, business is directly affected because technology 4.0 presents both opportunities and challenges for the Company. Updating new technology trends, changing management methods, automating systems, updating and processing data quickly are business goals.

In the field of distribution, application solutions are now considered as the most effective tools to support companies to systematize all processes from production, distribution and business, maintaining position and increasing competitiveness in the existing market. Distribution activity is a complex process. Processing of data and information at this time is generally done manually or relying on human ability to process information. Thus there is a delay in the processing of information and allows the occurrence of data or information errors.

Based on these problems, to place goods and services in the right place, the right quality, the right quantity, the right price and the right time, the right distribution channel is needed, the company must really choose or select the distribution channel to be used. The need for a distribution management system is unavoidable. Most of the suppliers are manufacturers, principals and distributors, retailers are facing challenges in managing inventory, ensuring the availability of goods, efficiency of warehousing, increasing the ability to reach customers.

RESEARCH METHODOLOGY

The method used is research and development. According to Sukmadinata (2011) Research and Development is a process or steps to develop a new

product or perfect an existing product that can be accounted for. System analysis carried out processes related to the initial stages of research methods. With the planning stages of the design as follows:

1. Method

In the research method taken using the waterfall model. In the waterfall model there are several stages, analysis, design, coding and testing.

2. Testing.

Validation test is carried out to check the software as a whole. At this test stage, the software is installed on the computer. At this stage the software is tested functionally and records errors that occur.

RESULTS AND DISCUSSION

Supply Chain Management

The supply chain is the relationship between companies that develop joint products and deliver them to end users. These connected companies are usually supported by supporting companies such as suppliers, factories, stores, distributors and logistics service providers. Supply chains usually have three types of flows that need to be managed. The first is the flow of goods that flows from ascending to descending. One example is raw materials sent by suppliers to factories. When a product is ready, it is sent to distributors, retailers and users. The second is the flow of funds and others from downstream to upstream. Three flows of information that can occur from ascending to descending and vice versa. Information on the availability of manufacturing facilities owned by suppliers is often needed by factories. Suppliers and consignees often request information about the status of shipments of raw materials.

Database

Data is a record of a set of facts that represent an object. The data is raw and has no context. Base on the other hand can be understood as a gathering place or representing an object.

User Acceptance Test

User Acceptance Test (UAT) is a user test that when the test results are combined, creates documentation that proves the device is expandable and acceptable to the owner, by reviewing the evaluation results to meet the owner's needs.

Design

General system design can be in the form of context diagrams, Data Flow Diagrams (DFD) and tiered charts while detailed system design is a global system overview that describes the physical data of a system which includes the relationship between entities (Entity Relationship Diagram) and flow charts (flow chart).

The components designed in this stage include:

1. The design of the data model which is a data storage and management system which is the main core of this system to form a dynamic information system. This design includes Entity Relationship Diagram (ERD) and database table design.
2. Dynamic system design which is a system component that deals directly with users interactively, including user interface design and menu structure. The process model is described in the form of context diagrams and Data Flow Diagrams (DAD) or Data Flow Diagrams (DFD). Context diagram is used to describe the library data processing information system in an outline or overall. This diagram also describes the input-output relationship between the system and the outside world (outer unit). This structured approach describes the system first in outline and divides it into more detailed parts.

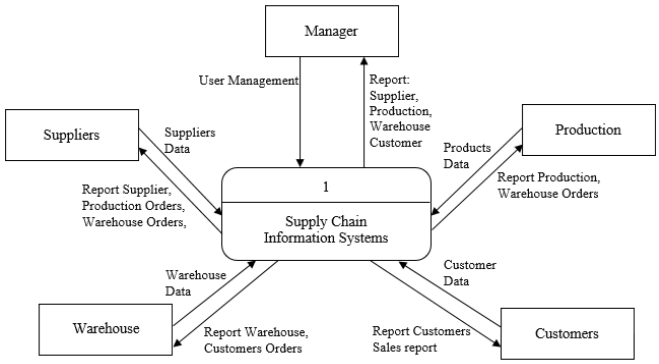

Figure 1 Context Diagram

Coding

Coding or implementation is used to implement the interface design into the program so that the goods distribution management system in support of supply chain management can have a clearer picture.

Architectural Design

After the system is analyzed and designed in detail, the system implementation stage is the stage of putting the system so that it is ready for operation. System implementation is also a process of making and implementing a complete system, both hardware and software.

1. Front Page

On the main page, on the left displays the menu and on the right products, suppliers, customers, users, packers, shipments, invoices and purchases (payment).

2. User View

User List Menu to display user data, add, update or delete user data. Used for manager to set user permissions.

3. Supplier View

Supplier menu to add, update, or delete data and information related to suppliers and orders from the production and warehouse sections.

4. Production View

Production Menu to add, update, or delete data and information related to production/products and orders from the warehouse section.

5. Inventory View

Inventory menu to add, update, or delete data and information related to production data, customer parts and inventory.

6. Customer View

Customer menu to add, update or delete data and information related to customers, sales, invoices and sales reports.

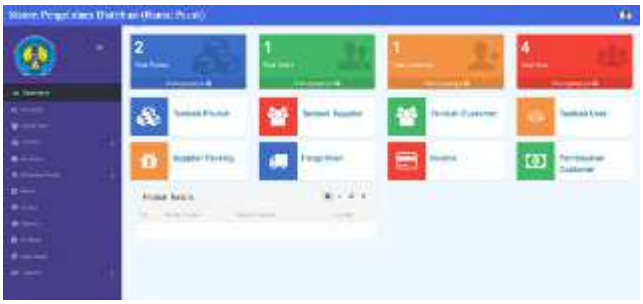

Figure 2. Home Dashboard

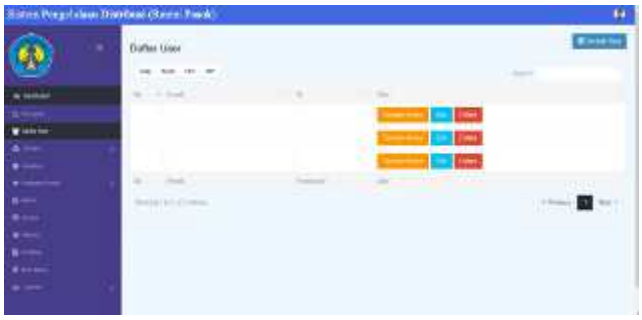

Figure 3. User Page Display

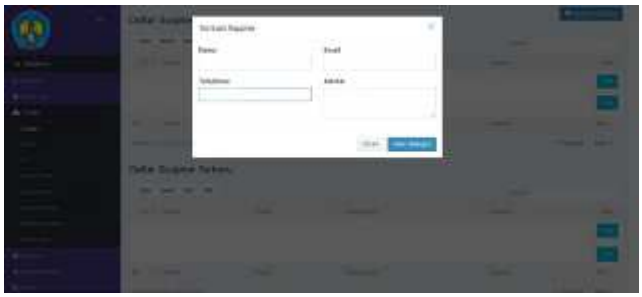

Figure 4. Supplier Page Display

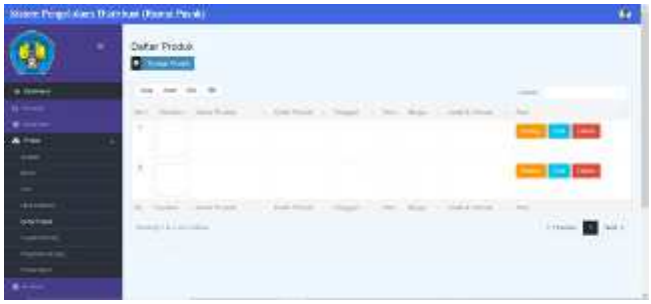

Figure 5. Production Page Display

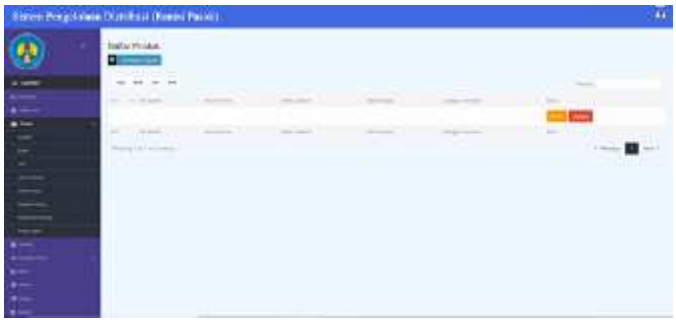

Figure 6. Inventory Page Display

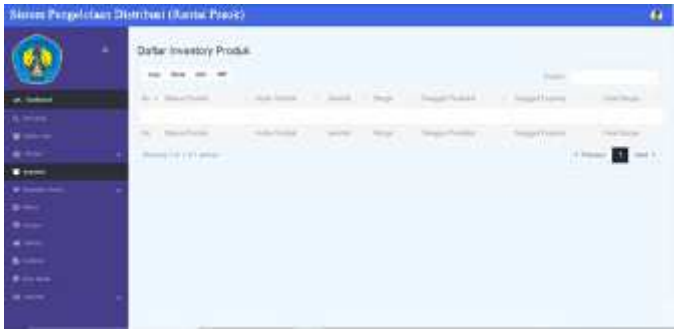

Figure 7. Inventory Page Display

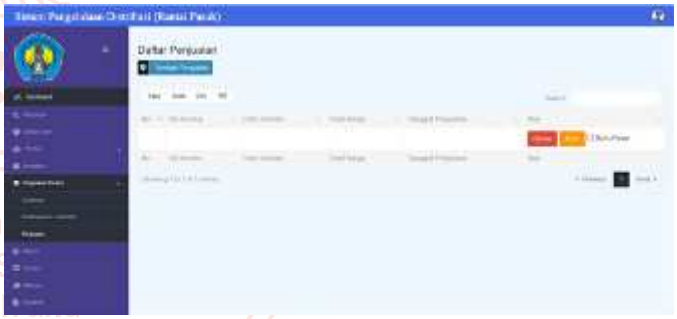

Figure 8. Customer Page view

Evaluation

Coding or implementation is used to This stage is the last stage which aims to make improvements to the application if problems or malfunctions are found before the application is actually implemented and tested. At the evaluation stage the author uses a form of summative evaluation, namely an evaluation carried out after the latest version is implemented and aims to assess the effectiveness of the application as a whole.

CONCLUSION AND SUGGESTIONS

Based on results and discussion from this research, the following conclusions can be follows:

1. Distribution management system has been produced to support supply chain management.
2. System can help and accelerate existing business process mechanisms by adding supply chain management features and sales and expenditure reports.

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