Design of Palm Oil Transport Information Systems at CV. Simatahari

Putra Mustakim Nasution[1], Hasdiana[2], Nurjamiyah[3]
[1,2,3]Department of Information Systems, Universitas Harapan Medan, Indonesia

ABSTRACT

Transportation is the movement of goods or people from one place to another using a tool or vehicle. Transportation system in the CV. Simatahari is still manual, if the farmer wants to transport palm oil, the farmer first contacts the company via telephone to inform the transportation schedule and address. This often results in mistakes from the company when recording the schedule and address for transporting oil palm. One solution is to create a web-based palm oil transportation information system. The research method used in the manufacture of transportation information systems namely design thinking methods, programming languages using PHP and MySQL are used as databases. The results of this study can facilitate farmers in ordering oil palm transportation in real-time and also can find out information on the price of oil palm per kilo and transportation wages.

Keyword: Transportation System, Palm Oil, Website, Design Thinking

Corresponding Author:
Putra Mustakim Nasution,
Department of Information System,
Universitas Harapan Medan,
Jalan H.M. Joni No. 70C Medan, Indonesia.
Email: putramustakim23@gmail.com

1. INTRODUCTION

Oil palm (ElaeisguineensisJacq.) Is one of the important plantation commodities in Indonesia, because it is a significant source of the country's foreign exchange earnings. This data also shows that the total area of oil palm plantations in Bengkulu Province reached 308,669 ha, with a production of 914,103 tons of palm oil (Waruwu et al., 2018).Indonesia is one of the main producers and exporters of palm oil in the world along with Malaysia. The main product of palm oil is Crude Palm Oil (CPO) (Bakara et al., 2016).

Transportation of fresh fruit bunches (FFB) and loose fruit is a very important activity in the harvest process, so that the oil produced from processing the FFB and loose fruit remains of good quality(Siregar & , Priyambada, 2016).Delays (restants) in transporting FFB to Palm Oil Mills (POM) will affect processing, processing capacity, and peak production quality (Rinaldi et al., 2016). The efficient way of transporting the harvest is also very important to determine the quality of the harvest. An efficient harvest transportation system will have a significant effect on the overall production cost (operation cost)(Hartono et al., 2018).

Based on previous research, (Ovianti & Haji, 2019) have conducted research on "Design and Build Application for Palm Oil Distribution of PT. SteelindoWahana Perkasa, East Belitung Branch "based on web and using the Waterfall system development method. The results of this study indicate that the design of this distribution application can facilitate the company in the process of inputting palm oil order data and assist in monitoring or monitoring the shipment of palm oil to its destination.(Julian et al., 2018) have conducted research on "Data Processing Applications for Palm Fruit Harvest at PT. Anugrah Palma Lestari "based on mobile using the android operating system and using system analysis methods. The results of this study aim to provide real time information for each unit about the yields of palm oil that have been delivered and processed.(Rhiyan Edyal, 2016) have conducted research on "Web-Based Application of Palm Oil Sales at Village Unit Cooperatives (KUD) in Kab. Dharmasraya "the research method in making the application using data collection through interviews and direct field observation and the sample was taken using purposive sampling. This study aims to provide an overview of how the oil palm sales process is and make an application about the oil palm sales system at the farmer level.

(Harianja et al., 2018)conducted research on "Designing Applications for Purchasing and Management of FFB at PT. Web-based Biccon Agro MakmurJambi" using the waterfall system development method. The results of this study can display more structured data processing with vehicle data, supplier data, customer data, FFB purchase data, FFB processing data, CPO and PK sales data and make it easier for PT. Biccon Agro Makmur Jambi to get information more quickly and precisely.(Putra, 2019) have conducted research on "Development of Map-Based Information Systems for Oil Palm Plantation Management and Harvest Monitoring" based on web and mobile where the information system built uses the Global Positioning System (GPS) to be able to track and provide information about the position of FFB being transported, as well as tracking in real time to monitor the transport of FFB to keep it affordable and optimal. (Wiratama, 2016) has conducted research on "Information Systems for Monitoring Plantation Products and Production Results of PT. Perkebunan Ogan Palembang Web Based "using the waterfall method. The results of this study can provide information on the realization of activities in a visual graphical manner, consisting of charts of months, years and trends per certain period.

Of the six studies, no one has provided information on the transportation of oil palm based on information on the price of palm oil per kilo and the wages for oil palm transportation. System at CV. Simatahari is still manual, that is, if farmers want to transport oil palm, they first contact the company via telephone to inform them of the transportation schedule and address. This often occurs when the company makes an error recording the schedule and address of the oil palm. With these problems, the authors will develop a web-based oil palm transportation information system that can minimize errors when recording oil palm transportation. As for the method used in this research, namely the design thinking method, is a design methodology that provides a solution approach to solving problems starting from emphatize, namely to get an empathetic understanding of the problem to be solved, define, namely to determine the core problem to be solved. identified, ideate, namely to generate ideas, prototypethat will produce a number of cheap versions of the product and test, namely testing and evaluating the product to the public. So that the authors are interested in lifting the title of the thesis "Design Of Palm Oil Transport Information Systems In CV. Simatahari - Kota Pinang Labuhanbatu Selatan".

2. RESEARCH METHOD

In system development, a method is needed that functions as a reference or procedure in developing a system. The system development method used by the author is the waterfall method.Waterfall is a linear sequential model (sequential Linear) or a software life-flow approach in a sequential or sequential manner starting from analysis, design, coding, testing and support stages(Sukamto dan Shalahuddin, 2016).

1. Analysis is the stage carried out to analyze the system requirements. Analysis of the requirements required by the system includes needs such as data on oil prices, wages for oil palm transportation and the type of transportation used.
2. Design aims to describe how a system is built. This system design method uses design thinking.
3. Implementation is the process of making a system which will integrate with each other with the next stage The implementation process is based on the results of the design analysis stage.
4. Testing is the stage that is carried out to test the implementation phase that has been carried out. This aims to determine the quality of the system and find out whether the system is ready or not used.
5. Maintenance is the process of maintaining the system after the system is released.

A. Design Thingking Method

Design thinking is a system design method that requires a concept of thinking in solving ideas for existing problems(Carrol, 2015). The author uses this method because the system process is carried out systematically starting from emphatize, define, idea, prototype and test in accordance with the development of the information system to be built:

1. Emphatize is the first stage in the design thinking method, this empathy includes observations and interviews with the company CV. Simatahari in order to obtain information on the focus of research on oil palm transportation. So that it can be formulated that the main concern in this study is that farmers who want to make transportation orders first contact the company via telephone. This often happens when the company makes an error recording the transportation schedule and transport address.

2. Define is the second stage in design thinking which seeks to analyze and understand the problem information that has been collected at the emphatize stage. Based on the definition, it is found that the main problem that can be concluded from the empathy process is that the company often makes mistakes in recording the transportation schedule and address of the oil palm transportation.
3. Ideateis the third stage where the process will be carried out to generate ideas or solutions as a basis for making prototypes. Ideas that will be made from the previous define stage are about how to produce a web application that is able to answer existing problems. The web-based oil palm transportation information system can minimize the occurrence of errors and can make it easier for farmers to order oil palm transportation.
4. Prototypeis a process in designing the design of a product to be made. At this stage, the researcher uses draw.io to carry out the design of the system design.
5. Test or testing this is done to obtain appropriate responses and feedback from the results of the prototype that has been made to find out whether the solution has overcome the existing problems.

B. System Design

The system design used in building an oil palm transportation information system is to use the Unified Modeling Language (UML) which is a collection of diagrams that already have a standard for building object-based software(Sulianta, 2017). The UML method used in designing this web application is use case diagrams, activity diagrams, class diagrams and sequence diagrams.

1. Use Case Diagram

Use case diagrams describe the interaction between the system and actors, use case diagrams can also describe the type of interaction between the system user and the system. The following is a use case diagram design between admin, farmer and driver.

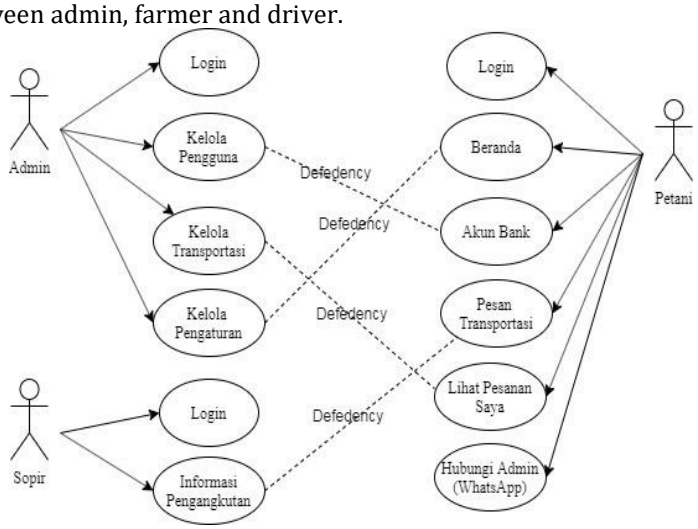

Fig 1. Use Case Diagram

2. Class Diagram

Class diagram is a diagram that is used to display several classes and packages that exist in the system / software that we are currently using. Class diagrams give us an overview (static diagram) about the system / software and the relationships that are in it.

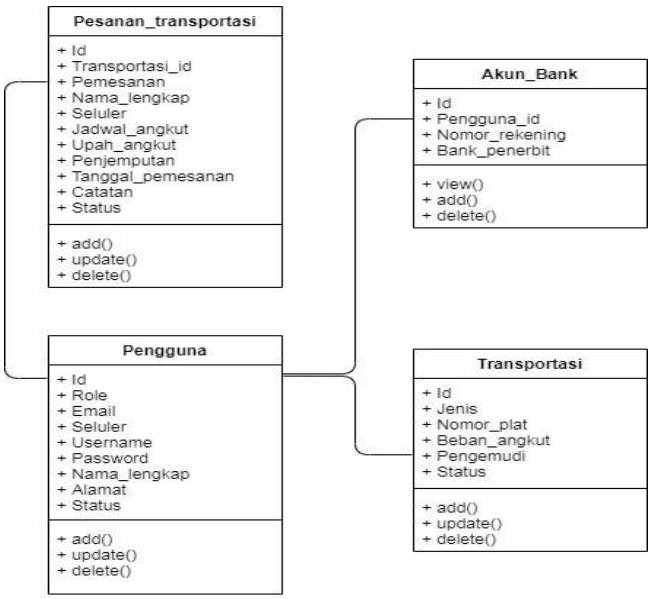

Fig 2. Class Diagram

3. RESULTS AND DISCUSSION

A. Research Results

The web-based Oil Palm Transportation Information System uses the CodeIgniter framework, and uses the PHP programming languagewhich is a script language that can be embedded or inserted into HTML(MADCOMS, 2016) and mysql databases. Based on its users, this oil palm transportation information system consists of three users, namely admin, farmer and driver. The features that can be used in this system consist of a login page, admin home page, user menu, transportation menu, settings menu, farmer home page, transportation order menu, my order menu, driver home menu.

1. Admin, Farmer, Driver Login Page View

The login interface design is carried out by admins, farmers and drivers who already have accounts by inputting email and passwords so they can enter the web. Then after the email and password have been input, then click the enter button. If the login is successful, it will go to the home page of each user. If login fails, it will return to the login menu page.

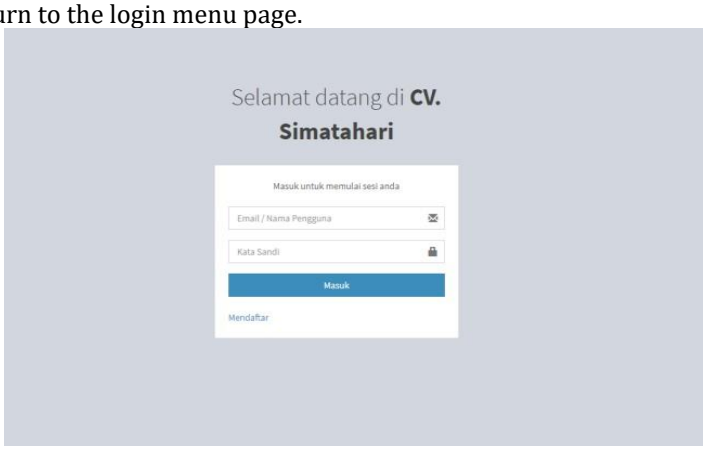

Fig 3. Admin, Farmer, Driver Login Page

2. Admin Home Page View

This page will explain about the appearance of the admin home page where the admin can see the total users, total transportation and total orders.

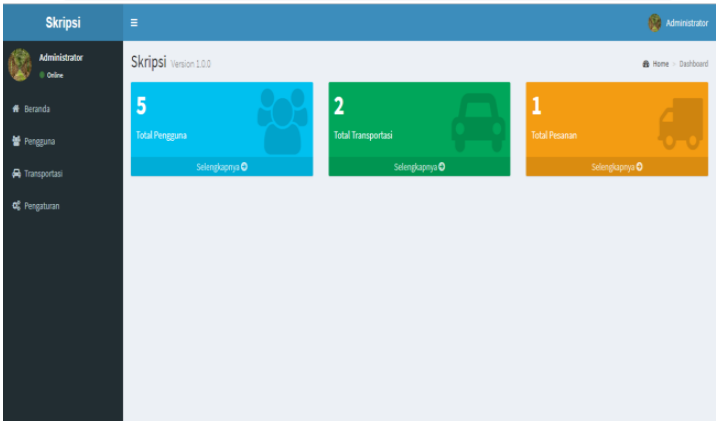

Fig 4. Admin Home Page View

3. Transport List Page View

This page will explain about the display of the transportation list data page where the admin can input the available oil palm transportation data.

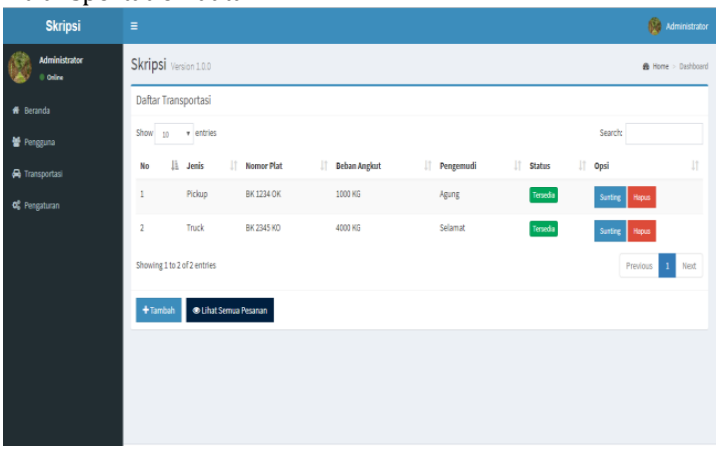

Fig 5. Transportation List Page

4. View Of The Farmer Home Page

This page will explain the home page display where farmers can see the price of palm oil per kilo and the cost of transportation.

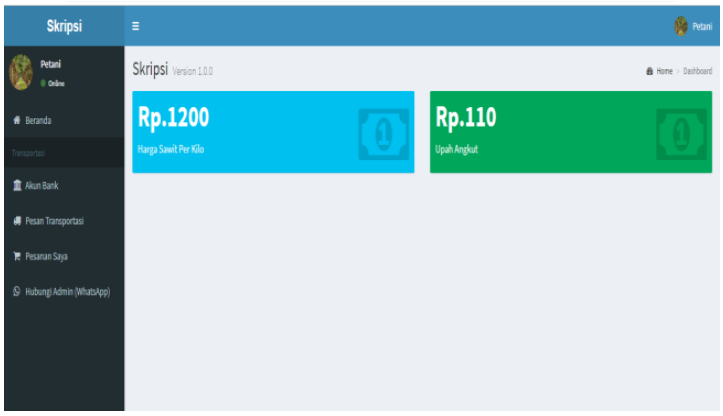

Fig 6. Farmer's Home Page

5. Transport Message Page View

This page will explain the appearance of the transportation message page where farmers before placing an order for transportation can choose the available transportation.

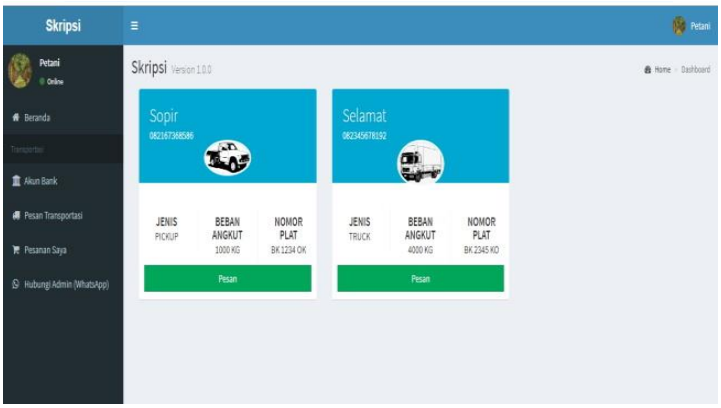

Fig 7. Transportation Message Page

6. Driver Page View

This page will explain the driver page display where the driver can view transportation order information.

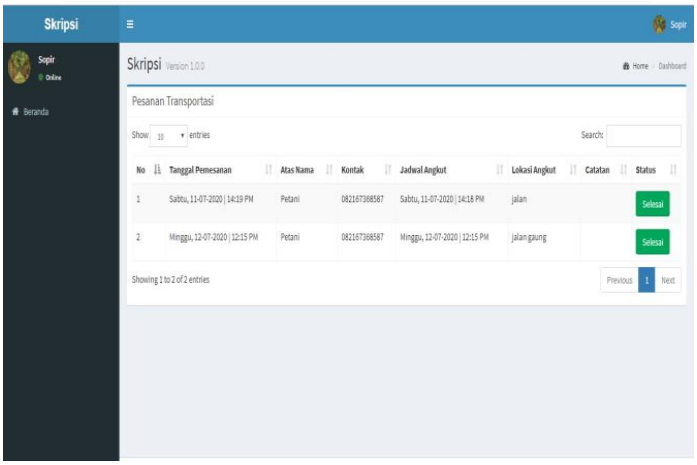

Fig 8. Driver Page View

B. Discussion

The design of the oil palm transportation information system has been successfully carried out, while in the early stages of making the system the author conducted an analysis first such as problem analysis, system requirements analysis and system design analysis. Oil palm transportation information system at CV. This web-based Simatahari was created with the aim of producing a system that can manage transportation data on CV. Simatahari, and make it easier to place orders for oil palm transportation in this application. There are three users who can run this oil palm transportation information system, namely admin who can manage the entire system, farmers who can place transportation orders, see palm oil prices and transportation wages, and drivers who can view oil palm transportation ordering information.

4. CONCLUSION

The conclusions obtained from writing a web-based Oil Palm Transportation Information System are as follows:

1. This Oil Palm Transportation Information System can make it easier for farmers to place transportation orders.
2. This Transportation Information System can display the price of palm oil per kilo and the cost of transportation.
3. The Oil Palm Transportation Information System can be accessed by users online.
4. This Transportation Information System was built using the PHP programming language and MySQL database as well as the Codeigniter framework

ACKNOWLEDGEMENTS
The author would like to thank CV. Simatahari to provide information about the research I did and to all parties who have contributed to this research.

REFERENCES

Bakara, T. T., Priyambada, & Santosa, T. N. B. (2016). Kajian Pengangkutan Panen Kelapa Sawit Menggunakan Armada Dump Truk Dan Truk Biasa Dari TPH Ke Pabrik Di Perkebunan Kelapa Sawit PT. Serikat Putra, Kecamatan Bandar Petalangan, Kabupaten Rokan Hilir, Provinsi Riau. *JURNAL AGROMAST*, *1*.

Carrol. (2015). Stretch, Dream, and Do -A 21st Century Design Thinking & STEM Journey,. *Journal of Research in STEM Education*, *1*.

Harianja, S., Hendri, & Kisbianty, D. (2018). Perancangan Aplikasi Pembelian Dan Pengelolaan TBS Pada PT. Biccon Agro Makmur Jambi Berbasis Web. *JURNAL ILMIAH MEDIA SISFO*, *12*.

Hartono, A., Priyambodo, & Kristalisasi, N. (2018). Kajian Pengangkutan Panen Dengan Sistem Bin Dan Sistem Net Di Perkebunan Kelapa Sawit. *JURNAL AGROMAST*, *3*.

Julian, M. R., , Yusniarti, S.Kom., M. K., & , Nita Novita, S.E., M. M. (2018). *Aplikasi Pengolahan Data Hasil Panen Buah Sawit Pada PT. Anugrah Palma Lestari*.

MADCOMS. (2016). *Pemrograman PHP dan MySQL Untuk Pemula, Yogyakarta: C.V Andi.*

Ovianti, V., & Haji, W. H. (2019). Rancang Bangun Aplikasi Distribusi Minyak Sawit PT. Steelindo Wahana Perkasa Cabang Belitung Timur. *Jurnal Cendikia*.

Putra, A. G. D. (2019). *Pembangunan Sistem Informasi Berbasis Peta Untuk Pengelolaan Kebun Kelapa Sawit Dan Monitoring panen*.

Rhiyan Edyal, B. E. P. (2016). Aplikasi Penjualan Kelapa Sawit Berbasis Web pada KUD di Kab. Dharmasraya. *JURNAL MULTINETICS*, *2*.

Rinaldi, R., Santosa, T. N. B., & WahyuKrisdiarto, A. (2016). Kajian Produktivitas Pengangkutan Tandan Buah Segar Buah Kelapa Sawit Secara Manual Dan Mekanis Di PT. Sawit Asahan Indah. *JURNAL AGROMAST*, *1*.

Siregar, T. P., & , Priyambada, E. N. K. (2016). Kajian Pengangkutan Tandan Buah Segar Kelapa Sawit Dari TPH Ke Pabrik Menggunakan Dump Truk Dan Truk Biasa. *JURNAL AGROMAST*, *1*.

Sukamto, Rosa, A.S dan Shalahuddin, M. (2016). *Rekayasa Perangkat Lunak. Bandung: Informasi Bandung.*

Sulianta. (2017). *Teknik Perancangan Arsitektur Sistem Informasi, Yogyakarta: Andi.*

Waruwu, F., Bilman Wilman Simanihuruk, P., & Hermansyah. (2018). Pertumbuhan Bibit Kelapa Sawit Di Pre-Nursery Dengan Komposisi Media Tanam Dan Konsentrasi Pupuk Cair Azolla pinnata Berbeda. *Jurnal Ilmu-Ilmu Pertanian Indonesia*.

Wiratama, R. I. (2016). *Sistem Informasi Monitoring Hasil Kebun dan Hasil Produksi PT. Perkebunan Mitra Ogan Palembang Berbasis Web*.