



Design of a Web-Based Fleet Management Information System at PT Qtrans

Syaifur Rahmatullah Abdul Rojak^{1*}, Andy Setiyawan², Irmawati³

^{1,2} Universitas Nusa Mandiri

³ Universitas Bina Sarana Informatika
syaifur.syl@nusamandiri.ac.id*

Abstract

The development of technology is currently very rapid and has an important role as a basic need in life. Technological sophistication is a force that helps the smooth running of work and business processes. In some companies, there is fleet management which is an operational activity in sending or receiving goods. For this reason, the use of information technology is needed to manage this fleet. In this case, PT. Qtrans still lack of visibility and supervision, and there is no effective fleet monitoring and tracking system because Microsoft Excel still used to record the data. The data analysis reports on fleet management are still manual and do not support the fleet maintenance and maintenance process. The system development model carried out in this study uses the prototype method model. The application of a website-based fleet management information system is expected to make it easier for administrators to monitor and manage fleets at PT Qtrans.

Keywords: Information, Systems, Fleet Management

1. Introduction

The development of technology today is very rapid and has an important role as a basic need in life. The sophistication of technology is a force that greatly helps the smooth running of work and business processes. The use of information technology has helped various companies in launching their business and also competing with other companies. To support the performance of a company, technology is needed that can make it easier to process information quickly. In some companies, there is fleet management which is an operational activity in sending or receiving goods. For this reason, the use of information technology is needed to manage this fleet.

The background of the problem regarding fleet management involves the management and maintenance of a fleet of vehicles or equipment owned by an organization or company. Fleet management is important in a variety of sectors, including transportation, logistics, delivery companies, and other service services that rely on operating using a fleet of vehicles [1].

Vehicle fleets require regular maintenance and periodic maintenance to keep them in good condition and safe to use [2]. Problems can arise when maintenance schedules are irregular or when required repairs are not carried out in a timely manner, which can result in decreased vehicle performance, increased repair costs, and even safety risks for drivers and other road users [3].

Fleet management also involves determining the vehicle's operational schedule and setting efficient routes [4]. Problems can arise when scheduling is not optimal, causing vehicles to get stuck in traffic jams or experience excessive idle time. Additionally, inefficient routing can lead to increased fuel costs and longer travel times [5].

Fleet management is a relevant activity at the operational level that must be faced by private companies and public institutions aimed at passenger transportation or freight transportation services [6]. In its use, both private companies and public institutions must know how to manage the fleet, so that they can ensure that the fleet that will be used for operational activities or official trips can run optimally. The Fleet Management System is structured to allow companies to obtain information on various aspects such as the use, maintenance, and operation of the fleet [7]. The information that needs to be obtained includes the distance traveled, the goals achieved, repairs and maintenance and periodic service planning of the fleet [8]. Reports can be generated once a week, once every two weeks, once a month, according to the needs.

2. Research Method

The system development model carried out in this study uses a prototype method model [8]:

1. Requirement Gathering
In this phase, users and developers collaboratively define the entire software format, identify all the requirements related to system development, and outline the system to be created.
2. Building the Prototype
Constructing the prototype design by creating a temporary design that focuses on presenting it to the users.
3. Evaluating the Prototype
This evaluation is performed by the users to determine whether the system built meets their expectations. If it meets the expectations, the next step will be taken. If it does not, the prototype will be revised, repeating steps 1, 2, and 3.
4. Coding the System
In this phase, if the prototype is accepted and agreed upon, it will be translated into the appropriate programming language.
5. Testing the System
Once the system has been developed into a ready-to-use software, the next step is to test it before it is used or implemented. The testing in this study is carried out using the black box testing method.
6. Evaluating the System
Users evaluate whether the system built meets their expectations or requirements. If it does, the process proceeds to step 7; if it does not, steps 4 and 5 are repeated.
7. Using the System
The software that has been tested and accepted by the users is ready for use.

3. Result and Discussion

3.1. Software Needs Analysis

3.1.1. Analysis Stages

The fleet coordinator admin inputs data from the waybill, which can be easily accessed via the web. The specifications for the fleet management information system at PT Qtrans are as follows:

Front-End Page:

- A1. Users can log in.
- A2. Users can view the transaction list.
- A3. Users can view transaction details.
- A4. Users can update the kilometers.

Administration Page:

- B1. Admin can log in.
- B2. Admin can view the dashboard.
- B3. Admin can manage transaction data.
- B4. Admin can manage driver data.
- B5. Admin can manage vehicle data.
- B6. Admin can manage sales data.
- B7. Admin can manage user data.
- B8. Admin can view report data.

3.1.2. Use Case Diagram

The design of the web-based fleet management information system at PT Qtrans will be illustrated in a use case diagram, as follows:

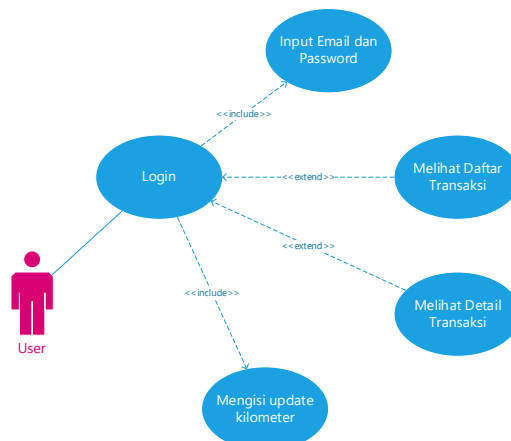


Fig. 1: Use Case Diagram Front-End Page

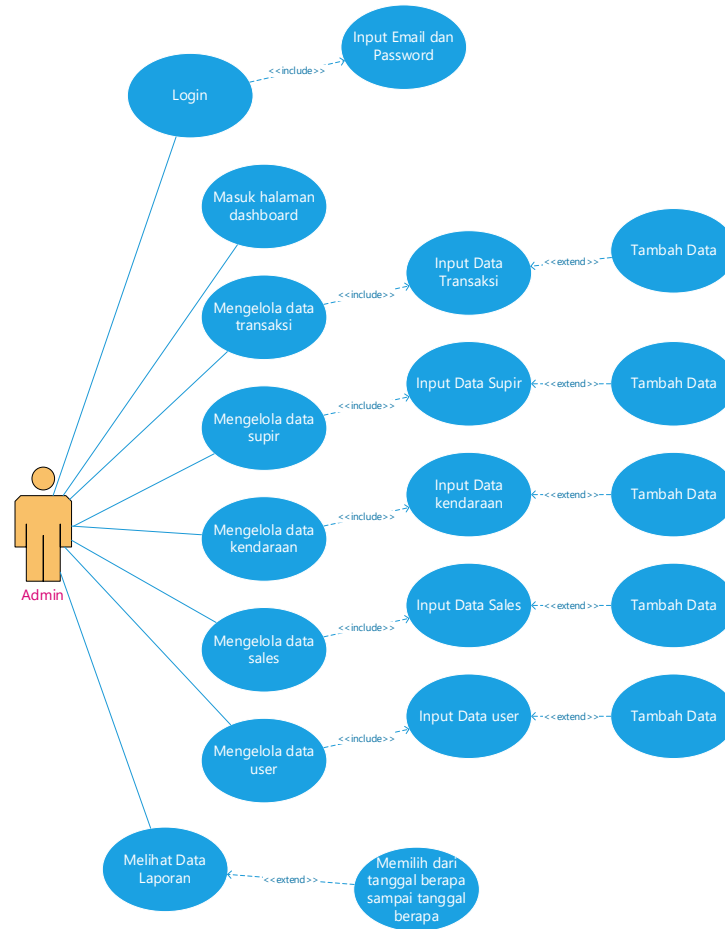


Fig. 2: Use Case Diagram Admin Page

3.1.3. Activity Diagram

1. Activity Diagram Login Admin

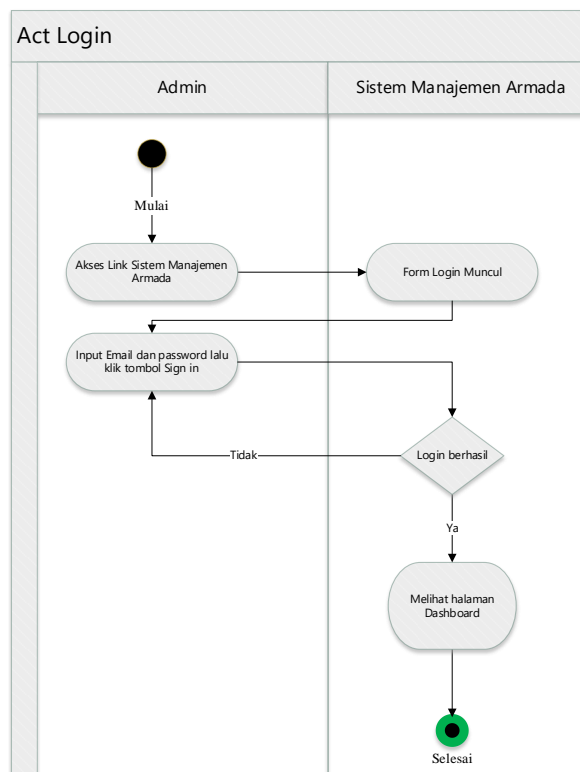


Fig. 3: Activity Diagram Admin Login

2. Activity Diagram Transaction Data Page

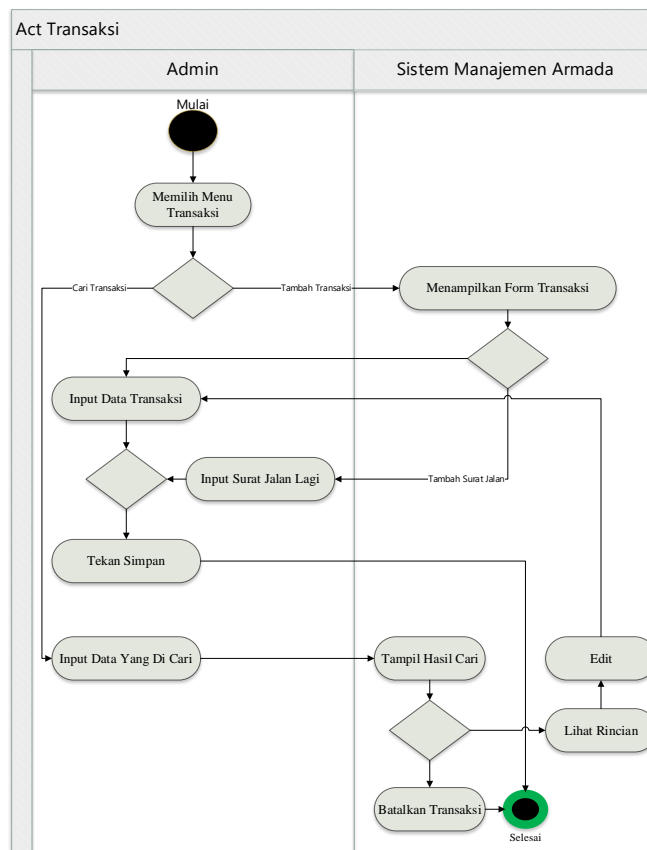


Fig. 4: Activity Diagram Transaction Data Page

3. Activity Diagram Driver Data Page

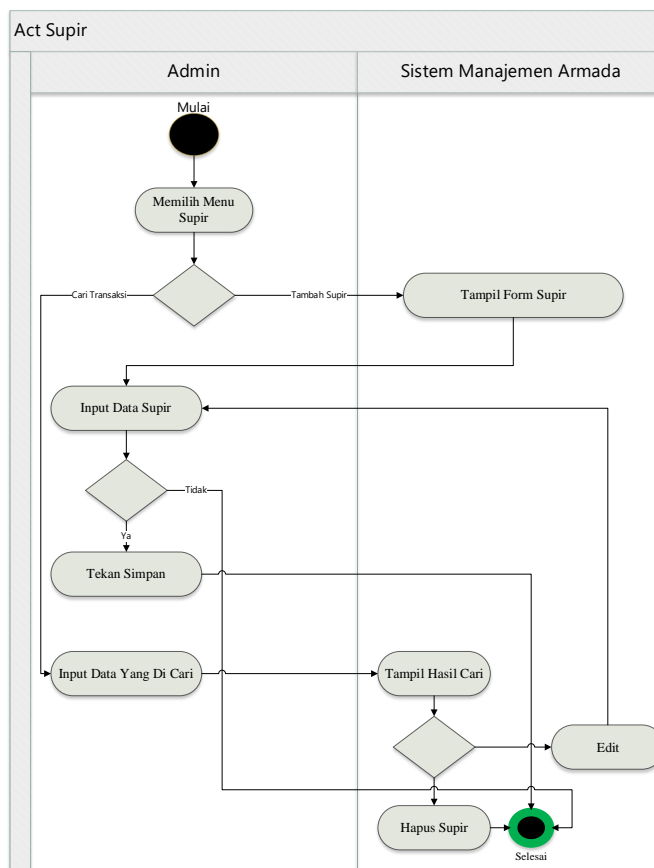


Fig. 5: Activity Diagram Driver Data Page

4. Activity Diagram Vehicle Data Page

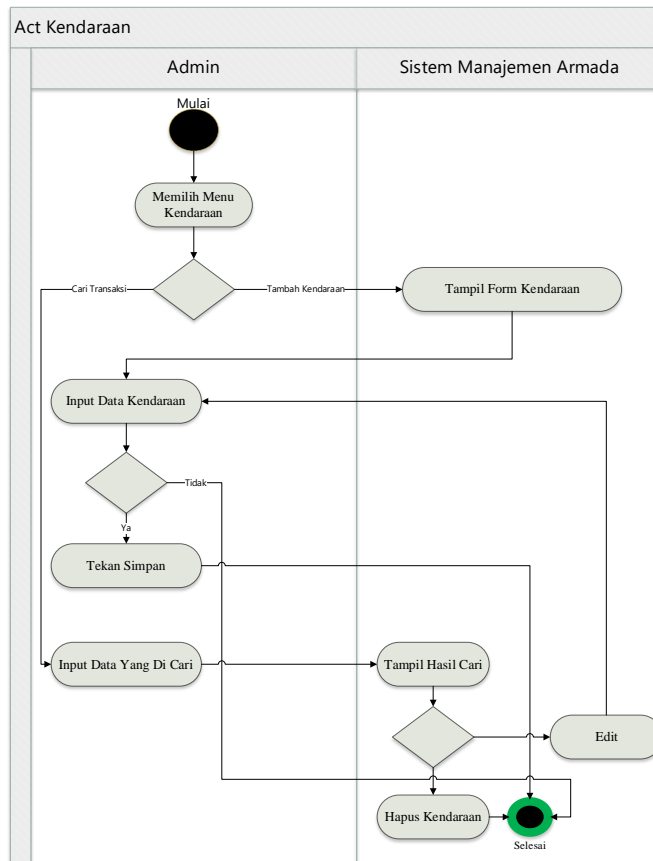


Fig. 6: Activity Diagram Vehicle Data Page

5. Activity Diagram Sales Data Page

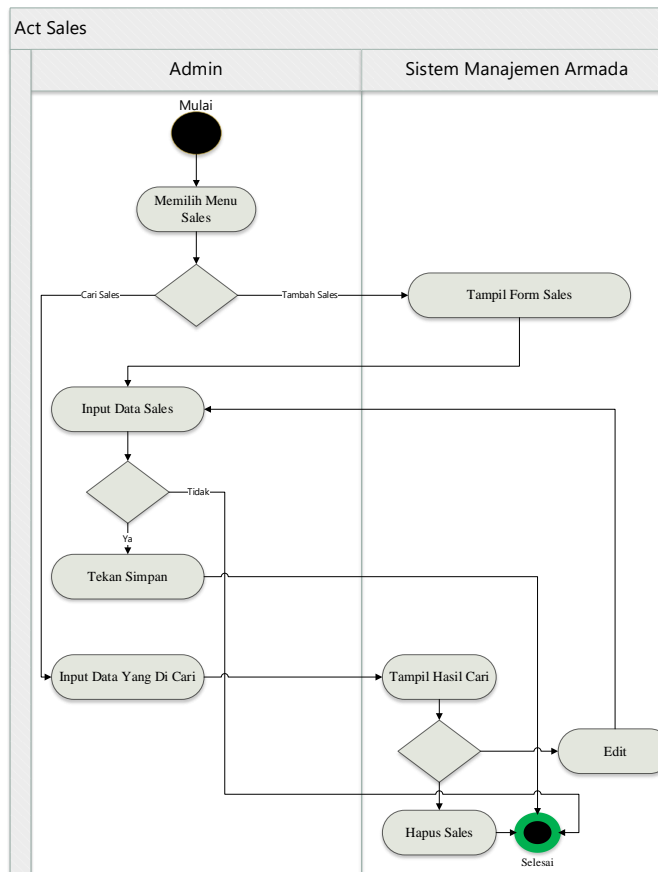


Fig. 7: Activity Diagram Sales Data Page

6. Activity Diagram User Data Page

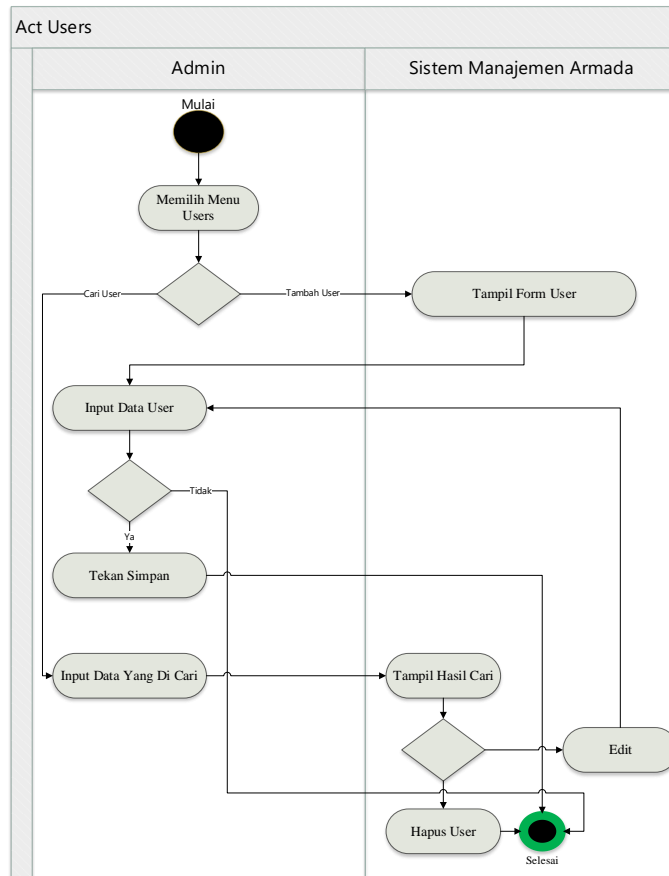


Fig. 8: Activity Diagram User Data Page

3.2. Design

3.2.1. Analysis Stages

1. Logical Record Structure (LRS)

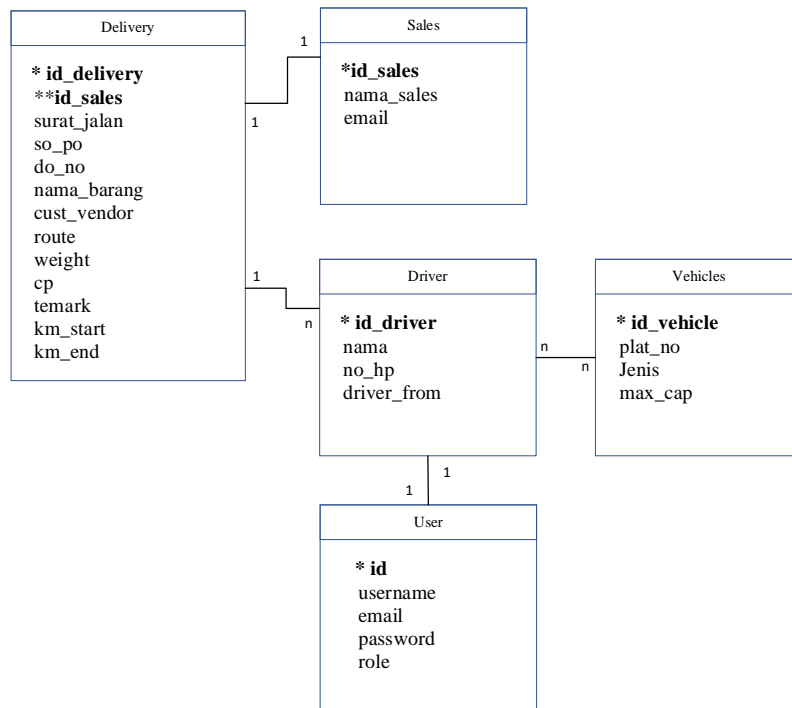


Fig. 9: LRS (Logical Record Structure)

2. Entity Relationship Diagram (ERD)

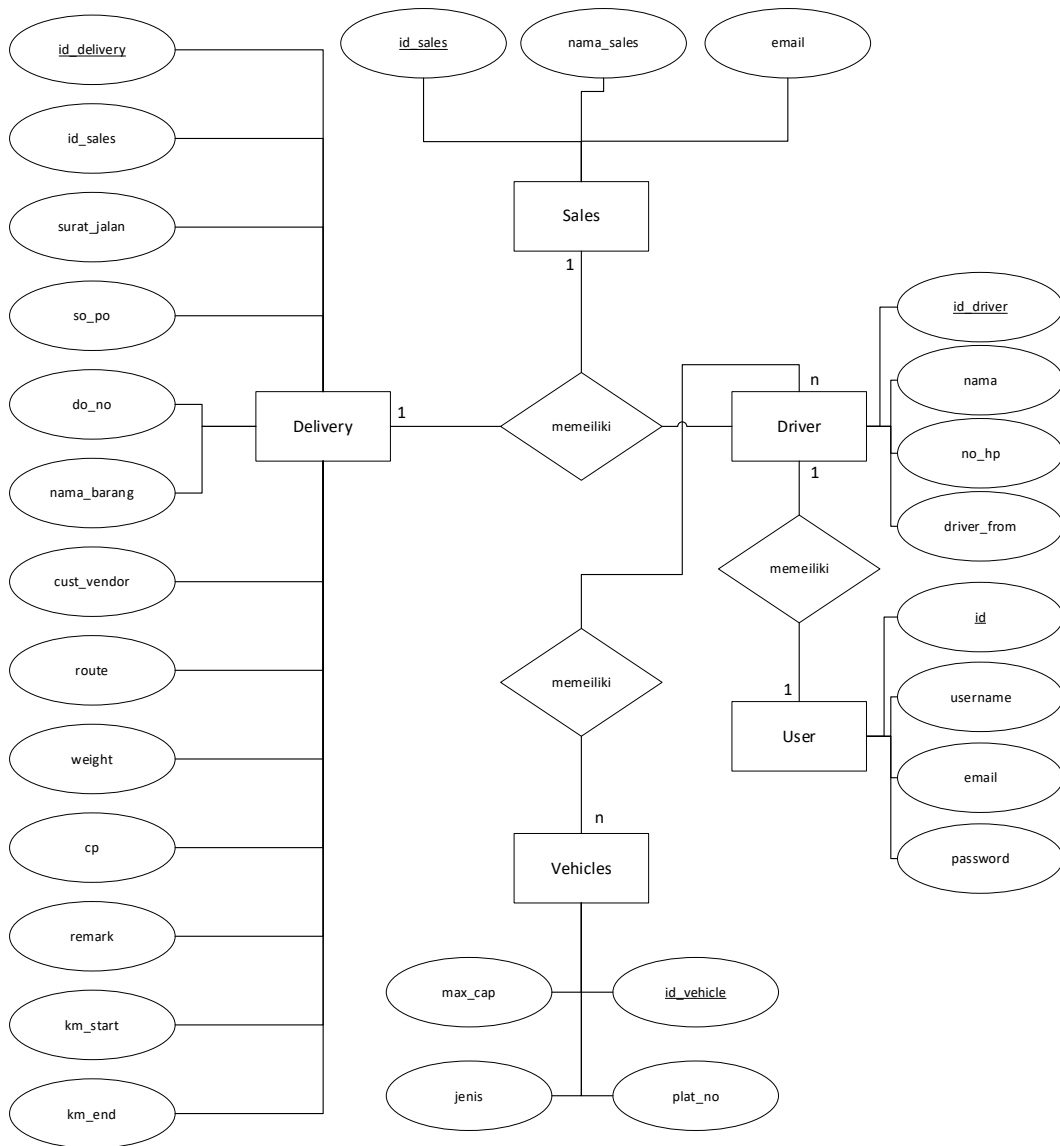


Fig. 10: ERD (Entity Relationship Diagram)

3.2.2. User Interface

1. Interface Admin Login Page Menu

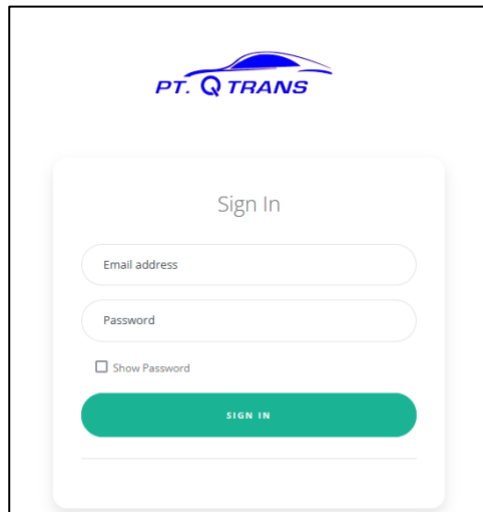


Fig. 11: Interface Menu Admin Login Page

2. Interface Dashboard Page Menu

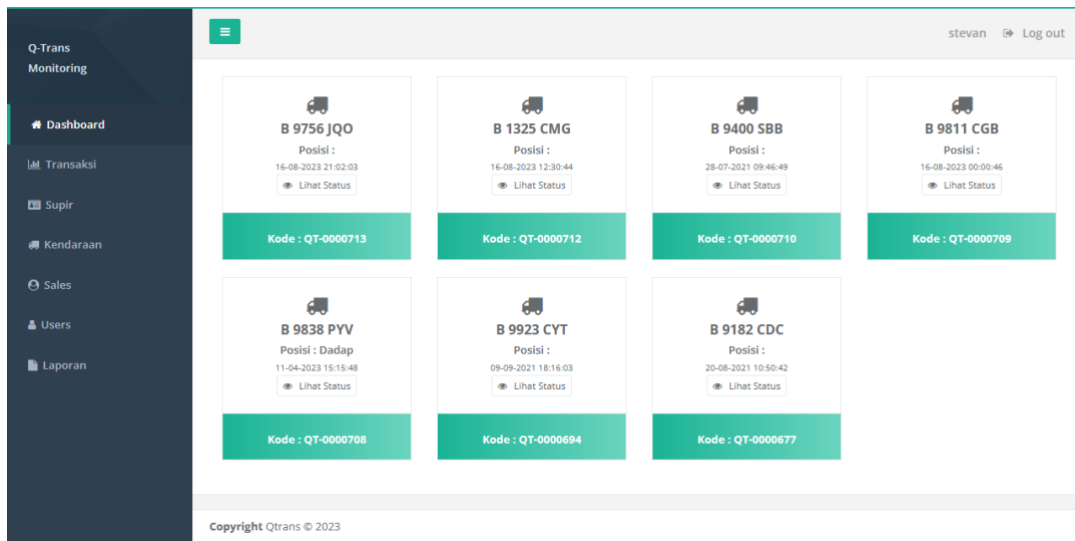


Fig. 12: Dashboard Data Page Menu Interface

3. Interface Transaction Data Page Menu

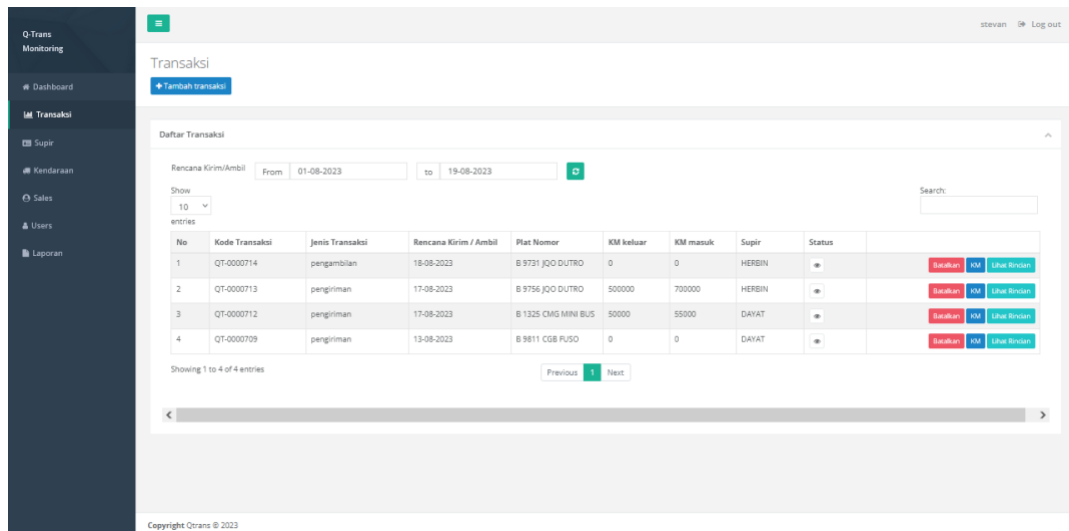


Fig. 13: Transaction Data Page Menu Interface

4. Interface Driver Data Page Menu

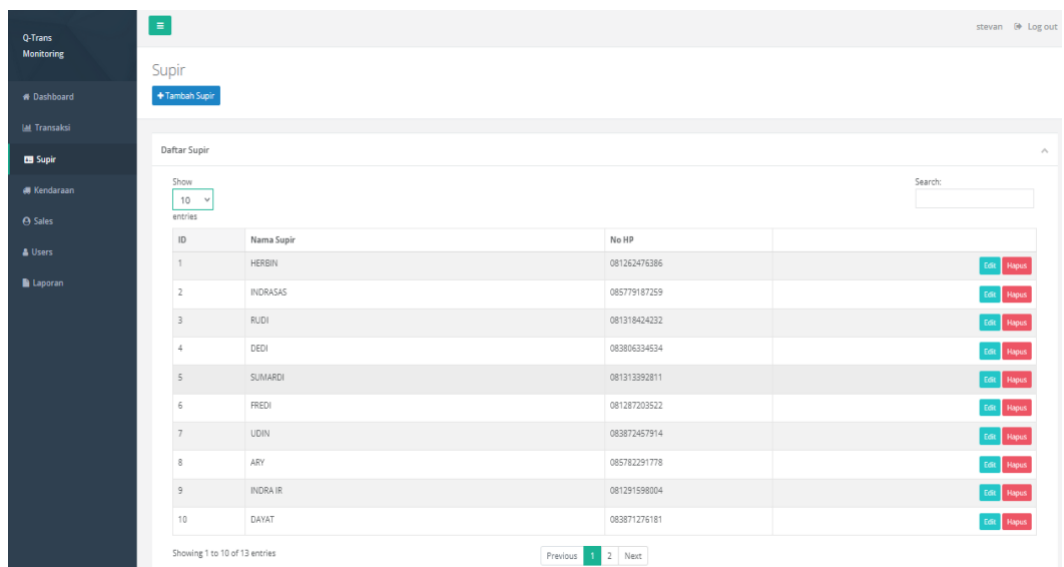


Fig. 14: Driver Data Page Menu Interface

5. Interface Vehicle Data Page Menu

No	Plat Nomor	Jenis	Max Capacity/Ton
1	B 9820 CYT	TRAILER	25
2	B 9058 CDH	TRAILER	25
3	B 9514 PEB	TRAILER	25
4	B 9640 PEB	TRAILER	25
5	B 9091 CDH	TRAILER	25
6	B 9811 CGB	FUSO	10
7	B 9631 COB	DUTRO	7
8	B 9662 COB	DUTRO	7
9	B 9923 CYT	DUTRO	7
10	B 9838 PIV	DUTRO	7

Fig. 15: Vehicle Data Page Menu Interface

6. Interface Sales Data Page Menu

No	Nama Sales	Email
1	Abidin Manurung	manro@paradiseperkasa.com
2	Eva	
3	Fardiyansyah	
4	Firmanyah	firman@paradiseperkasa.com
5	FRANGSIKA	
6	Irvan	
7	KURNIAWAN	
8	Liana Teng	liana@paradiseperkasa.com
9	marjo	marjo@paradiseperkasa.com
10	Mega	

Fig. 16: Sales Data Page Menu Interface

7. Interface User Data Page Menu

No	Username	Email	Role
1	andy	itsap1@teachmandiri.com	1
2	whs	whs@paradiseperkasa.com	3
3	henry	henry@paradiseperkasa.com	4
4	melifah	logistik@qtrans.co.id	2
5	stevan	logistik1@qtrans.co.id	1
6	dayat	dayat@qtrans.co.id	4
7	ary	ary@qtrans.co.id	4
8	udin	udin@qtrans.co.id	4
9	sumardi	sumardi@qtrans.co.id	4
10	rudianto	rudianto@qtrans.co.id	4

Fig. 17: User Data Page Menu Interface

8. Interface Report Data Menu

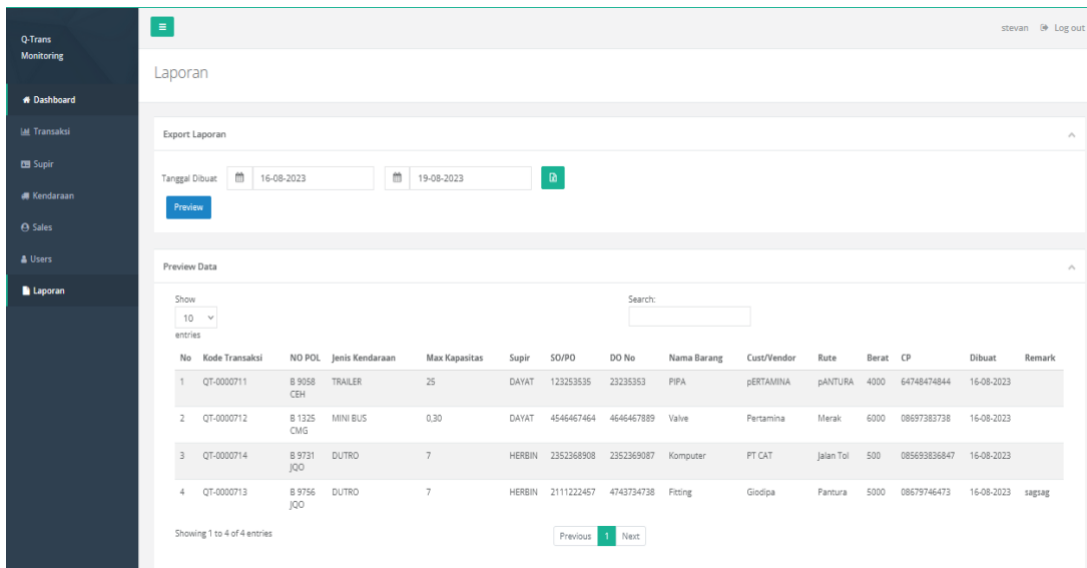


Fig. 18: Report Data Menu Interface

9. Interface Menu Login User

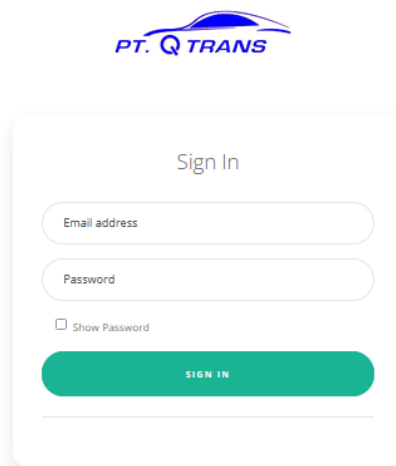


Fig. 19: User Login Menu Interface

10. Interface User Dashboard Menu

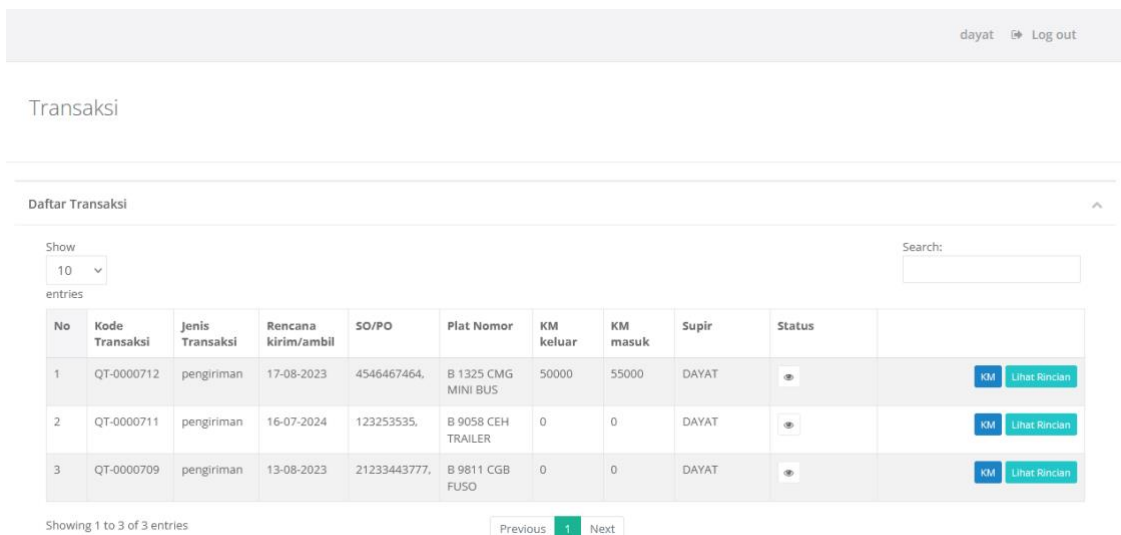


Fig. 21: Dashboard User Menu Interface

11. Interface Transaction Details Menu

Header

Kode Transaksi	Dibuat oleh	Tanggal dibuat	Rencana Kirim/Ambil
QT-0000712	andy	16-08-2023	17-08-2023

Detail Transaksi

Show: 10 entries

Search:

No	Surat Jalan	SO / PO	Sales	DO No	Nama Barang	Cust / Vendor	Rute	Berat(KG)	Contact Person	Remark	Status	KM start	KM end
1	43536373537	4546467464	Vince Tan	4646467889	Valve	Pertamina	Merak	6000	08697383738		Order	0	0

Showing 1 to 1 of 1 entries

Previous 1 Next

Fig. 21: Transaction Details Menu Interface

4. Conclusion

Based on the theory described and the facts observed in the field, several conclusions can be drawn, including:

1. The implementation of a web-based fleet management information system is expected to facilitate the fleet coordinator admin in monitoring and managing fleet data at PT Qtrans.
2. The implementation of this web-based fleet management information system is expected to expedite the fleet coordinator admin's process of distributing fleets to drivers accurately and according to the data prepared from the warehouse.
3. The implementation of this web-based fleet management information system also makes it easier for drivers to submit their travel reports during the delivery and pickup processes, as drivers only need to access the Qtrans monitoring website via their personal smartphones.

References

- [1] M. Fickri And F. Natsir, "Implementasi Fleet Manajemen Untuk Mempermudah Perawatan Mobil Di Pt Reisal Trans Mandiri Dengan Metode Customer Relationship Management (Crm)," J. Inf. Technol., Vol. 3, No. 2, Pp. 75–80, 2023, Doi: 10.46229/Jifotech.V3i2.759.
- [2] B. Hariadi, "Prosedur Pemakaian Dan Pemeliharaan Kendaraan Dinas Disekretariat Daerah Kabupaten Lima Puluh Kota," Japan J. Adm. Dan Pemerintah., Vol. 1, No. 2, Pp. 151–157, 2023.
- [3] E. D. Kusumawati And K. Karjono, "Integrasi Supplay Chain Dan Kinerja Perusahaan Manufacturing Dan Logistik Pasca Pandemi Covid 19," Pros. Natl. Semin., Vol. 1, No. 1, Pp. 24–34, 2022, [Online]. Available: [Http://E-Journal.Akpelni.Ac.Id/Index.Php/Nsmis/Article/View/335%0ahttp://E-Journal.Akpelni.Ac.Id/Index.Php/Nsmis/Article/Download/335/253](http://E-Journal.Akpelni.Ac.Id/Index.Php/Nsmis/Article/View/335%0ahttp://E-Journal.Akpelni.Ac.Id/Index.Php/Nsmis/Article/Download/335/253).
- [4] D. Sudiantini, D. Fatimah, A. S. Parhusip, I. A. Wa'afin, And M. D. R. Umam, "Pengaruh Penerapan Teknologi Terhadap Peningkatan Efisiensi Jasa Pengiriman Barang Dalam Manajemen Logistik Pt Jne Express," J. Neraca Manajemen, Akunt. Ekon., Vol. 1, No. 5, Pp. 1–8, 2023, [Online]. Available: [Https://Ejournal.Warunayama.Org/Index.Php/Musytarineraca/Article/View/530%0ahttps://Ejournal.Warunayama.Org/Index.Php/Musytarineraca/Article/Download/530/521](https://Ejournal.Warunayama.Org/Index.Php/Musytarineraca/Article/View/530%0ahttps://Ejournal.Warunayama.Org/Index.Php/Musytarineraca/Article/Download/530/521).
- [5] A. Maulidah And M. Mirwan, "Perencanaan Sistem Pengangkutan Sampah Dengan Metode Dinamis Di Uptd Tumpang," Esec Proceeding, Vol. 3, No. 1, Pp. 7–14, 2022, [Online]. Available: [Http://Esec.Upnvjt.Com/Index.Php/Prosiding/Article/View/104%0ahttp://Esec.Upnvjt.Com/Index.Php/Prosiding/Article/Download/104/102](http://Esec.Upnvjt.Com/Index.Php/Prosiding/Article/View/104%0ahttp://Esec.Upnvjt.Com/Index.Php/Prosiding/Article/Download/104/102).
- [6] H. Amalia, T. Retnasari, And S. Rachmawati, "Pemanfaatan Teknologi Informasi Untuk Meningkatkan Pelayanan Akademik Rumah Tahfidz Dan Tpq Sakinah Cipayang Jakarta Timur," J. Abdimas Bsi J. Pengabd. Kpd. Masy., Vol. 3, No. 2, Pp. 228–235, 2020, Doi: 10.31294/Jabdimas.V3i2.8550.
- [7] S. Susanti And C. Irawan, "Sistem Informasi Fleet Management Menggunakan Framework Laravel Pada Pt. Sajira Mahardika," Jika (Jurnal Inform., Vol. 7, No. 4, P. 415, 2023, Doi: 10.31000/Jika.V7i4.8574.
- [8] Frederica Rosabel Ramli, Fikri Hakim, And Ria Anggelina Hutabarat, "Perancangan Web Design Aplikasi E-Learning Dengan Metode Prototype Pada Tingkat Sma," Maj. Ilm. Upi Yptk, Vol. 28, Pp. 13–18, 2021, Doi: 10.35134/Jmi.V28i1.62s.