

A Web-Based Logistics Information System for Freight Forwarder PT. Rajawali Imantaka Sempurna

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ABSTRACT

This paper presents a web-based logistics information system at PT Rajawali Imantaka Sempurna, (PT. RISE), a company engaged in freight forwarding. PT. RISE has two operational offices, in Mataram and Surabaya. With existing legacy systems, they have difficulty to obtain information regarding the shipment of goods and in monitoring the operations of the office. The proposed system is able to handle the freight forwarding process from receipt of order delivery, determining the trucks that will transport the goods, shipping schedule, shipping documents and preparing reports.

Keywords

Logistics, Information System, Freight Forwarding.

1. INTRODUCTION

PT. Rajawali Imantaka Sempurna (RISE) is a company that is engaged in freight forwarder. RISE received a packet delivery order and the wholesale package (not the retail package). The route is from Surabaya-Mataram and Mataram-Surabaya. PT. RISE has two operational offices; the headquarters is located in Mataram and branch office in Surabaya.

Customers will order by phone. Orders will be accepted by the branch manager, then proceed to check the availability of trucks. If the truck is available, the package will be taken at the customer's place. If the truck is not available, the order will be delayed or canceled according to customer demand. The packages will be brought to the office and collected together with other packages. Branch manager will allocate each package to the truck, and administrative officers will calculate the shipping cost of each truck. If the total cost of each truck delivery not worth more than Rp. 8.000.000, then these packages will be allocated again until is worth more than Rp. 8,000,000. Trucks that are ready to depart to the destination accompanied with the Letter of Transport and Cargo Letter.

Payment can be made by the sender or recipient. Once the package arrives at the place, payment officer will provide invoice to the customer. Payment can be made maximum within one month. Payment can be cash or bank transfer. If it is due date, the payment officer will claim the payment by giving the invoice billing. If payment by bank transfer, the customer will provide

proof of transfer. Upon payment in full, the payment officer will give payment paid stamp on the invoice payment.

2. LOGISTICS INFORMATION SYSTEM

The investment and adoption of IT is becoming the rule and is essential if forwarders want to survive in the future [1]. The changing competitive conditions have increased pressure on forwarders to compete aggressively and simultaneously on both a low-cost and a differentiated position.

Logistics is the field of study to focus on the design and implementation of the efficient flow and storage of goods from the point of origin to consumption. Information System is the field of study to deal with problems against the design, development, implementation, application of information system. Logistics Information Systems (LIS) is a new discipline that unifies Logistics and Information Systems [2].

3. SYSTEM ANALYSIS

There are some problems with the legacy system are:

- The lack of information regarding the availability of trucks, so when customers ordered when the truck is not available, the clerk's office cannot provide certainty when the truck will be available.
- Shipping document still use handwriting, so it could happen obscurity or letter writing is unreadable.
- Owner has difficulty in monitoring the financial of Surabaya branch office, because the owner stays in Mataram.
- Difficult to monitor packages in the warehouse have not been sent.
- There is no monthly performance reporting, such as the number of shipments per month, and the financial statements of income and expenditure.

Based on those problems, the system requirements are as follows:

- A system that can help to create a simple schedule of availability of trucks.
- An administrative system that can handle the creating documents problem such as Transport Letter, Cargo Letter, Bill Payment Letter, etc
- A system that can allow the owner monitors financial expenditure and income at offices in Mataram and Surabaya.

- d. A system that can monitor packages that have been sent and has not been sent.

4. SYSTEM DESIGN

4.1 Data Flow Diagram

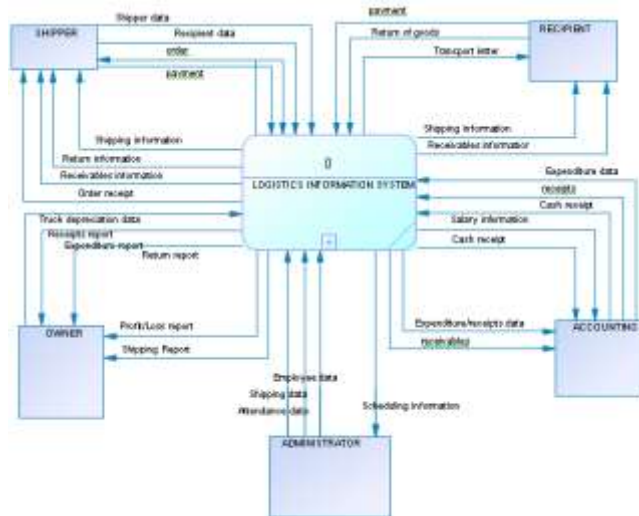


Figure 1. Context Diagram

DFD context diagram (Figure 1) is a portrait of the system in general. The system consists of six entities, namely the sender, receiver, owner, administrator, and finance. The process begins with the order from the sender. The information must be provided is biographical of sender data (if their order is for the first time), the receiver data and package data to be sent. If the order has been collected, the admin will process scheduling shipments.

The process began with determining the delivery date and chooses the shipping destination city. After that, system will search the available truck and driver. If the truck and the driver are not available, then the delivery date has to be changed. If the driver and the truck are available, user must specify the driver and the truck that will be scheduled.

Next, the process of allocating the package into a truck that has been determined will be done automatically by the system using the FCFS (First Come First Served) with priorities, where the system will prioritize orders that come first. If there are orders that come together, the system will choose the order with higher priority. Factors that affect the priority are the number of customer orders ever done. The more often customers use a freight forwarder, the higher the priority.

Package allocation process began with taking the capacity of a truck that has been selected. Then the system will select items that have not been scheduled or sent to the FCFS method. These items will be allocated to the appropriate truck capacity. If the truck is no longer fit, but the cost of shipping freight has not reached the minimum, then the scheduling is invalid and not saved. Scheduling is considered valid if the truck is not greater than the capacity of the truck and the total cost is less than minimum shipping costs. After a valid scheduling, scheduling will be stored

in a Scheduling table. Scheduling process can be seen on Figure 2.

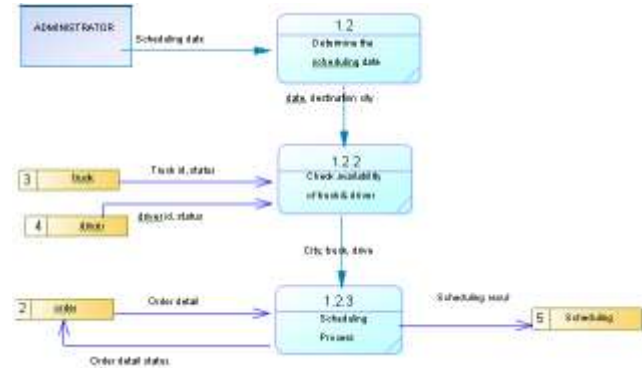


Figure 2. DFD Level 1- Scheduling

The packages that will be shipped are allocated on each truck. Next, it will be continued in the delivery process. Before shipping, admin will process documents such as Transport Letter and Cargo Letter as in Figure 3.

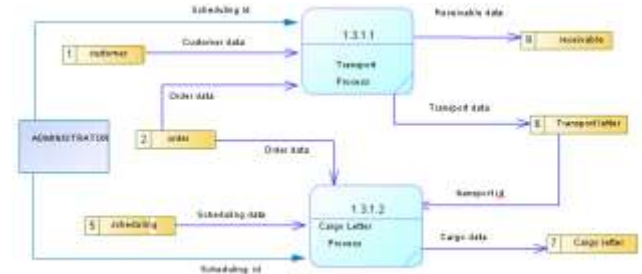


Figure 3. DFD Level 1- Transport & Cargo

After the packets arrive at their destination, bill payments will be given to the party responsible for the shipping costs. The recipient can request return of goods if there are any shipping errors or damage to package, by giving the transportation letter code and items data to be returned.

Every day, the administrator must record employee attendance. The results from the presence of each month will be accumulated with a daily salary of the employee to generate employee salary for one month.

Financial officer will enter data on all expenditures and revenues of each branch office. Revenues came from customer accounts receivable and cash payment of employees, while expenditures came from employee payroll, cash receipt, truck depreciation, and other expenses spent for daily operations. The output of this process is proof of cash receipt, and employee payroll slip. The system will store and generate information in the form of financial statements.

Based on all data being entered and processed by the system, the system will generate output in the form of Transport Letter, Cargo Letter, shipment scheduling, freight costs, availability of truck and driver status, income-expense statements, income statement, delivery report, Report of returns of goods, Report of items that have not been sent, salary slip and salary report.

4.2 Access Right

There are three kinds of permissions, i.e. admin, finance, and the owner. access rights depend on their respective positions in the company and the city where they were. User with access rights Surabaya city, can only see the shipping activity in Surabaya, and the transactions that occurred in Surabaya, as well as for users with access rights Mataram..

Administrator access right can use all menus in the program, unless the financial menu. Administrator can add transaction and view the various data according to the city where they were. The next is the financial access right. User with this access right is allowed to add order and use financial menu accordance to their city.

5. IMPLEMENTATION AND TESTING



Figure 4. Home Page

Figure 4 is the system's home page, display a warning about the customer receivables that will be due, memo messages, and alerts if there are attendance that have not been done on that date.

Figure 5 is a case study example for a delivery order on August 24, 2011. There is a shipping order from Surabaya. The sender is PT Dalya Citra Mandiri and the recipient is UD Melody, and the payer is UD Melody. Packages to be shipped are 50 packs bowls, 50 packs table, 100 packs Plastic Pails, 100 packs Buckets Louhan. Total cost of shipping is Rp 2.425.000, - and will be due on September 23, 2011. After several orders collected and will be sent, the process continues to scheduling. Scheduling dates can be tailored to the desire shipping date. Destinations can be selected according to delivery destination. After the user specifies the date and select the delivery destination, the system will search for the available driver and truck on the specified date, and in the sender city.

The driver and the truck was registered to another scheduling cannot be selected again. In addition, the driver and the truck was registered in the sending process until the date of scheduling, it cannot be selected too. If there are no trucks and drivers are available, the scheduling cannot be done. Scheduling can be saved and considered valid when the weight of the goods delivered no more than the capacity of a truck with delivery charge no less than the minimum delivery charges.

Scheduling for the delivery of goods made on August 25, 2011. Delivery of goods to the city of Mataram by using a truck with police number L 1234 AB, and driven by a driver named Iwan. Here are the results of scheduling, can be seen on Figure 6.

Shipping recording process began by selecting the desired schedule, and then will display the details of scheduling that has been selected. This feature can only be performed by a user with admin or owner access rights Users with admin access right can only make delivery of package from the city it is located, while the owner access right may make delivery of goods from any city.

On August 24, 2011 will be made a package delivery for scheduling number 1 to Mataram. Results of Transport letter (*Surat Angkutan*) can be seen on Figure 5 and Shipping (*Pengiriman*) Form can be seen on Figure 6.



Figure 5. Transport Letter (*Surat Angkutan*)

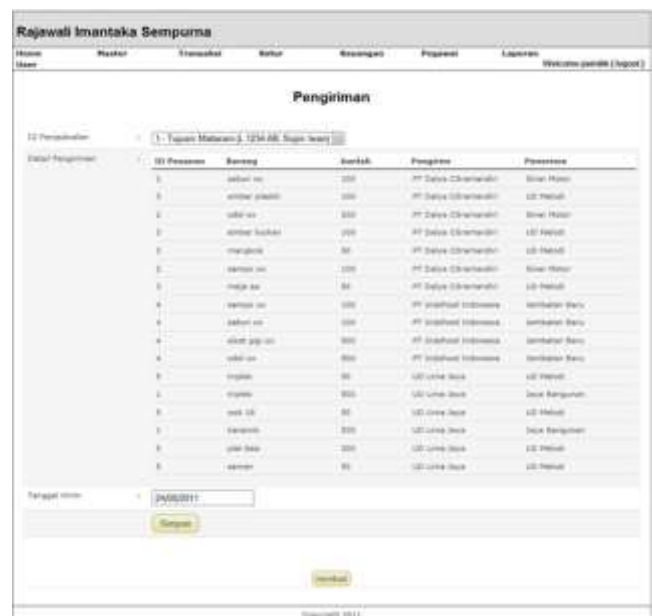


Figure 6. Shipping Letter (*Surat Pengiriman*)

| Rajawali Imantaka Sempurna | | | |
|--|---------|-----------------|---------------------|
| Home | Master | Transaksi | Retur |
| User | | Kuangan | Pegawai |
| | | Laporan | |
| Welcome pemilik [logout] | | | |
| Cetak | | | |
| Laporan Laba Rugi Periode Bulan 08 Tahun 2011 | | | |
| Bulan: | Agustus | 2011 | |
| Tampilkan | | | |
| Pendapatan: | | | |
| Pendapatan Jasa Pengiriman | | | Rp 2.275.000,00 |
| Pemasukan Pelunasan Kasbon Pegawai | | | Rp 0,00 |
| | | Total | Rp 2.275.000,00 |
| Beban-beban: | | | |
| - Beban penggajian pegawai | | Rp 1.082.000,00 | |
| - Beban kasbon pegawai | | Rp 0,00 | |
| - Beban administrasi kantor | | Rp 35.000,00 | |
| - Beban pemisutan truk | | Rp 0,00 | |
| - Beban ganti rugi kerusakan barang | | Rp 150.000,00 | |
| | | Total Beban | Rp 1.267.000,00 (-) |
| | | laba | Rp 1.008.000,00 |

Figure 7. Income Statement (*Laporan Laba Rugi*)

Income Statement on Figure 7 is a report that displays the company's overall revenue and expenditure, and company's profit or loss statement for a particular month. This report can only be accessed by users with owner's access rights.

6. CONCLUSION

At the end of the design and implementation of web-based information system of PT RISE, it can be concluded that:

- Scheduling system is less efficient because of the scheduling system can only calculate the charge based on weight and not by volume of the package.
- With this online application, the owner can monitor the shipment activities.
- Based on the results of the questionnaire, this application gets a percentage of the overall average of 82.5% so it can be said that this application is sufficient to meet the needs of the company.

7. REFERENCES

- [1] Hardaker, G., Trick, R.R. and Sabki, A.A. 1994, The Use of IT in Freight Forwarding in the UK, *International Journal of Logistics Information Management*, **7.4**, 19-22.
- [2] <http://www.slideshare.net/togar/logistics-information-system>, 8 March 2012