

## ANALYSIS AND DESIGN OF A WEBSITE-BASED BATAM LOCAL COURIER INFORMATION SYSTEM

Muhammad Ikhlah<sup>1)✉</sup>, Irsutami<sup>2)</sup>, Sugeng Riadi<sup>3)</sup>, Fathia Mayang Sari<sup>4)</sup>

<sup>1, 2, 3, 4</sup>Department of Business Management, Politeknik Negeri Batam

### Article

#### Information

Received January 2023

Accepted March 2023

Published March 2023

Keywords :

Information System,  
Courier, Website

### Abstract

*The impact of the Minister of Finance Regulation (PMK) Number 199 concerning Customs, Excise, and Tax Provisions on the Import of Consignments in 2019 which was enacted since January 30, 2020 is a decrease in online sales in Batam. As a result, MSMEs in Batam City have to change their market share to only focus on the people of Batam as a strategy in maintaining their business. Based on the results of interviews with several people selling goods whose consumers are in Batam City, they basically prefer local couriers. However, there are some problems, namely the position of goods cannot be tracked in real-time as is the case with e-commerce applications. Where local courier companies have not been integrated with information system applications. The purpose of this study was to analyze the local courier information system of Batam City and to design the local courier information system of Batam City. The first method used is to collect and data through observation, interviews, and literature studies. Then design an information system by analyzing the running system, analyzing system needs, and designing a website interface that combines 3 points of view, namely local courier companies, sellers and consumers. The conclusion of this study is that this research has produced a draft information system for shipping goods for local couriers in Batam City. The information system developed has used data integration through the delivery database of goods available in data management. This information system can help customers to carry out the process of tracking goods that so far cannot be done if using a local courier in Batam City.*

© 2023 Indonesia

✉ Correspondence Address:

Tower A Jurusan Manajemen Bisnis

Politeknik Negeri Batam

E-mail: [ikhlah@polibatam.ac.id](mailto:ikhlah@polibatam.ac.id)

ISSN 2548-9909

## 1. Introduction

Nowadays, the development of information technology is increasing rapidly and the need for fast, accurate, and easily accessible information is very important for human life. The information itself can be accessed by anyone and at any time via a cell phone or computer via the internet. The development of information technology encourages progress in various fields, especially in the business field. Where there is a transition from direct sales methods to through e-commerce such as Shopee, Tokopedia, and Go-food. Evidently, the income of business people in Batam City has increased significantly.

On the other hand, Batam is known as a city that sells foreign branded products such as bags, shoes, and cell phones at lower prices. This is because Batam is a tax-free trade area and its geographical location is close to Singapore and Malaysia. However, there are obstacles after the issuance of the Minister of Finance Regulation (PMK) Number 199 concerning Customs, Excise, and Tax Provisions on the Import of Consignments in 2019 which was enforced since January 30, 2020 (Indonesia, 2019).

In this regulation, the government stipulates that all shipments of goods made by business actors must go through a delivery service that has been approved and determined by the government. In addition, all shipments leaving Batam will be subject to import duties, value added tax, and income tax. This will affect the selling price of goods which must be supplemented by import taxes, income tax and VAT. As a result, the selling price of goods is too high to be able to compete with competitors outside Batam. This has a negative impact on sellers of goods in Batam City, as quoted from suryakepri.com (2020) that PMK 199 is recognized as having an impact on reducing online sales in Batam (Boelan, 2020).

Since its enactment, MSMEs in Batam City have had to change their market share to only focus on the people of Batam as a strategy in maintaining their business. Because, there

are not a few who have gone out of business. Therefore, according to observations, the turnover of goods in Batam City has increased in line with the number of local couriers who are not part of national-scale couriers such as JNE, SiCepat, JNT, and others. Based on the results of interviews with several sellers of goods whose consumers are in Batam City, they basically prefer local couriers for several reasons. First, the shipping costs paid are not based on the distance, only Rp10,000. Second, all local couriers are willing to pick up goods from the seller even if they cover only 1 product. Third, in 1 day there are 2 times the delivery schedule of goods, namely during the afternoon and evening. These things, of course, are not available on couriers on a national scale.

For sellers, having a local courier really helps their business process. But not for consumers, because the position of goods cannot be tracked in real-time as is the case with e-commerce applications. Where local courier companies have not been integrated with information system applications. Especially if ordering food that is easily stale or ordered for events, real-time tracking is very necessary. Therefore it is necessary to create a website-based local courier application system to help sellers, buyers and courier companies manage the delivery of goods which so far has not existed in the city of Batam.

System is a network of interconnected procedures, coming together to perform an activity or complete a particular goal (Jogiyanto, 2017). Another opinion states that a system is a set of components that work together to achieve a specific goal (Romney & Steinbart, 2018).

Data is something real, a fact about an object that can reduce the degree of uncertainty about a state or event (Kristanto, 2018). From this understanding, it can be concluded that data is a real record of an object such as places, objects, and people that actually happened. Data that is still raw material if not processed then the data is useless, so a model is needed

which will later be grouped and processed to produce information.

Information definitions defined as an organized data that can support the accuracy of decision making. Information is the output of a data processing process. These outputs are usually well organized and have meaning for those who receive them, so they can be used as a basis for decision-making by management (Bodnar & Hopwood, 2013).

Information management is an integrated human or machine system that presents information to support the functions of operations, management, and decision making in an organization (Davis & Olson, 1985). Another opinion states that a management information system is a system that processes and organizes data and information that is useful to support the implementation of tasks in an organization (Hariyanto, 2016). The management information system in its implementation uses several components, namely computer hardware and software, file files or a set of stored data, procedures or guidelines in the operation of information systems, humans or (brain ware) or humans involved in the operation of information systems.

Distribution is a marketing activity that seeks to facilitate and facilitate the delivery of goods and services from producer to consumers, so that their use is in accordance with what is needed (type, quantity, price, place, and when needed). Distribution activities can make business activities smoother and easier to run with planned and well-run distribution, so that the relationship between sellers and buyers can be well established (Tjiptono, 2019). In providing satisfaction for consumers, service is very important. The services provided by the seller will be a challenge for its consumers. Service is an act or deed that can be offered by a party to another party that is basically *intangible* and does not result in ownership of something. One of the services that sellers can provide to consumers is the quality of service (Kotler, Keller, and Chernev (2022). In measuring the quality of

delivery services, there are several things that need to be considered. There is coordination between logistics and marketing to generate competitive profits for the company (Mentzer, Flint, & Hult, 2001).

Based on the background above, the author is interested in conducting research to analyze and design a website-based information system design as outlined in the form of a research proposal with the title Analysis and Design of a Website-Based Batam Local Courier Information System. With the design of this information system design, it is expected to be a solution to consumer complaints in tracking the position of goods in real-time, faster delivery times for goods and food so that they remain warm and not stale when received, as well as an integrated and transparent delivery process between sellers, couriers, and consumers.

## 2. Methods

In this study, the first thing that was done was to make observations about the system that was running at local courier companies in Batam City. Basically, the number of local couriers in Batam City has not been identified. However, according to the observations of researchers, there are quite a lot of them, both individual and business entities. In this regard, the researcher will use the snowball method to obtain information about local couriers, and will stop if the researcher thinks the data deemed necessary is sufficient for processing.

After making observations, then conduct interviews with the courier company to get an overview and expectations about the business processes they run. The interview itself does not only stop with courier companies, consumers also get the opportunity to be interviewed in this study to get consumer input and opinions regarding the weaknesses of the current system at local courier companies in Batam City. After that, collect data obtained from journals or books to meet analytical needs that can be used as a reference in designing the system.

### 3. Results and Discussion

#### 3.1 Research Result

##### a. Interview Data Analysis

Based on the results of interviews that have been conducted with informants, researchers analyze data to answer research problems. The following are the findings in research to get an idea of what kind of system is needed for the Batam city local courier information system. The information obtained from the answers of informants interviewed by researchers produced varied answers. This is explained below:

- 1) The first question regarding the process of recording details of goods, consumer data still uses manual or conventional systems. In essence, the informant's answer is that the process of recording and detailing goods still uses conventional systems using the WhatsApp or Facebook applications. The courier provides a format, the seller or consumer just fills in the data.
- 2) The second question regarding the shipping process takes a long time. In essence the informant's answer is no because the average pick-up time is 1 hour after the order. However, the pick-up is only valid until 16.00 WIB.
- 3) The third question concerns errors when recording data or typographical errors. In essence the informant's answer is very rare, and if it happens it is usually just a mistake in writing the address and the total payment.
- 4) The fourth question concerns administrative costs in the use of local courier services. In essence, the informant's answer is that there are no administrative fees because all costs include the cost of the services offered.
- 5) The fifth question concerns the shipping costs that must be borne by consumers. In essence, the informant's answer is that the shipping cost for the entire Batam City is Rp10,000.
- 6) The sixth question regarding the payment system for delivery services. In essence, the informant's answer is that payment

systems generally use *cash on delivery*. The courier will pay the seller the price of the item to be delivered. Then when it comes to the buyer, the courier will charge the price of the goods plus a delivery service of Rp10,000.

- 7) The seventh question regarding local courier companies incurs additional costs for the company's operational activities. In essence, the informant's answer is that courier companies do not incur additional costs because courier companies feel that the income, they get is very sufficient. Courier companies get a share of IDR 2,000/package, while couriers get IDR 8,000/package.
- 8) Concerns about couriers guarantee secure consumer data will not be lost or manipulated. In essence, the informant's answer is that the courier guarantees that the data will not be manipulated and misused because it will relate to consumer trust.
- 9) The ninth question about recording wastes a lot of time, especially during peak hours. In essence, the informant's answer is during peak hours such as 10.00 WIB and 14.00 WIB. This happens because data recapitulation is still done manually not using the system.
- 10) The tenth question concerns checking the location of the goods or the estimated length of time until it can be served by the courier company. At its core the informant's answer is that the submission cannot be traced. Information on goods has arrived or not only from buyers.
- 11) The eleventh question is about using information systems in the distribution of goods. In essence the informant's answer is that no information system is used, it still uses manual systems, such as WhatsApp or Facebook. The seller can only place an order.
- 12) The twelfth question regarding what kind of system is needed by local couriers in Batam City. In essence, the informant's answer is that there is a need for a tracking

system to find out the position of goods, this is to minimize human error. However, with the existence of an information system, it may also greatly affect the cost of services that will increase.

b. Actor Identification

To find out the actors involved in the business process that is currently running on the local courier of Batam City, it is necessary to identify the actor. Table 1 describes the actor identification results from current business processes.

Table 1. Actor Identification

Actor Name	Description
Customer	Customers are played by customers who use local courier services in Batam City in the process of shipping goods
Admin	Admins are played by employees who have the intention to receive orders from customers, recap shipping data, and divide the goods to be picked up and sent by couriers
Courier	Couriers are played by employees who are in charge of picking up goods from the seller, collecting goods at the office, and delivering the goods to the buyer.

c. Problem Analysis

Problem analysis is carried out in order to understand the problems in the current business process and explain the needs of the user, so as to propose solutions to the problems that occur. Table 2 below is the result of the problem analysis.

Table 2. Problem Analysis

<b>Problem</b>	1. Unable to track shipments 2. Can't find out who the courier is carrying the ordered item if the goods have been delivered to the courier's office
<b>Affect</b>	Customer, Admin, Courier
<b>Impact of the Problem</b>	1. Customers (sellers) must wait for information from other

	customers (buyers) if the goods delivered have arrived or not 2. The goods did not arrive at the desired time
<b>Solution</b>	A system that can improve the suitability of tracking information, minimize shipping errors and courier information of the shipper.

d. System Features

Features are obtained from the feature identification process that represents a given solution to answer user needs. The information obtained from the feature identification process is used to identify functional and nonfunctional requirements. Table 3 describes the features of the system in the information to be built.

Table 3. System Features

Feature Code	Feature
F-KLKB-01	User authentication
F-KLKB-02	Manage customer data
F-KLKB-03	Manage courier data
F-KLKB-04	Manage item tracking data
F-KLKB-05	Item tracking info
F-KLKB-06	Courier data info

e. Modeling Use Case Diagrams

Use case modeling uses diagrams to explain the actor's relationship to the system. Figure 1 is a use case diagram explaining who the actors are and their relationships in the system

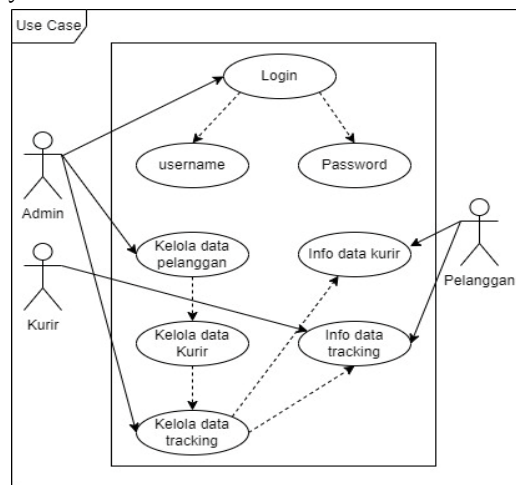


Figure 1. Use Case Diagram

f. Use Case Specifications

This stage describes brief information about the actors and activities carried out in the use case that has been made to find out the detailed behavior of the system that will later be used in the analysis class process at the design stage. The specifications of the use case tracking of goods are described in Table 4.

Table 4. Specification of Goods Tracking Use Case

<b>Primary Actor</b>	Customer
<b>Brief Description</b>	Explains how the actor uses the system to check the delivery status of goods
<b>Pre-Condition</b>	<ol style="list-style-type: none"> <li>1. Internet-connected devices</li> <li>2. The system has been connected with the server</li> <li>3. The customer has received the receipt number</li> </ol>
<b>Post-Condition</b>	Customer actors get information regarding the delivery status of goods.
<b>Basic Flow of Events</b>	<p>{use case started}</p> <ol style="list-style-type: none"> <li>1. Use case begins when the customer actor enters the receipt number</li> <li>2. The customer sends the receipt number into the system</li> <li>3. The system identifies delivery receipts</li> </ol> <p>{identifying receipt}</p> <ol style="list-style-type: none"> <li>4. The system displays the delivery status of goods from the receipt that has been entered</li> </ol> <p>{Use case completed}</p> <ol style="list-style-type: none"> <li>5. Use case completed</li> </ol>
<b>Alternative Flow</b>	<p>Handling errors entering receipt numbers</p> <p>On {identifying receipt} if the customer enters the wrong receipt, a delivery status message of the item</p>

	not found will be displayed by the system and the use case is completed
--	---

3.2 Display Design

a. Main Page Interface Design

Below shows the main page design for admins, couriers, and customers. On this page only admins can log in.

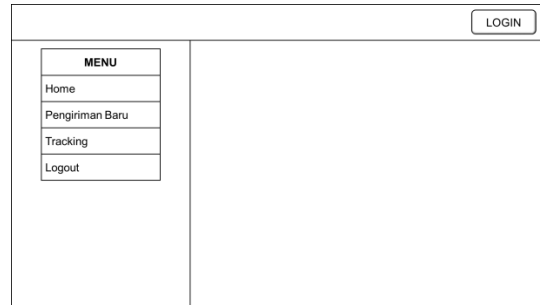


Figure 2. Main Page Interface Design

b. New Delivery Interface Design

Below shows the design of the new submission page. On this page there is information on the transaction number, delivery date, sender data, data of the courier who picked up the package, recipient data, data of the courier who delivered the package.

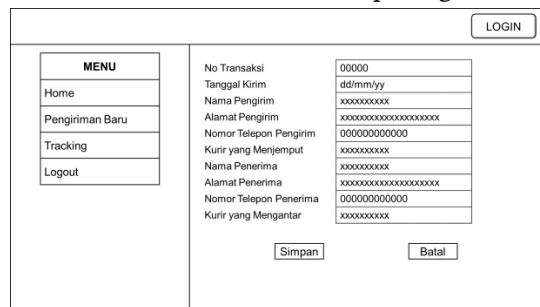


Figure 3. New Delivery Interface Design

c. Tracking Process Interface Design

Below shows the design of the tracking page. On this page, customers enter their mobile phone number to track the whereabouts of the shipment.

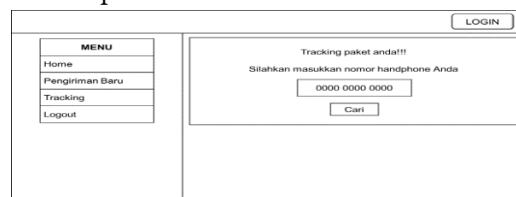


Figure 4. Tracking Process Interface Design

#### d. Program View

##### 1) Start page

The start page is the thing that first appears when the user opens the website for the first time or what is often known as the homepage



Figure 5. Start page view

##### 2) New Submissions page

The new shipping page is the page used by admins to enter freight forwarding data. On this page there is data on the delivery of goods, the recipient of the goods, the courier who picks up the goods, and the courier who delivers the goods. The transaction number and send date will be automatically filled in by the system when saved.

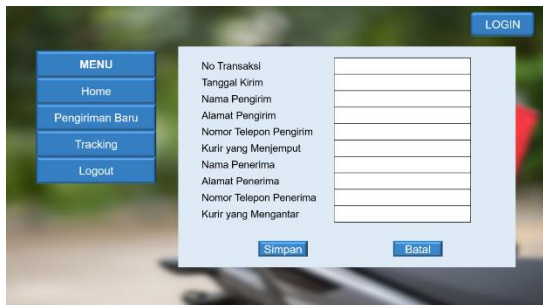


Figure 6. New submission page view

##### 3) Tracking Page

The tracking page is a page that has a function to process shipment tracking data. On this page, it will display the position of the location of the goods, besides that the courier will also be displayed who will deliver the goods and the courier's mobile phone number. This tracking process will only be able to be done if the delivery item has arrived at the courier company pool (after the admin inputs the item data).

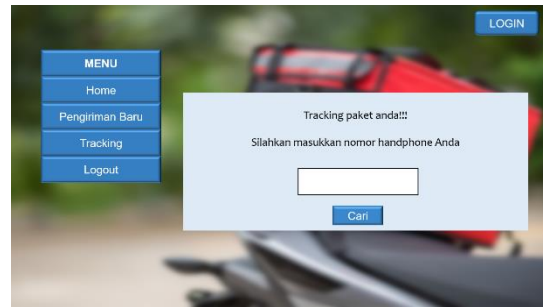


Figure 7. Tracking page view

#### 4. Conclusion

Based on the discussion and description above regarding the local courier information system in Batam City, the researcher made several conclusions. The first is that this research has produced a draft information system for shipping goods for local couriers in Batam City. Second, the developed information system has used data integration through the delivery database available in data management. Finally, this information system can help customers to carry out the process of tracking goods that so far cannot be done if using a local courier in Batam City.

In addition to some of the conclusions above, there are also several recommendations for further research, namely the next research can improve this design because according to researchers there are still many shortcomings in the system that has been designed, as well as the existence of this information system, it is hoped that this information system can be used by Batam City courier companies to improve services to customers.

#### References

- Bodnar, G. H., & Hopwood, W. S. (2013). *Accounting information systems. 11th edition* (- ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Boelan. (2020). PMK 199 Diakui Bawa Dampak Penurunan Penjualan Secara Online di Batam. *Surya Kepri*. Retrieved from <https://suryakepri.com/2020/02/03/pmk-199-diakui-bawa-dampak-penurunan-penjualan-secara-online-di-batam/>
- Davis, G. B., & Olson, M. H. (1985). *Management Information Systems:*

- conceptual foundations, structure, and development*: McGraw-Hill.
- Hariyanto, S. (2016). Sistem Informasi Manajemen. *Publiciana*, 9(1), 80-85.
- Indonesia. (2019). *Peraturan Kementerian Keuangan Nomor 199 Tahun 2019 tentang Ketentuan Kepabeanan, Cukai, Dan Pajak Atas Impor Barang Kiriman*.
- Jogiyanto, H. M. (2017). *Analisis dan Desain (Sistem Informasi Pendekatan Terstruktur Teori dan Praktek Aplikasi Bisnis)*: Penerbit Andi.
- Kotler, P., Keller, K. L., & Chernev, A. (2022). *Marketing Management, 16th Edition* (-ed.). Upper Saddle River, NJ: Pearson Education Limited.
- Kristanto, A. (2018). *Perancangan Sistem Informasi dan Aplikasinya* (Ed. revisi., Cet. 1 ed.). Yogyakarta: Gava media.
- Mentzer, J. T., Flint, D. J., & Hult, G. T. M. (2001). Logistics Service Quality as a Segment-Customized Process. *Journal of Marketing*, 65(4), 82-104. doi:10.1509/jmkg.65.4.82.18390
- Romney, M. B., & Steinbart, P. J. (2018). *Accounting Information Systems, 14th Edition*: Pearson Education Limited.
- Tjiptono, F. (2019). *Strategi Pemasaran*. Yogyakarta: Penerbit Andi.