The Implementation of The Auto Gate System as A Facilitator of The Flow of Goods At Container Terminal (A Study At Operating Terminal 3 Ocean Going, Tanjung Priok Port)

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Abstract. The heavy traffic of goods in the port, infrastructure and technology are needed as a support in the activity of goods traffic in the port. Terminal 3 Ocean Going IPC TPK has just implemented an auto gate as a goods flow accelerator at the port. This study aims to knowing the implementation of the auto gate system at Terminal 3 Ocean Going IPC TPK in facilitating the flow of goods and knowing the obstacles in the application of the auto gate system. The method used is qualitative descriptive by interview, observation and field research. Expected results with the existence of an auto gate system can increase the effectiveness and efficiency of services in goods traffic activities and can make it easier to control the flow of goods movements. The implementation of the auto gate system at Terminal 3 ocean going is considered good and provides many benefits, but IPC TPK has just been in a development test so that evaluation is still underway to go to the production test stage.

1. Introduction

The digitalization era provides a lot of convenience in providing services, one of which is at the port or better known as the digital port. Digital port is allegedly able to increase the effectiveness of port services and the efficiency of the resources needed in the port. There is a plan since the last few years, Indonesia Port Corporation (IPC) will be one of the digital ports in operational and financial aspects. Indonesia Port Corporation (IPC) II will impose an auto gate at terminal 3 of Tanjung Priok Port.

The auto gate is a container service process at the gate that processes checks, documents the physical condition of containers that are carried out automatically through a digitization system without involving gate officers [4]. The auto gate is applied to simplify and shorten inspection times, such as physical inspection of trucks, containers, and customs checks. At the terminal gate, it is not only identifying and recording important data such as the number, type, size, condition and weight of the container and information about the owner and shipping but also related to driver information, driving license numbers and chassis that must be identified and recorded [1]. This activity requires a lot of time if it's done with gate-workers.

With the implementation of the auto gate, all activities at the gate become automated so that they can minimize the time used in the gate terminal which can also facilitate the flow of goods in and out of the port. The use of the Auto gate at the port is one of the recommendations from the central
government to position the EoDB (Easy of Doing Business) ranking. The auto gate will be applied to export and import activities.

In the application of the auto gate there is no more Customs clearance to examine documents and provide wet stamps on documents. On the other hand, the application of the auto gate can also eliminate HR costs because all of its functions have been carried out by engine or technology. Therefore, this research was conducted to find out how the application of the auto gate system in facilitating the flow of goods in the Operating Terminal 3 Ocean Going Tanjung Priok Port.

2. Research Method
The research was conducted at Operating Terminal 3 Ocean Going, Tanjung Priok Port. Location selection since it is a port that has implemented an auto gate system. The researcher used a type of research that was descriptive qualitative, which was intended to describe the implementation of an auto gate system.

In writing this journal, the author will collect primary data and secondary data relating to the auto gate system. Data collection techniques used in the research are interviews, observation, and field surveys. The research subjects were selected by the method of snowball sampling technique since researchers needed many respondents to get more data so that they could be compared with each other's opinions and analysed more deeply.

3. Result and Discussion
The gate of a container terminal is a physical interface between a container transporter and a container terminal where the responsibility for container management is shifted between the two. It also provides a truck driver with information on the access to the container yard and storage location [2].

The background of the application of the auto gate at Terminal 3 Ocean going Tanjung Priok Port with management responsibilities by IPC TPK is due to frequent traffic jams or long queues when making transactions at the gate terminal. On the other hand, Customs recommends to implementing an auto gate system for Operating Terminal 3 Ocean going.

The purpose of the implementation of the auto gate system in the port is to minimize the time of transaction so that there is no congestion, can reduce extortion, and also the application of auto gate can eliminate HR costs since almost all activities at the gate are handled by the system, which is considered to reduce service time. The objective of implementing the auto gate system is as follows:

| Table 1. Objective of implementing |
|-----------------------------------|
| **Objectives Implementation**     |
| Reducing truck service time at the gate | • Improvement of transaction time at the gate  
                                      | • Reduce the queue at the gate  |
| Increase productivity at the gate | • Increase capability at the gate  
                                      | • Increase gate capacity to trucks service  |
| Standardization of services and security at the gate | • SLA standards in each process to maintain customer satisfaction  
                                                     | • Reducing manual entry errors done at the gate  
                                                     | • Reducing human interactions  
                                                     | • Standardize regulations to external trucks through the use of Truck ID (TID)  |
| Eliminating the use of documents or papers | • No need for wet stamps from Customs  |
No need to carry SP2 (Container Submission Letter)
• It has been replaced with a system

The auto gate has several advantages that can improve the service at the gate. The advantages are as follows:

Table 2. Auto gate advantages

| Auto gate advantages |  |
|----------------------|--|
| **Speed**            | • Reducing the time of the transaction at the gate |
| **Security**         | • Implement RFID technology for secure gate transactions  
|                      | • Transparent and recorded Transaction gate  
|                      | • Reducing the human transaction between operations and truck drivers at the gate |
| **Accessibility**    | • Providing online data |
| **Portability**      | • Providing the best service to third parties |

The components in the application of the auto gate, namely:
• Checkpoint Enclosure  
• CCTV cameras (required for terminal containers that serve internationally)  
• eTicket / Billing  
• Control Center (mandatory for container terminals serving international ships / Customs Offices)  
• Post-Gate / Gate Office for monitoring

The checkpoint enclosure is very influential on the application of the auto gate because previously the service at the gate will be handled by the gate worker. The supporting components in the checkpoint enclosure, such as camera CCTV for recording and photographing the driver and barrier gate as a security tool.
In implementing the auto gate, truck drivers are no longer carry documents but have used the Gate Pass e-Ticket. E-Ticket is RFID technology that made of lightweight paper, and it has a chip where the chip serves to scan data in container trucks. RFID technology can be applied to container number confirmation, driver confirmation, chassis number confirmation, and container number specification confirmation [3]

E-Ticket will be used at the checkpoint enclosure to scan the data and data that has been automatically filled in the system completely. However, the e-Ticket has a weakness; it can not be bent or press, which can damage the chip in the e-Ticket. If the e-Ticket is bent, it cannot be scanned because the chip is cut off so that the owner of the goods must pay an administrative fee to the billing and the user must pay the service to the billing. The e-Ticket is only for one use, after that it doesn't work anymore after all service activities are complete. After the service activity is complete, the e-ticket is handed over to the security during the process at the gate out. The goal is to provide proof if the truck is already out.

Figure 2 is an example of an e-Ticket in the Operating Terminal 3 Ocean Going Tanjung Priok Port, which is for truck containers in receiving activities. Of course, with the e-Ticket, it can minimize the activity process at the gate in and gate out. The following figure is the flow of the receiving and delivery process at the gate in and gate out:
Receiving Process Flow

At the time of the study, a line was constructed as infrastructure in the auto gate which numbered two lanes for the gate in and four lanes for gate out. In applying the auto gate at Operating Terminal 3 Ocean Going Tanjung Priok Port, the activities at the gate will be automated, there will be no more labor at the gate except the gate inspector who will input the truck data and containers to be forwarded to the system and the system will automatically input data that is. The truck driver only needs to tap
the gate pass e-ticket to the enclosure, and the output is in the form of a CMS (Container Movement Slip) containing information about the location of the stack. The figure below is an example of CMS:

![CMS Example](image)

Figure 5. Container Movement Slip
Source: IPC TPK

In applying the auto gate at Operating Terminal 3 Ocean Going Tanjung Priok Port, the activities at the gate out only included the inspection and tapping of the e-ticket and then handed over the e-ticket to the gate out security officer as a proof that the truck was out.

With the application of this auto gate, the service at the gate is very efficient because it only requires a little time compared to the manual. Here is a comparison of the time between the manual and the auto gate:

### Table 3. Manual Time

| Gate BC In | Gate Inspection In | Truck In (Gate Out) | Gate Inspection Out | Truck Out (Gate Out) | Gate BC Out |
|------------|--------------------|---------------------|---------------------|----------------------|------------|
| 24 s       | 82 s               | 59 s                | 85 s                | 67 s                 | 25 s       |

**The total average time in Gate In 165 seconds = 2 minutes 45 seconds**

**The total average time in Gate Out: 166 seconds = 2 minutes 46 seconds**

Source: IPC TPK

### Table 4. Auto Gate Time

| Gate Inspection In | Truck In | Gate Inspection Out | Truck Out (Gate Out) |
|--------------------|----------|---------------------|----------------------|
| 45 s               | 33 s     | 43 s                | 18 s                 |

**The total average time in Gate In 78 seconds = 1 minute 18 seconds**

**Total average time in Gate Out: 61 seconds = 1 minute 1 second**

Source: IPC TPK
Judging from the time, it takes the truck when at the gate in and gates out; therefore, the implementation of the auto gate greatly affects the service time. If the implementation of the auto gate has been fully implemented in Operating Terminal 3 Ocean Going, then this leads to a positive thing given the high throughput of the port of Tanjung Priok.

At the time of the June 2019 study, Operating Terminal 3 Ocean Going Tanjung Priok Port had not fully implemented the auto gate and was still carrying out an experiment using the auto gate in the last few weeks as well as the customs system; it had not been applied to the users. During the study, Customs still carried out an evaluation related to the application of the auto gate in Operating Terminal 3 Ocean Going. However, the readiness to implement auto gate, namely the preparation of auto gate in the first operating Operating Terminal 3, is a facility that has been built, the IPC TPK and Custom system has been tested and will run after all the problems have been tested. Because the auto gate is still being tested normally, when there is an error, all terminals are worried that they have not prepared the things beyond normal. During the 2019 study, IPC TPK was still in the development test phase, which meant that it was still in the normal trial stage while building and improving if there were errors and shortcomings. If the evaluation is complete and the system is ready, the next step will go up to the production test stage and stabilization, which means the auto gate system is ready to be implemented for the user. The project team has prepared from the preparation of the equipment, procurement, system, system integration, installation of the equipment, the test function, or not. The plan also includes training for operators and gate officers related to the application of the auto gate so that they get knowledge about the auto gate because this is a new thing. If all preparations are ready, then the auto gate is ready to be applied. The related SOPs regarding auto gate is related to procedures. Regarding the implementation of the auto gate, IPC TPK has already been socializing, namely before the project starts and when the project will be in a live trial.

The application of the auto gate system is very useful for users because it makes it easier for users to carry out activities at the gate terminal. However, the auto gate system has the disadvantage that the system often experiences errors when used, so it must be done manually until the system returns to normal. At the time of research, there was no problem for users in implementing the auto gate system. However, because of the user's lack of knowledge about the auto gate, users often double-taped the e-ticket to the enclosure, which caused data to be inputted twice.

4. Conclusion
The application of the auto gate at Terminal 3 Ocean Going based on frequent traffic jams or long queues at the time of the transaction at the gate. Customs also recommends IPC TPK to implement an auto gate system in order to minimize transactions at the gate terminal. IPC TPK's implementation of the auto gate system at Operating Terminal 3 Ocean Going is still in the development test stage. It means that IPC TPK is still building and testing the system so that the system is considered good to proceed to the production test stage and stability so that the auto gate system can be implemented as soon as possible. IPC TPK has also held training for operators and gate officers with knowledge of auto gate systems. The application of the auto gate is considered to provide many benefits and can increase efficiency and effectiveness. The suggestion for the future is to continue to develop auto gates with advanced technologies such as OCR that can convert images in the scan process so that they can read container numbers and truck numbers and LIDAR technology that can detect container damage so that fully automation can be applied at the gate so there is no gate inspector at the gate terminal.

5. References
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