

IMPROVEMENT OF IMPORT CARGO HANDLING PROCESS AT CARGO SERVICE CENTER, AHMAD YANI INTERNATIONAL AIRPORT

Sita Aniisah Sholihah¹, Iqbal Firmansyah², Dinar Dewi Kania³, Chairunisa Tiara Hanalia⁴

Institut Transportation dan Logistik Trisakti, Jakarta, Indonesia

✉ corresponding author: sitaaniisah@itltrisakti.ac.id

Abstract: This study aims to streamline processes that have waste and find out processes that do not add so that it is necessary to make changes to the flow of the import cargo handling process at the Cargo Service Center of PT.A. The method used in this research is the Value Stream Mapping (VSM) method by mapping the actual process according to the actual conditions in a company that performs a constraint analysis to determine the benchmark of the problem using seven waste. To make suggestions, improvements need to analyze streamlining in order to determine the type of improvement that will be carried out in the future from the results of streamlining, then determine the process that needs to be done is the breakdown process and delivery to the recipient. So that the proposed improvement design will be changed by inputting an integrated system in order to minimize time wastage and be able to change the cargo handling flow to be more optimal and able to survive in the long term so that this can have an impact on the related company. Combining the Value Stream Mapping (VSM) method with the Streamlining method in order to find out the optimal import cargo handling process in carrying out repair designs by describing a future state map that results in a more optimal process flow starting from 56.29 minutes to 34 minutes after repairs are made.

Keywords: *Import Cargo, Value Stream Mapping, Seven Waste, Improvement, Streamlining*

Introduction

Cargo Service Center is a freight forwarding business that give services in cargo handling, both for domestic and international. It's a third party cargo handling process. Cargo handling at Ahmad Yani International Airport is in accordance with Standard Operating Procedur (SOP) in handling export-import cargo. However, there are obstables that resulted in a problematic process (Sari, 2014).

The import process itself is a form of activity carried out by importing goods or services from one country to another or the activity of sending goods into the Customs area (Altius, 2009). In carrying out import activities, there are several regulations that need to be considered in order to avoid obstacles that will occur (Fathullah et al., 2018; Firmansyah et al., 2021; Fitharti et al., 2019; Ricardianto et al., 2022). One of them is to prepare documents such as Invoice, Packing list, Air Waybill (AWB), Notification of Imported Goods (PIB), Notification of Release of

Goods (SPPB) and other additional documents that are adjusted to the type of goods being transported (Sutedi, 2014).

The typical goods shipped by air cargo are urgent or high-value or perishable commodities. So, time to import or export become importance. Astuti (2017) highlighted that the smoothness of document processing greatly affects the timeliness of releasing imported goods at Soekarno Hatta International Airport. Azkia (2017) stated that delays are caused by incomplete documents, partial shipments, redress, careless and lack of facilities in handling goods.

Preliminary study with Cargo Service Center at Ahmad Yani Airport shows that activities in carrying out the import cargo handling process are said to be still not optimal. This is because in the breakdown process for Airway Bill (AWB) it is still done manually and in the Delivery to Consignee process, cargo loading from the warehouse to the agent fleet is carried out by double crosschecking, so this results in an indication of a waste of time at each stage of the import cargo handling process.

This study analyzed process business of import cargo handling by Cargo Service Center and identified the improvement needed to decrease process time. The research questions are:

RQ1: How is the existing import cargo handling process?

RQ2: What are the wastes that occur in the existing import cargo handling process?

RQ3: What is the proposed process improvement in import cargo handling?

Method

Lean logistics approach is used to solve the problem, in which this method suits for the problem that need radical or incremental improvements by understanding of the wastes or inefficiencies that lie in existing systems (Jones et al., 1997). Value stream mapping is a well-known tool supporting process improvement, and its source and basis are the principles of Lean (Lean Management, Lean Production). Usually VSM is used to visualize the materials and information flows, to define the adding (VA) and non-adding (NVA) (Klimecka-Tatar, 2021).

The value stream mapping (VSM) technique was developed as a graphic method within the lean manufacturing paradigm to help redesign and improve manufacturing processes. VSM

is a tool used by lean practitioners to visualize work processes, which helps them in better understanding of relationships among activities, movements of materials and information and, most importantly, wastes (Basu & Dan, 2014).

VSM used in this research to understand the current state, identify problems in the flow of the import cargo handling process so that it becomes more optimal, especially at PT. A Cargo Service Center. Overall, the research design consist of 3 (three) steps: (1) mapping existing process business (Current State Map); (2) analyze the waste in the system and identify the value-added (VA), non-value-added (NVA), and neccessary but non-value-added (NNVA) process using Process Analysis Mapping (PAM); and streamline the process and design a future state map using Process Analysis Mapping (PAM); and streamline the process and design a future state map (Hines & Rich, 1997). The overall research design can be seen in Figure 1.

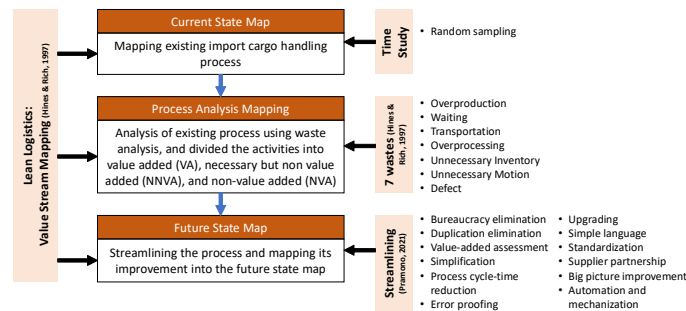


Figure 1 Research Design

Discussion and Result

The business process of import cargo handling at Ahmad Yani International Airport can be divided into 5 (five) main activities:

- Hand Over Cargo:** the process of hand-over cargo from ground handling operator to warehouse, carried out by the checker;
- Breakdown:** Cargo checklist process with supporting data and document verification to ensure that the documents are in compliance;
- Document Processing:** Inputting the document into the SITEK G2 system and inspect the import route by the Customs;

- d. **Printing receipt of goods:** The form issued by the warehouse operator after making payment; and
- e. **Delivery to Consignee:** The loading-unloading process is carried out from the warehouse to the Aircraft Cargo Expedition (EMPU) fleet to be handed over to the consignee.

The existing process business can be seen at cross-functional diagram of import handling cargo (See Figure 2). There are several actors involved: Porter, Checker, Acceptance, SITEK G2, Bea dan Cukai (Customs), Cargo Service Center, AVSEC, Porter EMPU, and Customer. (Sholihah et al., 2018) The system that consist of several actors involved need a good coordination.

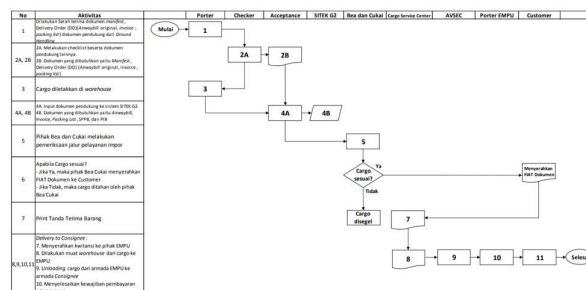


Figure 2 Cross-Functional Diagram of Impor Handling Cargo

The first Value stream mapping design is to design the flow of the import cargo handling process (current state map) in accordance with the existing business process flow at PT. A (see Figure 3). The processing time is 56.29 minutes, while the lead time is 61 minutes or 52% of the overall processing time. It shows that the business process is inefficient.

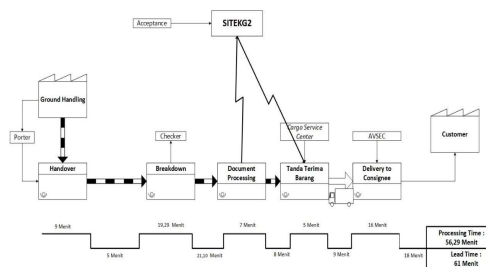


Figure 3 Current State Map

The Process Analysis Mapping (PAM) is carried out to identify the VA, NVA, and NNVA (see Table 1). The result is there are 9 value-added activities, 4 non-value-added activities, and 5 necessary but non-value-added activities. The percentage of cycle time shows that the breakdown process and the delivery to consignee process are the most inefficient activities. Therefore, these processes need to be followed up in order to minimize the waste.

Tabel 1 Process Analysis Mapping (PAM)

No	Activities	Activity Analysis					Activity Type	% Cycle Time	%
		D	I	T	O	S			
1	Hand Over Cargo								
	a. Hand Over Cargo Process				9		VA	9	8%
	b. Waiting the handover process	5					NVA	5	4%
	Breakdown								
	a. Cargo transfer process					1	NNVA	1	1%
	b. Checklist Process				17.29		NNVA	17.29	15%
	c. Document double crosscheck		21.10				NVA	21.10	18%
	d. Document Verification		1				VA	1	1%
	Document Processing								
	a. Input SITEK G2				4		VA	4	3%
	b. Double crosscheck		8				NVA	8	7%
	b. Document Handover				1		NNVA	1	1%
	c. Import line check		2				VA	2	2%
	Print Receipt of Goods								
	a. Print Receipt of Goods				5		VA	5	4%
	b. Waiting cargo pick up info	9					NNVA	9	8%
5	Delivery To Consignee								
	a. Handover invoice to air cargo expedition				1		VA	1	1%
	b. Waiting the fleet of air cargo expedition	2					NNVA	2	2%
	b. Cargo loading process				8		VA	8	7%
	c. Consignee pays administration				2		VA	2	2%
	d. Double Crosscheck		18				NVA	18	15%
	e. Cargo loaded onto shipping fleet				3		VA	3	3%
	Time Comparison	16.00	50.10		50.29	1	VA = 9 NVA = 4 NNVA = 5		
	Total Time	117.39							

Then a constraint analysis is carried out by identifying the types of waste that exist in the import cargo handling process flow which is adjusted to the results of grouping Value Added (VA) and Non-Value Added (NVA) which have the highest percentage. The result of waste analysis shows that there are 2 types of waste in the existing process business: waiting time and inappropriate processing. The reason why these wastes occurs can be seen in Table 2 below:

Table 2 Waste Analysis

No	Process	Waste	Reason	Time	Activities
1	Handover	Waiting time	Waiting handover for the document process	4%	NVA
2	Breakdown	Innapropriate Processing	The Procees of the <i>cheatoliter</i> and document verification still used manually with hand writing and it makes indication waste	15%	NNVA
3	Doc Processing	Waiting time	Double crosscheck	7%	NVA
4	Tanda Terima Barang	Waiting time	Waiting information for pick up cargo	8%	NNVA
5	Delivery To Consignee	Waiting time	The process of loading goods from the warehouse to the Agent fleet is carried out by double crosscheck which causes a waste of time	15%	NVA

The next step is to streamline the process in order to make improvements. Table 3 shows the streamlining of the process. The intitial business process issue is the process flow is still done manually by inputting SMU. It need upgrading, automation, and simplification so that the system can be develop to be automated using barcode scanning. The other issue is the process of loading cargo from the warehouse to the agen's fleet is carried out by double crosscheck which causes a waste of time. Therefore it nees simplification by carried out the cargo loading inspection only once which witnesses by parties (AVSEC, EMPU, and Agent) to shorten the process time.

Tabel 3 Streamlining

	Initial Business Process Issues	Streamlining tool	Business Process Recommendations
1			
2	The process flow is still done manually by inputting SMU	Upgrading, Automation, Simplification	Develop system processes to be automated using barcode scanning
3	The process of loading cargo from the warehouse to the Agent's fleet is carried out by double crosscheck which causes a waste of time	Simplification	Cargo loading inspection is carried out once which is witnessed by parties (AVSEC, EMPU, and Agent) to shorten the time

Based on streamlining's results, it can be seen that the most influential processes are in the Breakdown process which produces a percentage of 15% (NNVA) and Delivery to Consignee which produces a percentage of 15% (NVA). Then at the next stage, it can determine the proposed improvement in the flow of the import cargo handling process by implementing an integrated system and simplifying the cargo loading process.

Suggestions for improvement resulting from streamlining in the flow of the import cargo handling process, the solutions made for proposed improvements are worthy of being followed up with performance criteria that provide better processing time (Sholihah et al., 2018).

After the proposed improvement is made, it is possible to design a future state map on the flow of the import cargo handling process contained in Figure 4.

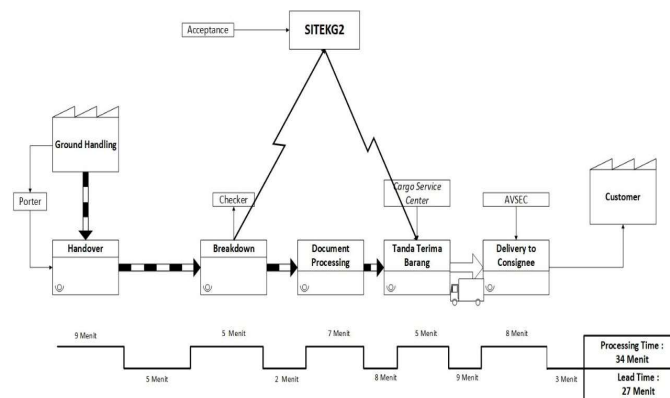


Figure 4 Future State Map

In designing the process flow improvement for handling imported cargo, it is known to be able to reduce lead time significantly, which in the previous process took 56.29 minutes and then after the process flow improvement was carried out, the resulting time became 34 minutes. Then the difference in the resulting time comparison is 22.29 minutes and the percentage of improvement produced is 252%.

Conclusion

One factor caused waste is because in the breakdown process it is known that the input of Air Cargo Letters is still done manually and the Delivery to Consignee process is known to have

double crosschecks. Therefore, the objective of the existing business process is to minimize processes that are known to not add value and to design improvements to optimize the business process flow to be more effective and efficient. a barcode scanning system that can be connected directly to the SITEK G2 system and in the Delivery to Consignee process changing the inspection of the cargo loading process only once witnessed by (AVSEC, EMPU, and Agent) to shorten the time.

References

- Altius, A. S. (2009). *Proses Penanganan Import Melalui Freight Forwarder*. 85.
- Astuti, E. Z. (2017). *Analisis Proses Dokumen Terhadap Ketepatan Waktu Pengeluaran Barang Impor Pada PT. XYZ Soekarno-Hatta International Airport Jakarta Tahun 2016*.
- Azkia, M. (2017). *Pengaruh Keterlambatan PLP Barang Impor Terhadap Pencapaian KPI Pada PT. DHL Global Forwarding Indonesia Soekarno Hatta Tahun 2016*.
- Basu, P., & Dan, P. K. (2014). Capacity augmentation with VSM methodology for lean manufacturing. *International Journal of Lean Six Sigma*, 5(3), 279–292. <https://doi.org/10.1108/IJLSS-07-2013-0036>
- Fathullah, A., Ferdian, A., Octora, Y., Bijaksana, G., & Prasetya, O. (2018). THE EFFECT OF PASSENGERS SATISFACTION TO SERVICE QUALITY IN BATIK AIR. *Advances in Transportation and Logistics Research*, 1, 996–1006.
- Firmansyah, I., Poncotoyo, W., Maulana, A., Zain, A. R., Ferdiansyah, A., & Lestari, S. A. (2021). Penerapan Metode Six Sigma untuk Menurunkan Terjadinya Keterlambatan Informasi Kedatangan Barang (NOA) dalam Kegiatan Impor. *Jurnal Sistem Transportasi Dan Logistik*, 1(2), 78–86.
- Fitharti, S. D., Megawati, A. A., Sholihah, S. A., Triyasa, D. H., & Nugroho, A. (2019). THE IMPACT OF DOWNTIME AGAINST SERVICE PERFORMANCE SYSTEM INDONESIA NATIONAL SINGLE WINDOW (INSW). *Advances in Transportation and Logistics Research*, 2, 37–45.
- Hines, P., & Rich, N. (1997). The seven value stream mapping tools. *International Journal of Operations & Production Management*, 17(1), 46–64. <https://doi.org/10.1108/01443579710157989>

- Jones, D. T., Hines, P., & Rich, N. (1997). Lean logistics. *International Journal of Physical Distribution & Logistics Management*, 27(3/4), 153–173.
<https://doi.org/10.1108/09600039710170557>
- Klimecka-Tatar, D. (2021). Analysis and improvement of business processes management – based on value stream mapping (Vsm) in manufacturing companies. *Polish Journal of Management Studies*, 23(2), 213–231. <https://doi.org/10.17512/pjms.2021.23.2.13>
- Ricardianto, P., Sulistiana, I., Sihombing, S., Rahardjo, S., Abidin, Z., Sholihah, S. A., Rizaldy, W., Rifni, M., Subagyo, H., & Wahyuni, T. I. E. (2022). Synergy and competency of labor and management in handling dangerous goods with game theory approach. *Academy of Strategic Management Journal*, 21(S1), 1–8.
- Sari, Y. U. (2014). Penanganan Export Import Cargo Maskapai Garuda Indonesia di PT Gapura Angkasa Bandar Udara Ahmad Yani Semarang. *Jurnal Ground Handling Dirgantara*, 1(2), 5–15.
- Sholihah, S. A., Samadhi, T. M. A. A., Cakravastia, A., & Nur Bahagia, S. (2018). Coordination model in hinterland chain of hub-and-spoke export trade logistics. *Journal of Industrial Engineering and Management*, 11(4), 776–793.
- Sutedi, A. (2014). *Hukum Ekspor Impor* (N. L. Masrurroh, Ed.).