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Value Analysis among the Parties on Imported Product in Indonesia Using Process Activity Mapping: Freight Forwarder, Distributor, and Retailer

Megita Ryanjani Tanuputri[1], Ravipim Chaveesuk[2] and Adi Djoko Guritno[1]

1. Department of Agro-industrial Technology, Universitas Gadjah Mada, Yogyakarta, Bulaksumur 55281, Indonesia

2. Department of Agro-Industrial Technology, Kasetsart University, Bangkok, Chatuchak 10900, Thailand

Abstract: National logistics system in Indonesia can be categorized as inefficient logistics system due to current number of non-value added (NVA) activities. The unreliable National logistics system and the complexity of distribution system are the big obstacles. This study aims to analyze the value and to propose recommendation for further improvement of National distribution system for imported product. This study employed convenience sampling through in-depth interview to analyze the activity in freight forwarder (FF), distributor and retailer. To demonstrate and analyze the activity process in each party, Process Activity Mapping (PAM) was used as a tool. The study results showed that the delivery speed in Jakarta (8.4 min/km) is slower than that of Surabaya (6.6 min/km). The government support through creating adequate infrastructure, good bureaucracy system and good collaboration directly affects the activities of FF, distributor and retailer. Improving FF performance in a timely and reliable manner is required to reduce errors that may occur. Moreover, encouraging the practice of cold chain management is also necessary in distributing the product throughout Indonesia. The pull strategy can be chosen by retailer to eliminate storage activity. Meanwhile, the use of information technology (IT) system is essential to encourage better inventory management, database management and sharing information in distributor and retailer stage.

Key words: Value analysis, import, Indonesia logistics system, process activity mapping.

1. Introduction

The ability of a country to maintain its efficient logistics performance is necessary to encourage the competitiveness of countries, where logistics sector nowadays is recognized as one of the core pillars of economic development. According to data from World Bank [1], Germany in two consecutive periods occupies the best logistics performing country by evaluating six components of logistics performance. In the same period, Indonesia is in the Top 5 Logistics Performance Index (LPI) economies in ASEAN after Singapore, Malaysia and Thailand. The rank position of Indonesia was decreasing by 59th in 2012, 53rd in 2014 and 63rd in 2016. In overall score as shown in Fig. 1, higher Indonesian's score on 2016 but worse rank than that of 2012 shows that the Indonesian government is considered less serious in efforts to improve the performance of the national logistics performance comparing with other developing countries such as China and India [2].

National logistics system connects the firms to domestic and international market which gives the advantage for the country. Therefore, the efficient and reliable supply chain network should be developed. Every country has different characteristics which determine how they should operate their logistics system. Countries classified as low logistics performance typically face high costs due to high transportation cost and unreliable supply chain which leads to being less competitive in the global value chain. Currently, logistics costs in Indonesia account

Corresponding author: Megita Ryanjani Tanuputri, lecturer, research fields: supply chain management, logistics and operation management.

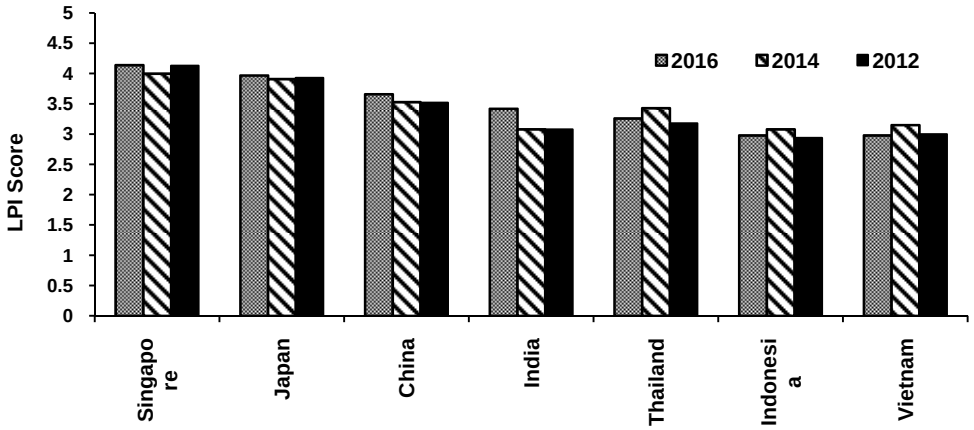

Fig. 1 The score of Logistics Performance Index (LPI) in several countries.
Source: World Bank (2016).

for 26 percent of Indonesia's $861 billion economy. It is one of the worst numbers in all of Asia, and far behind Singapore's 8 percent, Malaysia's 14 percent, Japan's 9 percent and South Korea's 13 percent of Gross Domestic Product (GDP) [3]. High logistics cost may cause high price of product in the market and it could undermine economic growth. The National logistics system of Indonesia is facing the complexity of distribution system due to the geographic condition of its archipelago. Consequently, the price of product in outside Java Island is more expensive than that of in Java Island, especially for fresh food and frozen food product, because of inadequate infrastructure and limited capability of cold supply chain practice. Bourlakis et al. [4] additionally revealed that technology, logistics, and information technology (IT) play influential role in the evolution and development of modern food supply chains.

Emerging middle class consumers in Indonesia are well educated and have a growing interest in imported goods, particularly for processed food products. In 2015, GDP distribution at current market prices showed that about 26 percent of household consumption expenditures were spent on food and 29 percent on non-food items (2015 GDP was $860 billion or IDR 11,540 trillion). During 2014-2015, the number of grocery retail outlets in Indonesia was growing rapidly in which growth of convenience store showed the most significant (15.3%) among all grocery retail stores [5]. However, distribution of imported products in Indonesia is facing several problems due to inefficiency of activity in each party. This study focuses on the parties outside the government agencies including freight forwarder (FF), distributor and retailer. The aims of this study are (1) to explain current condition on those parties of imported products in Indonesia, (2) to analyze the value in those parties, and (3) to propose recommendation to improve current condition.

2. Materials and Methods

In this study, convenience sampling was used as a sampling methodology. In-depth interview was employed to collect information from the respondents. Additionally, this study emphasis on the respondents who handle or have ever handled imported food and perishable products. This study was undertaken in Jakarta and Surabaya because seaports in both cities are the largest and most of imported products in Indonesia are arriving through both seaports. Data from World Development Indicator [6] show that the container port traffic in Indonesian port during 2010-2014 was increasing. The container traffic on 2014 was 11.9 million Twenty-Foot Equivalent Units (TEUs), while container traffic in Tanjung Priok Port, Jakarta was accounted for around 5.7 million TEUs [7]

and Surabaya was 3.1 million TEUs in 2014 [8]. The respondent under this study consists of 7 FFs, 7 distributors and 5 retailers and the detail information about the respondent is presented in Table 1.

Furthermore, Process Activity Mapping (PAM) was used as a tool to analyze the value in each party. By analyzing the value, this study can identify which activity should be maintained, improved, and removed. To support the study on the value analysis in the FF, T-test statistics on the delivery was conducted. Next, the recommendation for each party can thus be developed.

3. Results and Discussion

LPI is one of the measurements used in evaluating the performance of National logistics system. According to World Bank [1], among 6 components, the declining performance of Indonesia logistic occurred in customs, infrastructure, logistics competence and timeliness components (Fig. 2). The stakeholders cannot provide reliable delivery to their customer due to congestion nearby the port. Consequently, the score for timeliness also tends to decrease year by year. Data from Statistics Indonesia [9] revealed that both imported consumer goods and food raw materials tend to decrease during 2011-2015. It was possibly caused by the difficulties and inefficient process experienced by importers and overseas traders. Poor road condition and port facility, long dwelling time and unofficial cost are several problems on the importation process in Indonesia.

The importation process of food product in Indonesia must deal with Quarantine and Customs. An importer is allowed to discharge the container out of port after receiving a letter of approval known as Surat Persetujuan Pengeluaran Barang (SPPB) [10]. Meanwhile, Jayaram and Tan [11] revealed that many firms attempt to have wider integration with third-party logistics which encompasses a wide range of supply chain management services including distribution responsibilities.

Table 1 Profile of respondents and their detail positions.

No.	Current position	Stakeholder
1	Marketing Director of PT Transaka Dunia Cargo (Jakarta)	FF
2	Head of Logistics and Supply Chain of BP Logistics (Jakarta)	FF
3	The owner of Freight forwarder 1* (Jakarta)	FF
4	Air Import Supervisor of PT Agility International (Jakarta)	FF
5	Operational Director of PT Puma Logistics (Surabaya)	FF
6	President Director of PT Rahayu Perdana (Surabaya)	FF
7	Special Account Manager and Customs EDI Coordinator of PT Agility International (Surabaya)	FF
8	Head of Supply Chain of PT Bangun Karawang (Jakarta)	Distributor
9	Supply Chain and IT Supervisor of PT. Marketama Indah (Jakarta)	Distributor
10	Head of Supply Chain of Distributor 1* (Jakarta)	Distributor
11	Head of Supply Chain of PT Sinarmas (Jakarta)	Distributor
12	Logistics Supervisor of Distributor 2* (Jakarta)	Distributor
13	Branch of PT Marketama Indah (Surabaya)	Distributor
14	Head of logistics of PT Dos Ni Roha (Jakarta)	Distributor
15	Marketing Director of PT HERO (Jakarta)	Retailer
16	Chief Information Officer at PT. Citra Mitra Nusantara (Jakarta)	Retailer
17	Ex. Head of Marketing Indomaret and Alfamart (Jakarta)	Retailer
18	The owner of Retailer 1* (Surabaya)	Retailer
19	Store Manager of Retailer 2* (Surabaya)	Retailer

Notes: * The respondent's data cannot be issued upon the respondent's request.

FF means Freight Forwarder.

PT means Perseroan Terbatas to represent a limited liability company in Indonesia.

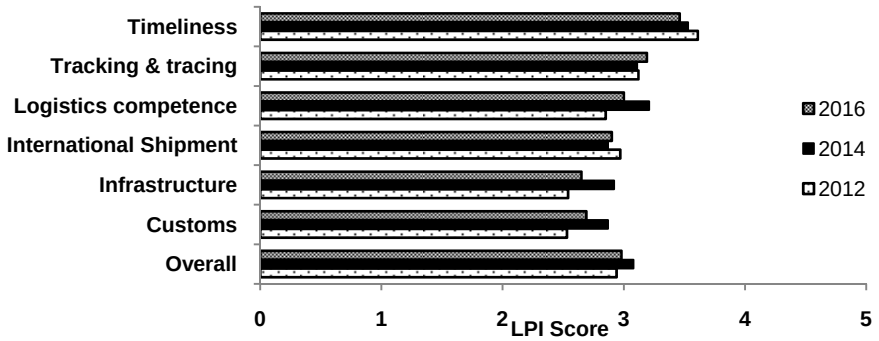

Fig. 2 The detail Logistics Performance Index (LPI) score of Indonesia during 2012-2016.
Source: World Bank (2017).

3.1 Freight Forwarder

Large FF companies can provide one stop service including booking shipment, preparing all the documents, handling all Customs and the National Agency of Drug and Food Control (known as BPOM) issues, arranging customs clearance and delivery task. Tanuputri et al. [12] stated that some of FFs in Jakarta also own import license and act as an importer to facilitate clients who import in small quantity. Therefore, those FFs should fulfill Full Container Load to reduce delivery cost. In this study, the number of specialized FFs who specialize on handling food products is limited, while most of FFs are general FFs who handle various types of product including food. The larger general FF typically means the more varieties of product being handled to achieve an economy of scale and an investment balance. For specialized FFs, generally they own cold chain transportation fleet to facilitate delivery task. In order to get an economy of scale, they also act as transporter to increase the vehicle utilization. General FFs may handle food and perishable products but they outsource the transportation fleet from third parties who have applied cold chain system. Krajewska and Kopfer [13] revealed that an FF generates its profit from the difference between the price that the customer is obliged to pay and the costs of request fulfillment. These costs result either from the fulfillment by own transportation capacity, or from the external processing of orders.

Recently, the involvement of FF in pre- and post-customs clearance indicates the strengthening role of FF. Pre-custom clearance for food product mostly relates to acquiring the permit documents from BPOM, Ministry of Trade and The Council of Indonesian Ulama (known as MUI) for Halal Certificate. To accelerate importation process, Indonesia has employed a real time tool called Indonesia National Single Windows (INSW) to integrate private stakeholder i.e. importer and government agencies i.e. Quarantine, Customs and BPOM. Only document submitted regularly that can be uploaded and accessed through INSW.

Once the product arrives at the port, the FF who acquires authority from importer takes the customs clearance responsibility. Table 2 shows the activity handled by all parties including FF for customs clearance and post-customs clearance. Hsiao et al. [14] defined that sharing resources and collaborating across company boundaries are essential in the supply chain. Moreover, collaborating with a third-party service provider allows a company to concentrate on its core business. In the FF stage, all activities are classified into Necessary but Non-Value Added (NNVA) activity where it mostly comes from inspection by Quarantine and Customs. Table 2 indicates that the FF should request several documents for handling activity and Quarantine checking at least 2 days before the product arrives at the port and the FF should maintain it on-time to avoid delays in file submission and

quarantine checking. If the imported product is classified as medium or high risk product by Quarantine and classified as yellow or red line by Customs, it takes longer time for inspection without any value added. Moreover, imported product which is classified as low risk possibly takes less than 1 hour once the documents are completely submitted to Quarantine unit, while high risk product needs deeper inspection on both document and laboratory. Tanuputri et al. [10] revealed that high risk product in Quarantine unit may take 4-5 days on average or 21 days to 6 months depending on the food safety issue of interest. Based on in-depth interview, green lineis claimed within 5-7 min., while yellow and red line takes varied (1-4 days). In addition, study from Tanuputri et al. [10] shows that customs clearance mean time in Tanjung Priok port, Jakarta (almost 4 days) is slightly longer than that of Tanjung Perak port, Surabaya.

The NNVA activity in the customs clearance should be improved by encouraging better coordination and collaboration between Quarantine and Customs and optimizing integrated physical checking to avoid redundancy in physical inspection. Furthermore, document of approval from Quarantine should be written in detail as it can be used as reference for Customs. For instance, if an imported product has been classified as high risk product and red line, it possibly takes 7-9 working days for customs clearance. Therefore, writing the detail result of inspection may eliminate unnecessary inspection or checking by Customs. Another way is both Quarantine and Customs may check the product simultaneously to reduce time.

Once Customs issued SPPB, FF may discharge out and deliver the product. Unpredictable delivery time in Indonesia is one of the post-customs clearance problems. Congestion may impact the customers since cost of congestion usually passed on to the customer in the form of higher selling price of goods and services. Report from Inrix [15] revealed that Thailand leads with the highest ranking in Asia whose drivers spent an average of 61 hours in peak hour congestion, while Indonesia is in the 3rd rank with drivers spent 47 hours in average. Singapore was on the last rank with drivers spent an average of 10 hours.

Table 2 Process activity mapping.

			Chart symbol					
Activity	Time	Stakeholder, tools	○	⇨	D	□	▽	Type of activity
Request for Quarantine checking	Max. 2 days *	FF, Quarantine	■					NNVA
Quarantine checking	Less than 1 hour to 4-5 days **	FF, Quarantine				■		NNVA
Customs checking	Less than 1 day to 1-4 days **	FF, Customs				■		NNVA
Delivery the product to importer	6.76-8.46 min. per km **	FF		■				NNVA
Receive the product	-	Purchasing staff, QA	□ ●					NNVA
Unloading the product	-	Labor	□ ●					NNVA
Store the product on warehouse	-	Warehouse staff					□	NVA
Load the product to vehicle	-	Labor	□					NNVA
Deliver the product	-	Driver		□				NNVA
Put the product on the shelves	-	Employee					●	NNVA
Calculate product sales	-	Sales department	●					VA
Share the information with distributor	-	Sales & Purchasing dept., distributor	●					VA

Notes:
* shows targeted process time from government;
** shows data based on in-depth interview with the respondent
■ represents Freight Forwarder (FF); □ represents Distributor; ● represents Retailer;
VA means Value Added; NVA means Non-Value Added; NNVA means Necessary but Non-Value Added.

○ Operation
⇨ Transport
D Delay
□ Inspection
▽ Storage

Table 3 shows that the delivery speeds from the seaport to an appointed place in Jakarta and Surabaya are not significantly different. The mean delivery speed in Jakarta is 8.4 min/km, while in Surabaya it takes 6.6 min/km. However, the highest delivery speed in Jakarta is 16.26 min./km, while 9.58 min./km in Surabaya. It shows that the delivery speed in Surabaya is almost twice faster than Jakarta. According to Inrix [15], driver in Jakarta spent around 55 hours in congestion in 2016, while driver in Surabaya spent 32.3 hours.

Customs clearance time and delivery speed in Jakarta take longer time than that in Surabaya because the container throughput in Tanjung Priok Port is higher than Tanjung Perak Port which leads to the heavier traffic in the surrounding area. Inadequate infrastructure to facilitate the container throughput causes inefficiency in the Tanjung Priok Port.

3.2 Distributor

This study classifies the distributor into main distributor and sub-distributor. General differentiation between both is shown in Table 4. There are two kinds of main distributor: independent distributor and bounded distributor or sole distributor. Independent distributors have a responsibility to distribute products from several clients and the large ones generally use advanced IT system to control that huge number of stock keeping unit (SKU), while the medium companies mostly use customize IT system. Sole distributor typically starts from a large manufacturer that expands its business in the distribution field and establishes such subsidiary company in charge of distributing the product owned by the parent company only. The sole distributors have employed advanced IT system i.e. SAP or Oracle to support their ware house management and sharing information about inventory level and sales planning data. In general, the main role of distributor is to distribute the product to the customer in the right quantity, quality and time.

Table 2 displays that only storage activity is classified as Non-Value Added (NVA) activity. It should be removed to enhance the efficiency in the distributor stage. Basically the practice of zero inventories is challenging for food product which is classified as functional product. The storage activity in the retailer is consequently classified as NNVA activity because retailers are stakeholders who deal directly with consumers and should be more responsive. Retailers should thus control the storage at the minimal value. In this case, the use of IT system is highly needed to support inventory management by enabling the user to share information with other parties on a limited basis and to analyze sales data. For handling huge number of SKUs, advance material handling and IT system help the loading and unloading activities as well as First-In-First-Out (FIFO) control.

Table 3 The comparison of delivery speed in Jakarta and Surabaya.

	Jakarta			Surabaya		
	Mean	SD	N	Mean	SD	N
Delivery speed (hour/km)	0.14[a]	0.13	5	0.11[a]	0.05	3

Mean in the same row followed by the same letter are not significantly difference ($p > 0.05$).

Table 4 The difference between main distributor and sub-distributor.

	Main distributor	Sub-distributor
Location	Big city i.e. Jakarta, Surabaya, Medan	Remote area
Source of product	One or more manufacturers or importers	Many manufacturers or importers
IT system	Customize to advanced	Customized

Transportation is necessary to be controlled especially for fresh food product. Its short shelf life and deterioration in quality during delivery are factors that should be considered by the distributor. Due to its NNVA activity, delivery task should be improved to enhance the efficiency. Emphasizing on Full Truck Load (FTL) and good delivery schedule may minimize transportation cost, while waiting for infrastructure improvement. In addition, delivery of products to outside Java Islands becomes an obstacle, whereby the delivery time required becomes longer. Therefore, the application of cold supply chain management is required to keep the product in the good quality. To shorten delivery time and maintain product quality, based on in-depth interviews, distribution product by helicopter to Papua, The Indonesia's most eastern region, is employed as an alternative due to poor road infrastructure which is difficult to use inland transportation. Thus, this selection of appropriate transportation mode is also necessary to optimize costs and reduce the risks.

3.3 Retailer

Indonesia is one of the most populous nations in the world with approximately 257 million people in 2015 [1]. Fig. 3 shows that traditional retailers play the main role in the retail sales value share while the modern retail is growing rapidly. It is observed that most imported products are sold through a modern trade such as hypermarket and supermarket. The regulation from the government can affect the policy of imported product purchasing of retailer. USDA [5] revealed that Indonesian regulation currently still prohibits the retailers from purchasing imported horticultural products directly from importers, limiting product availability and increasing prices. A wide variety of imported foods are available in high-end supermarket and the variety depends on the store locations and its community surrounding the store. In addition, there are also stores that are specialized on selling particular imported food products from certain country i.e. Japan and Korea and they initially originate from the importers who act as the distributor and start their own retail business focusing on segmented market of interest (niche market).

Based on the interview, this specialty store has a limited number of stores throughout Indonesia, only available in the main city such as Jakarta, Surabaya and Bali. Generally, their central warehouse is located in Jakarta but they have distribution branches with warehouse in Surabaya. Moreover, most of small specialty stores have very narrow market segment because 90% of their products are imported products. They purchase only in the small amount of product to reduce obsolesces risk, mean while they sell shallow and narrow variety of product and use manual and basic database system due to their limited number of SKU. Recently, convenient stores are growing rapidly in Indonesia because they have huge number of stores and provide convenience to the target customer. Tanuputri et al. [10] revealed that 70% of the convenience stores are owned by the company, while 30% are franchise ownership. A margin for the modern retail in Indonesia is around 18%-19%.

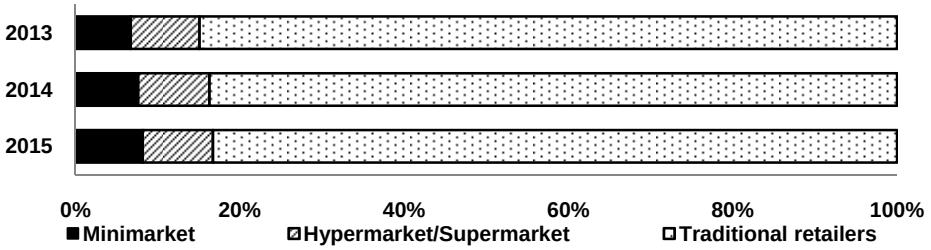

Fig. 3 The retail sales value share of Indonesia.
Source: Euromonitor in USDA [5].

Table 5 The relationship of the parties with the performance component of logistics system in Indonesia.

	Freight forwarder	Distributor	Retailer
Customs	√	X	X
Infrastructure	√	√	X
International shipment	√	X	X
Logistics competence	√	X	X
Tracking and tracing	√	√	X
Timeliness	√	√	√

The main activity of retailer in Table 2 shows that low turn-over product in the shelf leads to storage activity which is NNVA. Medium to long period of storage caused by lack of communication between importer, distributor and retailer leads to the high inventory and maintenance cost. Then, the retailer should encourage consumer's buying interest to increase product turn-over product on the shelf. Retailer also needs to understand about consumer preference and to enhance forecast reliability of imported product to minimize the number of unsold products. Forecast reliability seems to be solved by technology as explained by Kayakutlu and Buyukozkan [16]. The pull based strategy is also able to control the number of product and product's shelf life in their ware house. For Value Added (VA) activity, retailer should maintain those activities and encourage good information flow in both activities. For NNVA activity, this activity cannot be removed but should be improved by either controlling the amount of resources used or trying to add the value in the activities. In the receiving and unloading activity, both distributors and retailers need to optimize the number of human resources involved in both activities by choosing multi-tasking employee. Moreover, data record is also necessary to track, identify and evaluate the number of defective goods or incorrect delivery. From the above explanation and the result of value analysis in each party, it can be identified the relationship of the parties toward performance of logistic system in Indonesia. Referring to the component assessment by the World Bank, there are 6 components assessed in the LPI that can be used as the factor related to the performance of National logistics system in Indonesia and its relationship with the parties as shown in Table 5.

Inefficiency of customs clearance is directly under responsibility of Customs because it is activity beyond FF's control. The quality of infrastructure in the port also determines the smoothness of FF in performing its activities, while good bureaucratic system affects the competency of national logistics system. In addition, performance of FF in preparing documents relates to the competency of logistics service in minimizing errors and repetition of work. Timeliness basically becomes important for FF, distributor and retailer because consumers need reliable delivery time, especially for short shelf life product. Banomyong et al. [17] also stated that cost, timeliness and reliability of the supply chain must be understood and assessed to achieve effectiveness and define the performance. In some developed countries, tracking and tracing capability through IT systems is one of the most common services. However, it has not become a necessity in Indonesia at this time. The ability to track and trace the product is needed to help the FF and distributor control the position of product and arrange efficient delivery schedule. Ability in tracing also helps both to respond to sudden schedule changes and to know the source of errors in delivery task. Thus, improvements made by FF, distributors and retailers affect the performance of national logistics system.

4. Conclusion

Most of activities in FF, distributor and retailer stage are classified as NNVA activity, which should be improved to create efficiency in the importation process. Since the NNVA activity cannot be removed,

collaboration and control activity are needed among the stakeholders. The role of government through strengthening collaboration and coordination among government agencies should be encouraged. Improvements on the congestion problem also need to be immediately implemented. Moreover, several proposed recommendations for private stakeholders are (1) FF should prepare the document on time and appropriately; (2) distributor should encourage the use of cold chain management for distribution system throughout Indonesia; (3) distributor and retailer should emphasize on the use of IT system to support inventory management, help loading and unloading activity, arrange delivery schedule and share the information; (4) distributor and retailer should maintain the resource use in each activity; (5) retailer should use pull based strategy. Therefore, increasing value added in every private stakeholder's activity and infrastructure support from the government help to improve the efficiency of national logistics system.

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