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North Jamrud Terminal Warehouse Performance by The Effect of Halal Logistics Issue

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Abstract. The Government today, Government Business Entity and mass media in Indonesia are starting to pay attention to halal, since the turnover of halal products of the world has reached nearly 2 trillion dollars while Indonesia is still larger to be a consumer than a manufacturer. Not only foods, consumers in the world today want cosmetics to pharmaceutical products that have been halal certified. In Indonesia, problems with the potential of halal market today are still hit on the discourses. Indonesia still limited awareness not yet dared to action, whereas in non-Muslim countries themselves many have implemented halal supply chain. The establishment of Halal Hub Port in Tanjung Priok as the first Halal Hub Port pilot project in Indonesia is the forerunner to establish Halal Hub Port in other parts of Indonesia. Therefore, it is necessary to examine the needs of Halal Warehouse at Tanjung Perak Port which in fact is also a major port in Indonesia and is a distribution door for the central and eastern part of Indonesia. The study was conducted on 190 respondents who are stakeholders of Tanjung Perak Port. Using the Importance Performance Analysis method, the results of the research produced a quadrant graph where quadrant A is the main priority containing performance of L/U equipment in terminal, performance of L/U workers/operator in terminal, separation of halal and non-halal products in halal warehouse, sorting of halal and non-halal products that have been damaged, cold storage separation between halal and non-halal products, clean and avoid contamination between products, special training for officers in halal warehouse, and hygiene facilities for officers in warehouse/halal warehouse. Quadrant B is to maintain the achievement contains 11 items, Quadrant C is low priority contains 5 items, and Quadrant D is excessive contains 5 items. The existence of 8 items entered in quadrant A, indicating that stakeholders at Tanjung Perak Port are very aware with the potential of Halal Warehouse.

Keywords: Halal Logistic, Halal Warehouse, Importance Performance Analysis

1. Introduction

Indonesia is a country with the highest halal market potential in the world because the total population of Indonesia is 257.9 million and about 85% are Muslim, making Indonesia has a percentage of Muslims about 12.5 percent of the population around the world. But not many industries in the country that glance at business opportunities with this halal standardization.

Problems in Indonesia with the potential of halal market today are still hit on the discourses. Indonesia still limited awareness not yet dared to action, whereas in non-Muslim countries themselves

many have implemented halal supply chain. Conditions like this if not addressed wisely of course will make the Indonesian nation as a spectator in his own country, especially in the ASEAN Economic Community competition, which is not only Muslim entrepreneurs but already enlivened by the international community who are non-Muslim.

Halal (lawful) and Toyyib (clean and not damaged) are very important in Islam. The halal concept should not only focus on the ingredients and the processing of the products, but also on all activities from the beginning of the production till the final end to consumers [3, 11].

The halal supply chain concept has been seen as a potential business strategy that would attract a wider market comprises both Muslim and non-Muslim buying the halal products [8]. Moreover, it has influenced other countries including the non-Muslim countries to produce more halal producers [6].

The Halal Supply is a process of business integration and activity from the point of origin to the point of consumption under Islamic law known as Sharia [6]. The main objective of the Halal Supply Chain is to regulate the halal integrity of a product to dispel doubts by Muslim consumers at the point of product consumption. While halal products including: 1) Food: which is the main focus of halal industry; 2) Halal products and services which include cosmetics, pharmaceuticals, clothing, financial services, and logistics; 3) Halal is extending upstream (such as animal feed) and downstream (such as food services) value chains and including logistic.

Several matters relating to halal logistics are discussed by which are less practical procedures, lack of knowledge and expertise in this field, lack of ICT knowledge, lack of staff awareness, higher costs, lack of awareness of halal producers, higher service prices, lack of awareness and commitment of halal retailers, and a lack of consumer awareness of the importance of processes occurring in halal logistics [5].

Proper handling and storage activities are the primary key in protecting halal products. If an industrial halal product does not use the Halal Warehouse, is their product really Halal for consumption? At the same time, the Halal product industry still claims that their Halal products are due to have been labelled with Halal logo on their packaging [6].

The implementation of Halal logistics is still green field, especially for Halal Warehouse. Not many warehouses ready to implement halal principle in their daily activities, also very less manufacturers and suppliers recognized Halal approach as their priorities. The issues identified in this paper will be a threat to the performance of the organization if not properly managed. As a profit-oriented organization, performance normally referred to the cost minimization, profit maximization and customer satisfaction. Large expenses spent without proper planning to fulfil halal requirements may lead to a perspective that the implementation of halal warehouse is not cost-effectiveness. Management may decide to offer a service at higher price in order to gain more margin. Consequently, it will decrease customer satisfaction due to this unreasonable price. Worse yet, if consumers have to pay more unjustified price to get halal food. At the end, more manufacturers reluctant to use halal certified warehouse service and falling of interest towards the implementation of halal within warehouse provider are very much expected [8].

The halal supply chain is very important to the consumer. Consumers are willing to pay more for halal products that carry the assurance of a halal logistics system [3]. The main principle in halal logistics is the segregation of halal and non-halal goods [6] through the transportation, storage and warehousing, and terminal operations [9].

The establishment of Halal Hub Port in Tanjung Priok as the first Halal Hub Port pilot project in Indonesia is the embryo to establish Halal Hub Port in other parts of Indonesia such as Tanjung Perak Surabaya which is the second largest harbor in Indonesia after Tanjung Priok. Given its status as a halal hub port (primary port) in Indonesia, but with the status of the International Port for the Southeast Asian region, major ports are still Singapore Port feeders, where these ports supply Singapore Port.

In the Port of Tanjung Perak, there are only 3 terminals that have warehouse facilities namely Jamrud Terminal, Mirah Terminal, and Kalimas Terminal. These warehouses are only a transit point for general cargo goods. Also, so far, it started to switch to the containerization model, so that the warehouse function has been much reduced. By using this containerization system, consumers do not have certainty whether the products they use mainly for halal products are not mixed with non-halal products, so it

needs further research. In addition, the existing warehouse performance in Tanjung Perak is considered less than the maximum. Shown with an average of level of warehouse usage called Shed Occupancy Ratio (SOR) score of 2013-2016 is 32.03% away from the standard 65%.

Based on the presence of Halal Logistic & Cold Storage above, it is expected that the same thing is also applied in Surabaya, especially in Tanjung Perak. To begin with is to know about stakeholder preferences in Tanjung Perak Port regarding the existence of halal logistics warehouse which as one component of halal hub port as well as halal and halal retail transportation. This research held at North Jamrud Terminal by using Importance Performance Analysis (IPA).

2. Material and Methods

2.1. Location and Time of Study

The study was conducted at Jamrud North Terminal of Tanjung Perak Port of Surabaya, East Java, Indonesia from March to April 2018. Jamrud Terminal's facilities are contains of ocean service, inter island, freight and passenger services such as shown in Table 1. The research was carried out until the appropriate samples were obtained for further processing and analysis. Implementation of data collection starts from office activity hours (at 08.00 WIB) until the end of office activities (at 16.00 WIB). With the intent to get data directly with interviews in leisure time that can be spent by respondents in answering questions that exist.

Table 1. Jamrud Terminal Facilities

No	Item	North Jamrud Terminal	South Jamrud Terminal	West Jamrud Terminal
1	Area	90.312 m^2	57.912 m^2	4.807 m^2
2	Basin Depth	-10 mLWS	-8,0 mLWS	-8,0 mLWS
3	Berth Length	1.200 m	800 m	210 m
4	Warehouse Area	4.920 m^2	5.040 m^2	-
5	Apron Width	15 m	20 m	15 m
6	Warehouse Number	1 unit	1 unit	-
7	Storage Yard Area	23.744 m^2	13.639 m^2	-
8	Purpose	International General Cargo, International Dry Bulk / Domestic and Cruise Passenger	Domestic General Cargo, Domestic Dry Bulk	International Dry Bulk

2.2. Collecting Data Method

Primary data was collected by using analytical descriptive method, while secondary data were collecting data supported by literature study taken from sources related to this research.

2.3. Data Analysis Method

The research was used Importance Performance Analysis called IPA (Fig.2) [4]. IPA analysis method used the aid of statistical program by inputting data of average value of scoring performance score of primary warehouse survey results.

Importance Performance Analysis (IPA) conceptually is a multi-attribute model. This technique identifies the strengths and weaknesses of market supply by using two criteria namely the relative importance of attributes and consumer satisfaction.

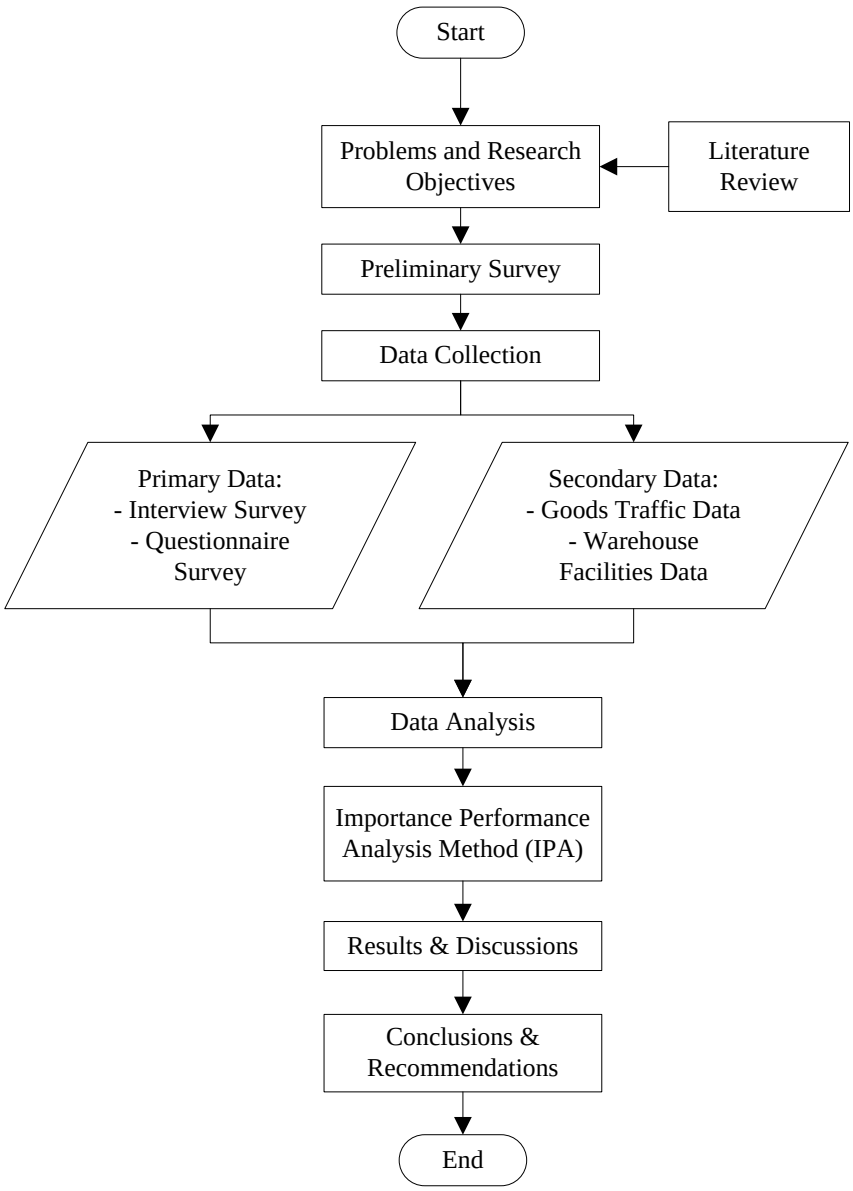

Figure 1. Analysis Process

The application of the IPA technique begins with the identification of the relevant attributes to the observed situation of choice. The list of attributes can be developed by referring to the literature, interviewing, and using managerial judgments. The steps of IPA analysis as follows:

1. Calculate the average assessment of the importance and performance of each service product as well as calculate the level of compliance.

$$\overline{Xi} = \frac{\sum_{i=1}^{k} Xi}{n} \quad (1)$$

$$\overline{Yi} = \frac{\sum_{i=1}^{k} Yi}{n} \quad (2)$$

$$Tki = \frac{\sum xi}{\sum yi} \quad (3)$$

2. Calculate the average level of importance and satisfaction for the entire product service.

$$\overline{\overline{Xi}} = \frac{\sum_{i=1}^{k} \overline{Xi}}{n} \quad (4)$$

$$\overline{\overline{Yi}} = \frac{\sum_{i=1}^{k} \overline{Yi}}{n} \quad (5)$$

3. Making IPA position's diagram.
4. Preparation of Cartesian IPA diagram.
5. Plot the results of the analysis of each variable into the diagram Cartesian divided into four quadrants (quadrant I, quadrant II, quadrant III, and quadrant IV), as shown in Figure 3.
    - Quadrant I: Shows the factors or attributes that are considered to affect customer satisfaction, including the elements of services that are considered very important, but the management has not implemented it in accordance with the wishes of customers so disappointing/dissatisfied.
    - Quadrant II: Shows the essential elements of service that have been successfully implemented. For it must be maintained. Considered very important and very satisfying.
    - Quadrant III: Shows some of the less important factors affecting the customer. Implementation by the company mediocre. Considered less important and less satisfactory.
    - Quadrant IV: Showing factors that affect customers is less important, but excessive implementation. Considered less important but very satisfactory [4].

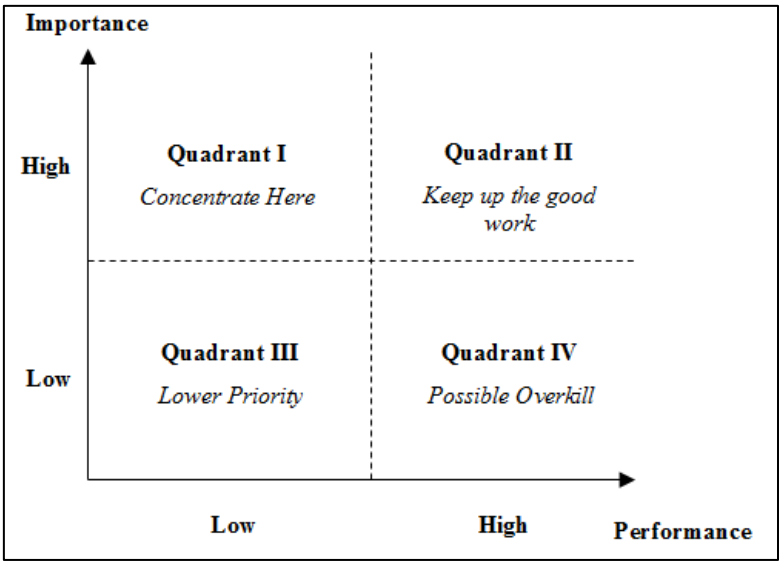

Figure 2. IPA Diagram

3. Result and Discussion

In this section will list some of the variables that have been studied, based on predetermined standards. Referring to the Decision Letter of Head of Port Authority Office III Tanjung Perak No. HH.496/01/17/OP.SBA.2011 dated March 14, 2011 concerning System and Procedure Guidance (SISPRO) Services of Ship and Goods at Tanjung Perak Main Port, this research uses land side service aspect as follows:

- Performance of Loading/Unloading (L/U) Equipment in terminal x1
- Performance of Loading/Unloading Workers/operator in terminal x2
- Operational supervision at the terminal x3
- Fleet carrier (truck/train) x4

- Line I and II warehouse services x5
- Service of goods documents. x6

Some variables also refer to the previous research [2] are:

- Location of adjacent warehouse (taken less than 1 x 24 hours) with port. x7
- Warehouse operation time following port operational time (24/7) x8
- Warehouse facilities and services in line 1 and line 2 are adequate x9
- Items embrace FIFO system (First in First Out) or first come first out x10
- Loading time per ritase max 20 minutes x11
- Unloading time per item max 20 minutes. x12
- The current fee system x13

While for Halal Products Warehouse utility refers to Malaysian Standard No. MS 2400-2: 2010, Management System Requirements for Warehousing and Related Activities, namely:

- Sorting of goods carried out according to the type of goods x14
- Placement of food and beverages in areas appropriate to the species x15
- Separation of halal and non-halal products in Halal Warehouse x16
- Sorting of halal and non-halal products that have been damaged x17
- Use of frozen food storage (cold storage) x18
- Separation of Cold Storage between halal and non-halal products x19
- Free from environmental pollution, flood and pest x20
- Free of solid & liquid waste that is difficult to remove x21
- Clean and avoid contamination between products x22
- Easy to maintain x23
- Use of special containers as waste disposal sites & dangerous goods x24
- Special location for waste disposal containers & dangerous goods x25
- Conducting training for periodical human resource improvement x26
- Special training for officers at Halal Warehouse x27
- Routine health inspection for warehouse/Halal Warehouse x28
- Hygiene facilities for officers at Halal warehouse/warehouse. x29

To obtain objective research results, survey had been carried out and obtained the results of questionnaires that refer to the method of science with 190 respondents.

From the recapitulation data of IPA method questionnaire, it can be obtained Cartesian Diagram of Performance and Importance of Logistics System at Port of Tanjung Priok Surabaya (Fig.4). This diagram is divided into 4 sections/quadrants where the axis of the abscissa and ordinate that make up the quadrant is derived from the average value of the aspect as well as the item of the performance level (X) as well as the importance level (Y).

Table 2. Mean Estimation of Performance & Importance Variables

VAR	Performance ($\bar{X}$)	Importance ($\bar{Y}$)	Quadrant IPA
x1	3.37	4.33	Quadrant 1
x2	3.33	4.31	Quadrant 1
x3	4.26	4.30	Quadrant 2
x4	4.19	4.22	Quadrant 4
x5	4.14	4.27	Quadrant 4
x6	4.06	4.32	Quadrant 2
x7	3.85	4.23	Quadrant 4

VAR	Performance ($\overline{X}$)	Importance ($\overline{Y}$)	Quadrant IPA
x8	3.83	4.37	Quadrant 2
x9	3.91	4.27	Quadrant 4
x10	3.92	4.30	Quadrant 2
x11	3.46	4.25	Quadrant 3
x12	3.37	4.21	Quadrant 3
x13	3.73	4.34	Quadrant 2
x14	3.61	4.34	Quadrant 2
x15	3.87	4.31	Quadrant 2
x16	2.08	4.32	Quadrant 1
x17	2.04	4.31	Quadrant 1
x18	3.76	4.22	Quadrant 4
x19	2.82	4.31	Quadrant 1
x20	3.63	4.30	Quadrant 2
x21	3.65	4.29	Quadrant 2
x22	3.47	4.30	Quadrant 1
x23	3.27	4.01	Quadrant 3
x24	3.59	4.31	Quadrant 2
x25	3.63	4.28	Quadrant 2
x26	3.47	4.22	Quadrant 3
x27	2.85	4.30	Quadrant 1
x28	3.15	4.16	Quadrant 3
x29	3.21	4.32	Quadrant 1

Source: Data Analysis

From Table 2 can be drawn in the form of graph as in Fig.4 where the $\bar{X}$ axis is performance, and $\bar{Y}$ axis is of importance. The cut line uses the average value of the mean of each axis.

- Quadrant I (Main Priority) with high importance but low performance level, contains item number: x1 (Performance of L/UL equipment in terminal), x2 (Performance of L/U workers/operator in terminal), x16 (Separation of halal and non-halal products in Halal Warehouse), x17 (Sorting of halal and non-halal products that have been damaged), x19 (Cold Storage separation between halal and non-halal products), x22 (Clean and avoid contamination between products), x27 (Special training for officers in Halal Warehouse) and x29 (Hygiene facilities for officers in warehouse/Halal Warehouse).

- Quadrant II (Maintain Achievement) with high importance and high performance level, containing item number: x3 (Terminal operational supervision), x5 (Line service I and II), x6 (Goods document service), x8 (Warehouse operation time), x10 (First in first out system for goods), x13 (The current cost system), x14 (The sorting of goods carried out according to the type of goods), x15 (Food and beverage placement in an area appropriate to its kind), x20 (Free from environmental pollution, floods and pests), x21 (Free of hard & liquid waste that is difficult eliminated), x24 (Use of special containers as waste disposal sites & dangerous goods), and x25 (Locations specific for waste disposal containers & dangerous goods).

- Quadrant III (Low Priority) with low importance and low performance level, contains item number: x11 (loading time per ritase max 20 minutes), x12 (Unloading time per item max 20 minutes), x23 (Easy to care), x26 (Conducting training for the improvement of human resources periodically), x28 (Health Check routine for warehouse/Halal Warehouse)

- Quadrant IV (Excessive) with low importance but high performance, contains item number x4 (carrier fleet), x5 (Line I and II warehouse services), x7 (location of adjacent warehouse (less than 1 x 24 hours) by port, x9 (Warehouse facilities and services in line 1 and line 2 are adequate), and x18 (Use of frozen food storage (cold storage).

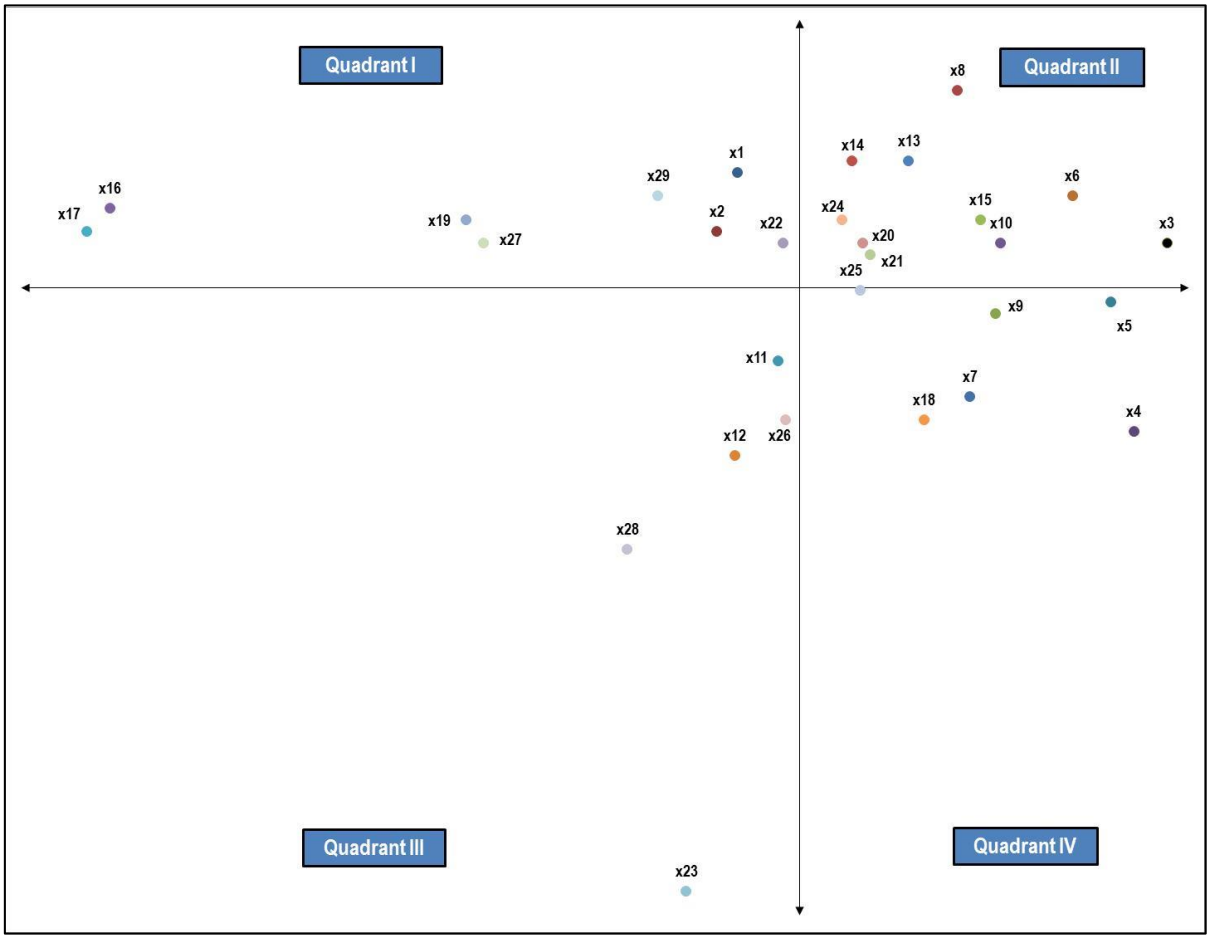

Figure 3. Cartesian Diagram of Importance & Performance

From Fig.4, it can be obtained 8 variables that enter in quadrant I, which are variable x1, x2, x16, x17, x19, x22, x27 and x29. Those variables required special attention, in accordance with the method used, that quadrant I is "concentrate here".

- x1 (Performance of L/UL Equipment in terminal). Jamrud Terminal has facilities and equipment some of which are:
  - General Forklift
  - HMC
  - Scales
  - Hopper
  - Grab

  Based on SISPRO at Tanjung Perak Main Port, the Standard of loading and unloading of non-container goods is 50 Ton/Gang/Hour. But in main value from 2013 to 2016 was 108,74 T/G/H, far from the specified standard. This indicates that Jamrud Terminal required additional equipment which are forklift, digital scales and well-trained L/U Workers

The decreasing performance of B/M equipment in this terminal is due to the increasing number of incoming and outgoing general cargo in Jamrud terminal. Fluctuations in the amount of general goods cargo flow can be seen in Figure 5.

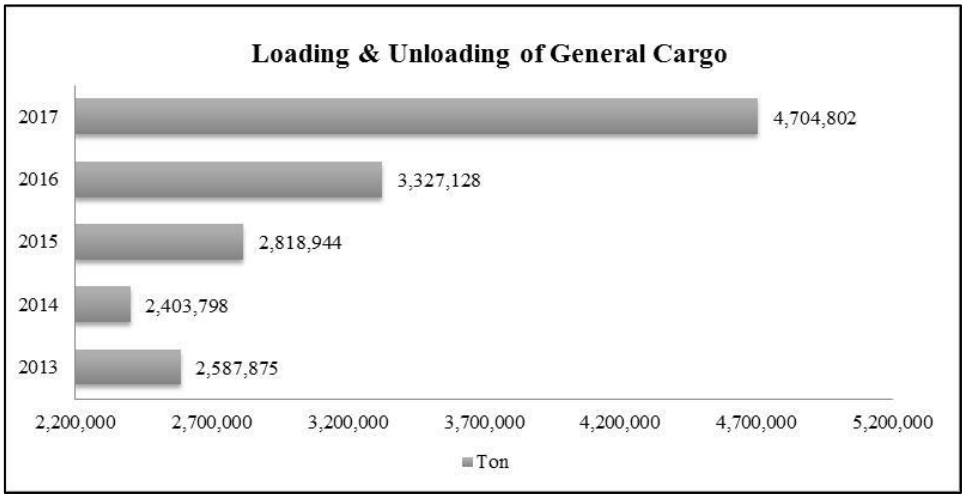

Figure 4. The Amount of General Cargo Flow in the Jamrud Terminal

- x2 (Performance of L/U Workers/operator in terminal). Jamrud Terminal currently has a TKBM number of about 1600 people. The number is spread into several Gangs, where 1 Gang consists of 12 people. However, the obstacle here is that not all existing TKBM are well trained in loading and unloading activities. This constraint causes the loading and unloading time of the required goods is longer, thus affecting the dwelling time of goods at the port.
- x16 (Separation of halal and non-halal products in Halal Warehouse). Jamrud Terminal has not done separation activities between halal and non-halal products. This can cause doubt to the consumer of halal products, due to there is concern about mixing between the two products mentioned above without the knowledge of the owner and the recipient of the goods.
- x17 (Sorting of halal and non-halal products that have been damaged). As well as the sorting of halal and non-halal products that are damaged, it is still done for non-halal products. It is expected that in the future it will be done for halal products with different places.
- x19 (Cold Storage separation between halal and non-halal products). Jamrud Terminal has not provided warehouse available cold storage in it. It was because the type of general cargo that entered was still raw materials or dry bulk such as soybeans, flour, and rice. While, for liquid bulk transported by truck directly from the carrier vessel. This also affects the low warehouse usage performance level of only 32.03% which is still far from the standard that is 65%
- x22 (Clean and avoid contamination between products). Hygiene and contamination between products is particularly preferred in the accumulation of goods at the North Jamrud Terminal warehouse. this is done with the use of pedestrian markers and VAK markers that serve as the boundary area between products, so expect no contamination between products.
- x27 (Special training for officers in Halal Warehouse). The respondents said that it is important to conduct training to Halal Warehouse officers. This is done for Halal Warehouse officers understand how to treat halal products according to Islamic Sharia so that halal products are not only halal but also Toyyib. Training is expected to be held periodically.

- x29 (Hygiene facilities for officers in warehouse/halal warehouse). Hygiene facilities are limited only to toilets. This is because the available warehouse is still a general warehouse, not yet a special warehouse such as halal products warehouse. If there is a special warehouse for halal products, then the existing warehouse staff should be well trained on how to treat halal products so as not to be contaminated with non-halal products.

In the second quadrant contains variables that are have a good performance considered the respondents opinion, and respondents expect that the performance each variable are could be improved. operational supervision at the terminal, service of goods documents, warehouse operation time following port operational time, items embrace FIFO system (First In First Out) or first come first out, the current fee system, sorting of goods carried out according to the type of goods, placement of food and beverages in areas appropriate to the species, free from environmental pollution, flood and pest, free of solid & liquid waste that is difficult to remove, use of special containers as waste disposal sites & dangerous goods, and special location for waste disposal containers & dangerous goods, respondents assume during this performance variable is good. This is because what happened so far for general cargo materials such as food and beverages, the goods are shipped with containers. The respondents assume for the safety and hygiene of the product, or contamination between the products have obtained guarantee. However, this assurance is still an opinion, not a systemized guarantee.

In the third quadrant shows that loading and unloading time per ritase max 20 minutes, warehouse that easy to maintain, conducting training for periodical human resource improvement, and routine health inspection for warehouse/halal warehouse has a low priority. Loading and unloading (L/U) times can be accelerated if existing L/U equipment and workers can work optimally. The lack of fast loading time may be due to less loading or unloading equipment or existing equipment is still under maintenance. It indicates that the existing condition, the above variables are rarely done, so the respondent's expectation to increase the performance of the variable is very low.

While in the fourth quadrant, some variables are considered excessive in the implementation or exceed the expectations of respondents, namely the provision of goods transporters i.e. truck. This is understandable, because service providers are racing with dwelling time suggested by the port operator that is 2 days. So, the provision of a fleet of freight carriers is reproduced for truck loosing activities so that the goods did not stop at the port for long periods. The location of adjacent warehouses facilitates service providers to unload their goods. The use of cold storage had been done on several warehouse service providers who special serve frozen food products. As well as for the procurement of training for warehouse staff who have periodically been implemented.

4. Conclusions

The results of the above research can be concluded that the performance of L/U equipment needs to be increased with the addition of loading and unloading equipment that is considered necessary forklift and digital scales. As well as the placement of well-trained L/U Workers so that the time for loading and unloading can be accelerated from existing time that was above 30 minutes to one hour could be reduced to 20 minutes. The need for separation halal and non-halal products, impacts on separation of cold storage between halal products and non-halal products, the respondents still consider halal products are still limited to frozen foods such as meat. Avoiding contamination and provision of hygiene facilities are expected to be improved in performance, especially for halal products that requires separate training so that halal products do not experience errors in the treatment.

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