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The Department of Management

FACULTY OF ECONOMICS AND BUSINESS

Universitas Muhammadiyah Yogyakarta

In Collaboration With
National Taiwan University, Taiwan
Universiti Sains Islam, Malaysia
Tamkang University, Taiwan
Khon Kaen University, Thailand



The 3rd International Conference on Management Sciences 2017 (ICoMS 2017)

Wednesday, March 22 2017

Universitas Muhammadiyah Yogyakarta, Indonesia

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Preface ICoMS 2017
The 3rd International Conference on Management Sciences 2017
(ICoMS 2017)
March 22 2017
The Department of Management
Universitas Muhammadiyah Yogyakarta, Indonesia

Dear Presenters and Delegates,

The Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta, in collaboration with the National Taiwan University, Tamkang University Taiwan, Khon Kaen University Thailand, USIM Malaysia, organized an International Conference which will be held on March 22 2017.

We are proud to know that there is a thick manuscript submissions came to our table for this conference. In detail, there are 67 international academic manuscripts has been accepted from Indonesia, Malaysia, Thailand, Taiwan, Pakistan. And in this conference we choose **Green Management** as the main theme.

Our international conference is a manifestation of the Government of Indonesia through the Ministry of Research Technology and Higher Education, which has encouraged the internationalization of research and teaching in order to foster high-caliber academic institutions globally and increase competitiveness in International Higher Education.

We are very confident that our presenters and delegates will get a lot of ideas together and experience of this conference. In addition, our participants will enjoy additional insight from our plenary session keynote speakers, namely, Prof. Dr. I-Hsuan Hong from National Taiwan University, Prof.Dr.Shu-Hsien Liao from Tamkang University Taiwan, Dr.Bodee Putsayainun from Khon Kaen University Thailand, Prof.Dr.Khairul Akmaliah from USIM Malaysia, and Dr.Retno Widowati PA from Universitas Muhammadiyah Yogyakarta.

Through this conference, we are committed to promote and improve our mission and academic culture synthesize global progress with local knowledge. Therefore, it is my great honour to welcome you to ICoMS 2017 in great cultural city of Yogyakarta, Indonesia. Welcome to ICoMS 2017, Universitas Muhammadiyah Yogyakarta.

Best wishes,

Retno Widowati PA, Ph.D
Head of The Department

<http://icoms.umy.ac.id/call-for-papers>

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MEASUREMENT OF FACILITIES AND SERVICES PERFORMANCE INDEX OF PASSENGER TERMINAL TANJUNG EMAS SEA PORT SEMARANG

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ABSTRACT

Tanjung Emas Semarang is a sea port through which the transport of goods and passengers to various regions in Indonesia. PT. Pelindo III manages the ports to provide good service to customers. Passenger terminal is the point where passengers and goods enter and out of the harbor. Improving the quality of services to passengers terminals require an assessment of the operational management and infrastructure facilities in the passengers terminal. This study aims to measure the performance index of service and facilities of passenger terminal by using a standard of sea transport passenger service of the sea port passenger terminal. Assessment was conducted by interviewing the officials and passengers and direct observation to the terminal facilities. The performance index values of assessment consider the passenger's satisfaction and importance weight of each aspect of the service. The index value defined was later described as a radar diagram. The assessment results show a gap on some aspects. The assessment value for services and facilities in a scale of 100 for each aspect are (1) Passengers Service of safety and health 95, (2) Security facilities 90, (3) The reliability and regularity of service 90, (4) The supporting facilities 100, (5) Easiness of passenger service 80, and (6) Facilities for disable and elderly 100. This value has an average of 92.5 which indicates that the services and facilities on passenger terminal at the Tanjung Emas Sea Port Semarang have been in a good condition but still needs to be improved. Improvements should be done related to security facilities and the provision of information to passengers.

Keywords : *Standard, Passengers Services, Facilities, Seaports Terminal, Index, Radar Diagram*

1. Introduction

Ports, whether maritime, inland or river ports, are important pieces of infrastructure that serve a wide

range of customers including freight shippers, ferry operators and private boats. One of the main functions of ports is facilitating the domestic and international trade of goods, often on a large scale. Competition in maritime ports and port services is central to countries with significant volumes of maritime based trade. Inland and river ports can also play important transport roles

within countries in particular for heavy or bulky goods where alternative ways of transport are more costly. Ports are, therefore, important for the functioning of the world economy and effective competition in ports and port services plays an important role in the final prices of many products.

Terminal is a place where passengers and goods enter and out to the sea port transportation system. Terminals are the nodes in a shipper/carrier system and perform various functions to facilitate the movement of freight (and also passengers). All modes of transportation use terminals in one context or another. A terminal can be any point within a transport chain where the movement of cargo is stopped or paused for a modal interchange, a value-adding activity, or both. As discussed later in this paper, terminals can also be seen as *nodes*, interchange or *articulation points*, linking different transport links. While maritime terminals (ports) have been always bounded by sea access, inland terminals can virtually be located anywhere, provided that there is an inbound/outbound transport link.

Seaport passenger terminal is an important component on transportation business. Passengers Terminal of Tanjung Emas seaport is one of marine transportation service facilities managed by PT. Pelabuhan Indonesia III as Indonesia state-owned enterprise. PT. Pelindo as a public service should continue to increase service quality due to increasing of passenger volume. Passenger volume of Tanjung Emas seaport terminal was targeted on Work Plan and Budget 2015 to reach 405.608. Seaport report indicates that the real of passengers flow for the year 2015 was 410.409 persons, an increase of 4.801 passengers from target. Tanjung Emas is the most visited port by foreign passengers after the port of Benoa, Bali and Lembar Harbor, Lombok. Number of foreign tourists in the last five years in Tanjung Emas tends to increase. Foreign passengers in 2015 targeted on 13.028 passengers and the real of foreign passenger flows during 2015 was 15.596 persons. It was 20% of increase from the defined standards and an increase of 15% from 2014. Competition between transportation providers requires each transport service providers to improve the quality of its services. PT. Pelindo III Branch Tanjung Emas Semarang had improved the quality of its services by renovating the Passengers Terminal. This construction is made to anticipate the growth in the number of passengers and improving the quality of service.

Between 2004 and 2009, laws which governed transport were changed to create a more efficient framework for transport network development, including to break the monopolistic role and to open the door for increased competition from the private sector in the delivery of transport services. Old law with public monopoly is Law No. 21/1992) was replaced by new law with open market (Law No. 17/2008).

The evaluation of the operational management and infrastructure facilities in the passenger terminal is done by applying the standard of passenger service ocean freight. This regulation established in the transport minister regulation No. 37 in 2015 on sea transport passenger service standards. Standards to be evaluated include: (1) passenger safety and health services (2) security facilities, (3) the reliability and regularity of services, (4) supporting facilities, (5) accessibility, and (6) facilities for the disabled and the elderly.

This research was conducted by interview and observation techniques using a check list form, the index calculation services, and radar charts. The purpose of this study are (1) Conduct an assessment to the conditions of passengers terminal of Tanjung Emas Semarang used a standards in the transport minister No. 37 year 2015 (2) Measure a passengers services and facilities index for Passengers Terminal Port of Tanjung Emas in Semarang (3) Provide some proposed improvement to increase the services and facilities in the Passengers Terminal Port of Tanjung Emas in Semarang.

2. Literature Review

Based on Transportation Minister Regulation No. 17 year 2008 on Shipping and Navigation, a port is defined as a place which consists of land and or water with certain limits area as a place for government activities and enterprise exploitation activities which used as a shipping wharf, pick up and down of the passengers and or loading unloading of goods, such as terminals for passengers and berths for ships. Port is equipped with the safety and security of shipping and port support activities as well as the displacement of intra and internodes of transport.

Passenger Services are defined as a commercial passenger service by sea or inland waterways operated according to a published timetable According to the regulation, there are various facilities and service activities that must be provided by the management of the passenger terminal. There are 6 service and facility dimension consisting of 28 indicators which will be processed to calculate the index value. The facility and service and its indicators are listed in table 1.

Table 1 Dimension and indicators of facility and service for passenger terminal on seaport

Facility and Service	Indicators of Standard on shipping
Passengers	1. Fire extinguishers are available on

Service of safety and health	certain place 2. Instructions and point of evacuation are well displayed and reachable 3. Medical official always available 4. Stretchers and wheelchairs are available 5. First aid equipment reachable
Security facilities	1. Security post and personnel are reachable by passengers 2. Available guardrail between passengers to the pickup 3. Metal detectors for passengers carry luggage 4. CCTV on location 5. Stickers complaint easily visible and clearly legible
The reliability and regularity of service	1. Always available arrival and departure ship 2. Ships arrival and departure right on schedule 3. Control room and management information system terminal in good condition 4. Available of terminal officer 5. Always give a notification for passengers in case of travel disruption and delays
The supporting facilities	1. Waiting room both VIP and non-VIP always on clean condition 2. Availability of a proper and clean toilet 3. Availability of a proper mosque 4. Availability of facility for air circulation such as air conditioning and fan 5. Proper lighting on passengers terminal
Accessibility of passengers	1. Facility to get a ticket and ticket self-printing machine

service	2. Information on Layout terminal, the name of docks and boats are well displayed 3. Facility to make passengers Easy to enter to and quit from the ship 4. Trolley available for passengers to carry luggage 5. Information on transport continued for passengers
Facilities for disable and elderly	1. Facility for disable are available in good condition 2. room / special place reserved for nursing mothers are available in good condition 3. room / special place reserved for the elderly are available in good condition

Terminal is a point where passengers and goods enter and out of the harbor. Passenger terminal s is a place for the activities of the process of moving passengers from one sub-system of transport to other sub-systems. Passenger terminal is function to facilitate the activities of service for passengers inter islands by means of ships. Minister of Transportation regulation No. 37 year 2015 regulates the standard of sea transport passenger service and facility.

Port operators should have a clear understanding of their responsibilities, including international legal and technical obligations to provide security to passengers, crews, and personnel in port. In accordance with applicable international legal requirements, port security arrangements (e.g. access control) may be established through the completion of a Port Facility Security Assessment of port operations followed by the appointment of a Port Facility Security Officer and the preparation of a Port Facility Security Plan depending on the outcome of the risk assessment.

3. Research Method

This research was conducted on February 1 to March 1, 2016. First activity in this research was compiles the transportation minister regulation in to a simple check list. This check list would be used to help researcher interview and ask the terminal official and passengers on giving a value for a facility or service condition. The assessor was 3 persons of terminal

officers and 10 passengers. Value was defined by comparing the actual condition of the facilities and services to the standard according to regulation (Republic Indonesia Transportation Minister Regulation No. 37 Year 2015). Necessary data in this study are reported volume of passengers transport 2011-2015 and report on vehicle transport volumes 2011-2015. The data collection was obtained with qualitative approach, with an interview to the supervisor of the terminal passengers and take photographs at the passenger terminal. The second step is the data collection in the form of value indicator of each dimension of passenger terminal facilities and services. Value defined by employees of seaport terminal. Assessment is done on four scales. The highest value is 4 as the expected value and the maximum number which means the facility and service are corresponding to the standard. This standard value (4 point) used as a reference for assess the facility and service real conditions.

- 4 is represents the state according to the standard.
- 3 is represents a condition where the facility are already available but the service has not been maximized.
- 2 is represents the condition of existing facilities and service but still in poor condition.
- 1 is indicates the facility and service is not yet available.

The third step is processing the data. After the values of all indicators are collected, then the average value can be defined. Facilities and services that exist in a sea port passenger terminal are expressed by the performance index. Performance index calculation is as follows (Eboli& Mazzulla, 2009 [9]).

$$W_k = \frac{1}{\sum_{k=1}^N I_k} \quad (1)$$

$$Performance\ Value = \sum_{k=1}^N (I_k \cdot W_k) \quad (2)$$

I_k : mean value of facility and service condition
 W_k : importance weight value of indicators

The importance weight value obtained by one divided by the number of elements. Value of an indicators obtained by multiply average value of indicators by its importance weighted value. Then, sum the value of indicators of certain dimension to gain the value of a dimension. Value of a dimension must be between 1 to 4. Meanwhile, to facilitate the interpretation, the index ratings then translated to a number lie on 25-100 with the following formulation.

$$Performance\ Indeks = Performance\ value \times 25 \times 25$$

After the performance value multiplied by the number 25, you will get number lie between 25 and 100 as a value of performance index. Performance index obtained then categorized into four classifications describe on table 2 below.

Table 2. Performance Indeks conversion and classification

Interval	Conversion Index	Quality	Services Unit Performance
1.00 to 1.75	25.00 to 43.75	D	Very Good Not Good
1.75 to 2.50	43.76 to 62.50	C	Not Good
2.50 to 3.25	62.51 to 81.25	B	Good
3.25 to 4.00	81.26 to 100.00	A	Very Good

The results then will be illustrated with diagrams radar. Radar diagram is a graphical method of displaying multivariate data in the form of two-dimensional chart of three or more quantitative variables represented by axis starting from the same point.

4. Result And Discussion

Data obtained from the interview to the officials and passengers at the terminal about the condition of the facilities and services at the passenger terminal Tanjung Emas Semarang was proceed and the result are given in Table 3. According to table 3, "target" is an ideal value or maximum value (4) and "real" is a value of existing condition of service and facilities.

Table 3. Result of data collecting and processing

Indicators of facilities and service dimension	Target	Real	Weights	Index
Passengers service of safety and health				
Fire extinguishers are available on certain place	4	4	0.2	0.8

Instructions and point of evacuation are well displayed and reachable	4	3	0.2	0.6
Medical official always available	4	4	0.2	0.8
Stretchers and wheelchairs are available	4	4	0.2	0.8
First aid equipment reachable	4	4	0.2	0.8
Total	20	19		3.8
Conversion Index : $(3.8 \times 25) = 95$				
Security facilities				
Security post and personnel are reachable by passengers	4	4	0.2	0.8
Available guardrail between passengers to the pickup	4	4	0.2	0.8
Metal detectors for passengers carry luggage	4	4	0.2	0.8
CCTV on location	4	4	0.2	0.8
Stickers complaint easily visible and clearly legible	4	2	0.2	0.4
Total	20	18		3.6
Conversion index : $3.6 \times 25 = 90$				
The reliability and regularity of service				
Always available arrival and departure ship	4	3	0.2	0.6
ships arrival and departure right on schedule	4	3	0.2	0.6
control room and management information system terminal in good condition	4	4	0.2	0.8
Available of terminal officer	4	4	0.2	0.8
Always give a notification for passengers in case of travel disruption and delays	4	4	0.2	0.8
Total	20	18		3.6
Conversion index : $3.6 \times 25 = 90$				

The supporting facilities				
waiting room both VIP and non-VIP always on clean condition	4	4	0.2	0.8
Availability of a proper and clean toilet	4	4	0.2	0.8
Availability of a proper mosque	4	4	0.2	0.8
Available facility for air circulation such as air conditioning and fan	4	4	0.2	0.8
Proper lighting on terminal	4	4	0.2	0.8
Total	20	20		4
Conversion index : $4 \times 25 = 100$				
Accessibility of passengers service				
Facility to get a ticket and ticket printing vessel	4	3	0.2	0.6
Information on Layout terminal, the name of docks and boats are well displayed	4	4	0.2	0.8
Facility to make passengers Easy to enter to and quit from the ship	4	4	0.2	0.8
trolley available for passengers to carry luggage	4	1	0.2	0.2
Information on transport continued for passengers	4	4	0.2	0.8
Total	20	16		3.2
Conversion index : $3.2 \times 25 = 80$				
Facilities for disable and elderly				
Facility for disable are available in good condition	4	4	0.3	1.3
room / special place reserved for nursing mothers are available in good condition	4	4	0.3	1.3
room / special place reserved for the elderly are available in good condition	4	4	0.3	1.3

Total	12	12		4
Conversion index : $4 \times 25 = 100$				

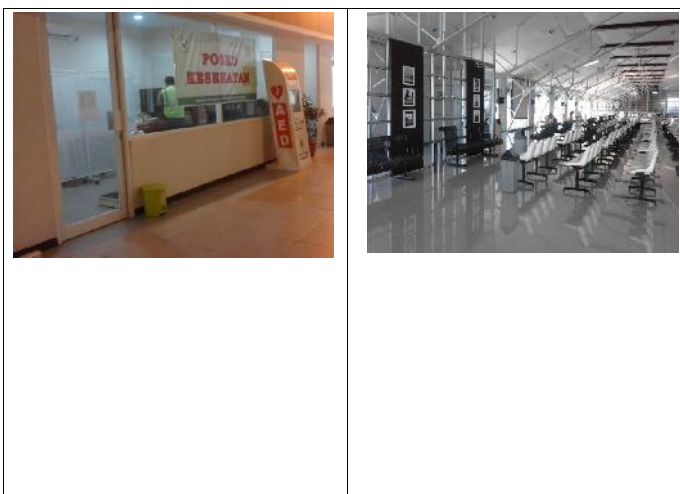
From the table above it can be seen that the six dimensions of facilities and services in the Passengers Terminal Port of Tanjung Emas is in a good condition. Service safety and health, safety, reliability and regularity, comfort and equality, all dimensions have an index value with excellent category. After renovation terminal is completed, the service should be better than before. Since the convenience facilities still unrealized, that the priority for the addition of facilities and improvements still needed.

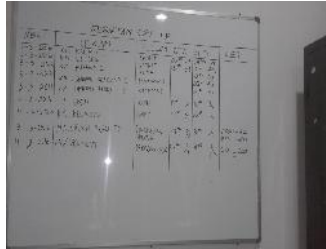
List of Facilities need to be improved include:

- 1) instructions and rallying point of evacuation,
- 2) stickers complaints were easily visible and clearly legible,
- 3) information board of arrival and departure of ships,
- 4) the suitability of the arrival and departure of ships to the schedule,
- 5) the ease to get a ticket and ticket printing machine availability,
- 6) Trolley for passengers to carry luggage.

The documentation about the facilities and services at the passenger terminal Tanjung Emas Semarang given in Figure 1 below

Figure 1. The real condition of six dimensions of facilities and services



Medical official always	
Passengers Service of safety and health	The supporting facilities
	
CCTV on location	Information on Layout terminal, the name of docks and boats are well displayed
Security facilities	Easiness of passengers service
	
ships arrival and departure right on schedule	Facility for disable are available in good condition
The reliability and regularity of service	Facilities for disable and elderly

The performance index of the facilities and services at the passenger terminal Tanjung Emas Semarang given in Table 4 below

Table 4. Index performance of the variables facilities and services at the passenger terminal Tanjung Emas Semarang

Variables	Target	Real
Passengers Service of safety and health	100	95
Security facilities	100	90
The reliability and regularity of service	100	90
The supporting facilities	100	100
Easiness of passengers service	100	80
Facilities for disable and elderly	100	100
Index performance		92.5

According to the table 3 and figure 1, passenger terminal condition can be known a few important things related aspects of services and facilities such as:

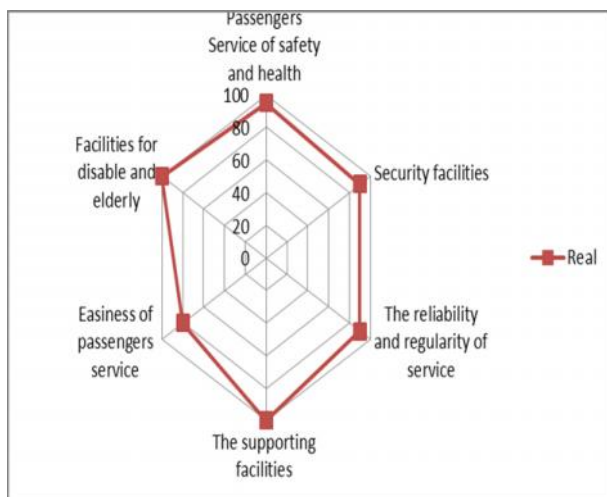
1. Passenger terminal of Port of Tanjung Emas has an index value 95 for safety and health services dimension (classified as category A or Very Good). Although the index has been entered in the excellent category, but there is still a gap between expectation and real condition. Improvement should be done for evacuation display and rallying point.
2. Security services at the passenger terminal at Port of Tanjung Emas got index value 90, classified as Very Good. Improvement should be done on customer complaints. Official should provide a telephone lines or a suggestion box for passenger complaint.
3. Service reliability and regularity in the passenger terminal got index value 90, but there is still need some improvement on information of arrival and departure schedule of ships. The display is already exists, but the information on board were not conform to real arrival and departure schedule of ships. The ship schedule needs to be adjusted continually due to some weather constraints that result on delays. There should be a notice for passenger in case of a travel disruption.

4. The index for the convenience facilities and service of the passenger terminal reaches index of 100 (Very Good). The leisure facilities are already available such as comfort waiting room, clean toilet with air freshener and janitor.
5. Index easiness of services at the passenger terminal is 80 and classified as category B (Good). There is still a gap between expectation and real condition such as ; (a) facility for self-printing not yet available (no printer engine tickets), the ticket printed by PT. Pelni officers using a scanning barcode system, (b) the lack of trolley for passengers to carry luggage.
6. Disabled and elderly facilities and services in the passenger terminal of Tanjung Emas Port have an index value 100 (Very Good). Amenities already provide by terminal management such as wheelchairs and special toilet for disable, the room a special place reserved for nursing mothers, and provided room / special place reserved for the elderly.

Passenger right include non-discrimination and assistance for disabled persons and persons with reduced mobility, provision of information to all passengers before and during their journey, assistance to all passengers in the event of delays and in certain circumstances compensation for delays and cancellation of journeys. Provision is also made for the handling of complaints and general rules on enforcement. The Regulation places certain obligations on carriers (ship operators), port or terminal operators, travel agents and tour operators.

Radar Diagram to review six dimensions of facilities and service of Tanjung Emas Port Passengers Terminal is given on figure 2. A Radar chart is a graphical method of displaying multivariate data in the form of a two dimensional chart of three or more quantitative variables represented on axes starting from the same point. Radar chart is also known as spider, which consists of several concentric circles (or polygons) and some axes starting from the circle center. Radar Diagram gives a data axis separately for each group of information. Each axis is distributed around a central point. Data should have common values and close together. Radar diagram can be used to control the enhance quality activity by display the performance metrics of each ongoing program. Radar demonstrates the difference value (gap) between target and real condition.

Figure 2. Radar Diagram of facilities and services on Tanjung Emas Port Passengers Terminal



Radar Diagram shows the comparison of value index of real condition to value of consumer expectations of sixth dimension (1) Passengers Service of safety and health, (2) Security facilities, (3) The reliability and regularity of service, (4) The supporting facilities, (5) Easiness of passengers service, and (6) Facilities for disable and elderly. The red line shows real condition Value index perceived by passengers and official. The radar diagram shows that the dimension 4 and 6 are already meet the standards. Meanwhile, Services on passengers Safety and Health, reliability and regularity of service, and easiness of service are still need to be improved.

5. Conclusion

Facilities and Services in Passengers Terminal Port of Tanjung Emas in Semarang are already in a good condition. To increase the customer satisfaction, the management of passengers should continue to focus on service improvement. The index value of each facilities and services dimension are: (1) Passengers Service of safety and health 95, (2) Security facilities 90, (3) The reliability and regularity of service 90, (4) The supporting facilities 100, (5) Easiness of passenger service 80, and (6) Facilities for disable and elderly 100. Index performance of facilities and services is 92.5 which indicate that the services and facilities on passenger terminal at the Tanjung Emas Sea Port Semarang have been in a good condition but still needs to be improved. Passengers ship terminal building not only take into account the circulation and space in it, but also provides a convenient concept for passengers with disabilities. Facilities still needed to be improved are (1) the display for passengers evacuation and the rallying point, consumer complaints facilities, display of arrival and departure of ships schedule, the suitability of the arrival and departure of ships to the schedule, the easiness to get a ticket, as well as the trolley for

passengers to carry their luggage. Routine annually assessment on index performance of facilities and service use standard checklists is recommended to maintain the performance index on a good level.

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