

## Model of Port Management to improve the Service Quality for Passengers

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### Abstract

*This research aims to analyze the demand for service quality by analyzing the relationship among actors in the port and the port management model to create excellent service for passengers. This research was conducted in Tanjung Emas Port in Semarang, one of the biggest seaports in Indonesia. The actors involved in the port management consist of port management, port filed officer, entrepreneur, ticket agent and passengers. The method used is the sequential mixed method, which combines qualitative and quantitative methods in sequence. Furthermore, the data analysis was done by using the software of atlas.ti, combined with stakeholder analysis and triangle analysis with in-depth interview and Focus Group Discussion (FGD). The results show that the some aspects obtain more concern from respondents about improving port quality such as port eligibility, facilities and comfortability, accessibility, and port security.*

**Keywords:** port management; stakeholder analysis; service quality.

### 1. Introduction

Indonesia is a maritime country, consisting of approximately 16,000 islands with 12 seas and 47 straits. Data from the Central Bureau of Statistics of June 2016 shows that the total population of Indonesia reached 257,912,349 spread in almost 2,342 islands, so Indonesia needs a means of transportation that connects the islands. There are several types of transportation that can be used. First, land transportation with inter-island bridge. An example for this is the Suramadu bridge, connecting the islands of Java and Madura. The advantages of this transportation mode are faster travel times, less influenced by weather factors, and more goods transported. However, this mode requires costly infrastructure and maintenance, and the construction of a bridge is strongly influenced by the distance between islands and the depth of the sea or strait. The second mode is air transport. The advantages of this mode are fast travel times, but some of the disadvantages are expensive travel expenses, expensive infrastructure development, and limited number of goods and people that can be transported. Due to the weaknesses of both modes, sea transport can be the main choice for Indonesia.

However, sea transportation in Indonesia has many obstacles. First, the number of ports is relatively low (1,241 ports) compared with the number of the islands, which means that one port serves 14 islands (14.1 islands/ports) with an average area of 1.548 km<sup>2</sup>/harbor. This figure is relatively low compared to other island countries in Asia, such as Japan with 3.6 islands / ports and 340 km<sup>2</sup> / port and Philippines with 10.1 islands / ports and 460 km<sup>2</sup> / ports. Secondly, the increasing role of sea transport accounts for only 4% of all Indonesian transport, a very small number for an island nation. Third, the rank of Indonesia's marine transport infrastructure at international level is still low, at 77, below Malaysia at number 19 and Thailand at number 54;

(4) (Bappenas, 2017). The data shows that over the last ten years, the number of sea transport passengers reached 39,283,040 per year, or 15.5% of the total population of Indonesia (Ministry of Transportation Republic Indonesia, 2017). The data illustrates that the number of sea transport passengers continues to grow despite a relatively slow rate. This slow growth is due to the low quality of service provided by public sea transport providers (Andiri, 2015). This issue needs to be addressed with the right governance policies so that this mode can grow efficiently and is able to compete with foreign shipping and logistics distribution (Mitreva et al., 2016; Radu, 2017). Marine governance is a process of interaction between the public sector and the private sector to provide solutions to marine issues.

Research on 20 major European passenger ports identifies and classifies the various services provided at passenger ports and private and public benefits generated from the provision of services in all passenger ports. With Analytical Hierarchy Process (AHP), this study found that: 1) if the port is commercially managed, the port will move toward new model changes; 2) the adoption of market value will encourage private operators to be more active in service strategies; 3) the number of professionally managed and profit-oriented ports is increasing; 4) this specialization of services by the private sector enhances business and industry activities; 5) the assumption remains that ports must be public infrastructure and administered by the government (Vaggelas & Pallis, 2010; Estima et al., 2017). This research aims to find the best management model for seaport in order to improve service quality for passenger. By using a case study in Tanjung Emas Port, Semarang, the purposes of this study are (1) to analyze the demand for service quality, (2) to analyze the role of stakeholders in efficient port management, and (3) to formulate a port management model to create excellent service.

## 2. Literature Review

Customer satisfaction is an important part in the development of sustainable transportation. Research conducted by Liu (2015) shows that today's society tends to use mass transportation. Factors considered important by the society are accessibility, comfort, security, and most importantly timeliness. The development of sustainable transportation policy also requires community participation (Liu & Liddawi, 2015). Research on service quality (servqual) assessment on ports in Europe classifies the quality of service into five main categories:

- a. Size of tangibles: port industry infrastructure referring to number of berths, size of terminal area, number of tow vessels, crane quality, availability of intermodal transport, quality of information systems and readiness of port management. Passenger ports have more complete tangibles including length of pier, parking lot, passenger terminal, waiting lounge, and information center;
- b. Reliability: efficiency and speed of port services. Timeliness is the basic indicator;
- c. Responsiveness: ports ability to meet user needs;
- d. Reputation: ports guarantees on the prevention of cargo damage;
- e. Empathy: ports ability to immediately provide information to customers against any problems (Pantouvakis, Chlomoudis, & Dimas, 2008).

To improve comfort, the environment becomes an important factor. Liam (2014) shows that green environment is one of the criteria for assessment of port comfort. Research results on ports in Asia and Europe (Singapore, Shanghai, Antwerp and Rotterdam) show that green environment management in Europe is better than that in Asia. In addition, port authorities have the greatest influence on environmental management (Lam & Notteboom, 2014). Acciaro (2014) found that environmental sustainability in the port industry began to be a concern of port authorities, policy makers, port users and local communities, requiring innovation and a specific policy framework. Other research on the efficiency of the management of fish found that important inputs in the fish industry began to concern the management of fish authority, policymakers, and local communities (Suharno et al, 2017a; Suharno et al, 2017b). Meanwhile, in managing the field of fisheries should also be specific to the problems that occur to examine cases per case in depth (Suharno et al, 2016, Suharno et al, 2017b).

Another study conducted in China on the role of stakeholders in port management shows that local governments are institutionally coordinating with port companies to develop a decentralized port management system (Wu, Li, Shi, & Yang, 2016). Research conducted on port governance in Europe and several other ports shows that there is a difference between conservatively managed and commercially managed ports (Verhoeven, 2010). The elements involved in the successful management of ports to improve services include regulators, operators, passengers, and other related elements such as agents, shop owners at ports, and passenger escorts (usually families or relatives). Collaboration between internal and external parties has a positive impact on the performance of sustainable management (Lu, Shang, & Lin, 2016).

## 3. Research Method

This research was conducted at Tanjung Emas Port, Semarang, Central Java, Indonesia. The method used is the sequential mixed method, which combines qualitative and quantitative methods in sequence. The qualitative method with atlas.ti analysis tool was used to answer the first objective, namely to analyze the demand for service quality. In-depth interviews were conducted on 15 respondents consisting of 8 passengers, 5 ticket agents, and 3 business owners at the port. Indicators used to assess port satisfaction are port eligibility,

facilities and comfortability, accessibility, security and orderliness.

Stakeholder analysis is performed to answer the second objective. Actors in this study are port management, field officers, ticket agents, passengers, and business owners at the port. The five actors will be linked to 10 goals: timeliness, availability of public facilities, access to ports, access to ships, security, comfort, cleanliness, dining facilities, costs and prices, and tidal flooding. The actors and the objectives will be processed by MACTOR on a matrix basis.

The third objective, the port management model to create excellent service for passengers, will be formulated with triangle analysis with in-depth interview and Focus Group Discussion (FGD). Respondents in in-depth interviews and FGDs are actors in stakeholder analysis.

## 4. Results and Discussion

Atlas.ti quantifies the results of interviews with coding assistance to. Results of field research and processing with atlas.ti found the following:

(1) Port eligibility: (a) clean toilets and public facilities (b) safe from tidal flooding; (2) Facilities and comfortability: (a) free toilets; (b) availability of seats and rest areas; (c) availability of prayers' place; (d) availability of stalls and kiosks with affordable prices; (e) clean waiting lounge; (3) Accessibility: (a) ease of access from outside the port; (b) ease of access for boarding; (4) Port security and orderliness. In detail, the assessment of each component is shown in Table 1 below:

Port Facilities	27
a. Eligibility	5
(i) toilet and public facility cleanliness	3
(ii) safe from tidal flooding	2
b. Facility and comfortability	13
(i) Mosque	2
(ii) Free of charge toilet	4
(iii) Seats/rest areas	1
(iv) Stalls/kiosks	2
(v) Spacious hall	1
(vi) Clean waiting lounge	3
c. Accessibility	4
(i) Ease of access from outside the port	2
(ii) Ease of access to board the ships	2
d. Security and orderliness	5

*Table 1.*  
Needs for excellent service at the port

*Sources:*  
Primary data is processed 2017

The above results are arranged in the network from figure 1.

Table 1 and Figure 1 show that the type of service desired by port users can be classified into four main elements: facilities and comfortability that refer to customer needs while in port; eligibility that refers to the availability of public facilities and safety from tidal flooding; ease of reaching ports and access to and from ships; and security while in port. Achieving service excellence depends on the role of the actors who become port stakeholders. In this study, there are five actors and ten goals. The role and relationship of the actors will be analyzed with MACTOR. The result shows that in the influence and dependency analysis, the business actor is in quadrant one which has low dependency and high influence, as the business actor strongly influences the running of the port economic activities. Passengers and all elements in the port need business actors to meet their needs, especially in the port of Tanjung Emas which is located far from the city center. Port management is in the second quadrant which has a high level of influence and a relatively high degree of dependency, because as the decision maker, port management must still consider customer needs and related elements at the port. In addition, the current policy determination tends to be bottom-up. Passengers, field officers

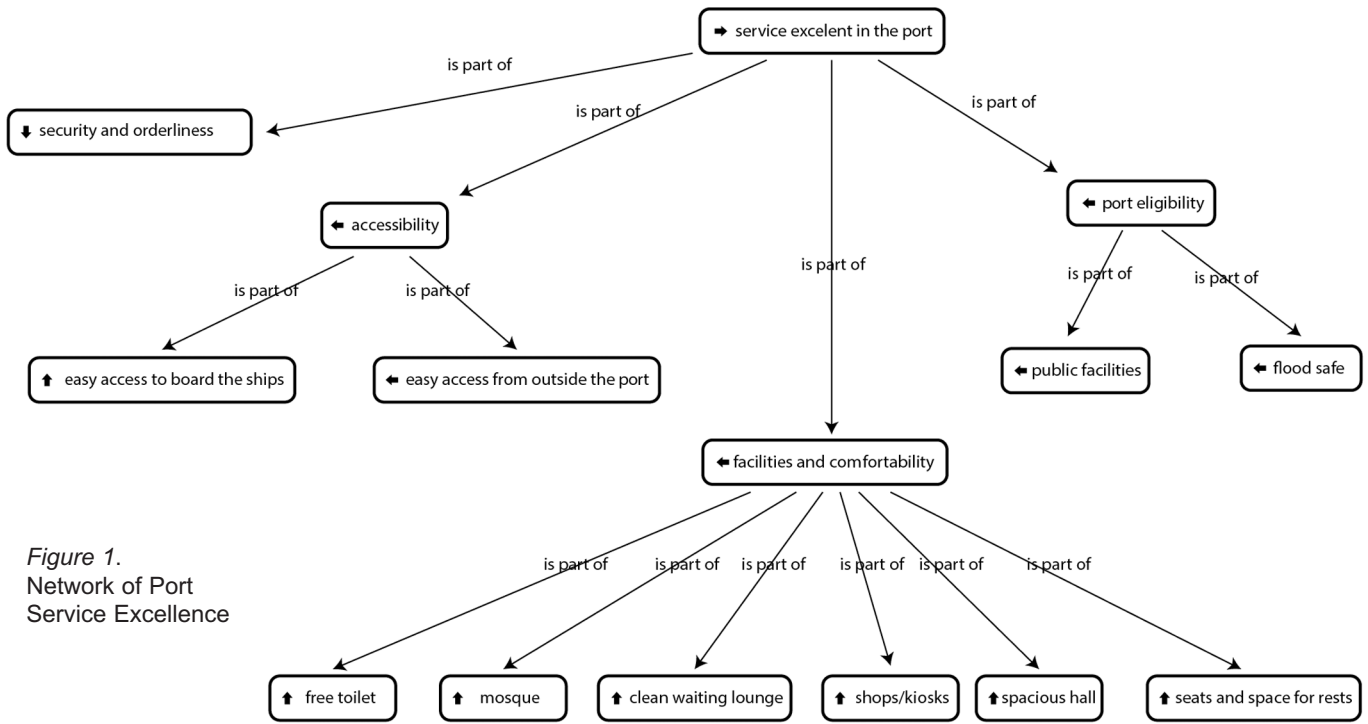


Figure 1. Network of Port Service Excellence

and ticket agents have low dependence and influence. Such dependency and influence analysis creates the following actors' competitiveness:

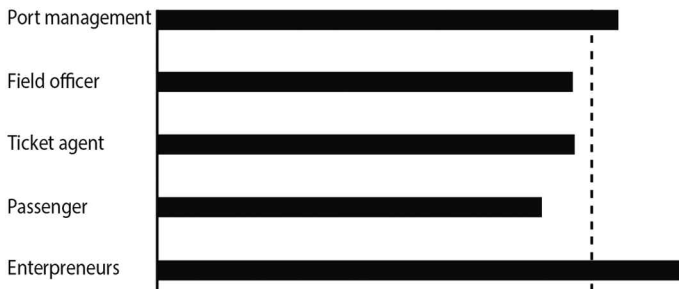


Figure 2. Histogram of competitiveness

Business actors have the highest competitiveness followed by port management, ticket agents, and field officers while passengers have the lowest competitiveness. This dependence causes passengers to be the most in need of service. The relationship between the actors and the goals to be reached at Tanjung Emas port is shown in Figure 3.

Figure 3 shows that on timeliness, it is found that more actors claim that this goal has not been achieved because the waiting period of ship docking and boarding is still relatively long. Similarly, the cost and prices at the port are still relatively expensive because the competitiveness of business actors in the port is very high. Security and cleanliness are the best aspects of Tanjung Emas port. Port management provides significant attention to both of these to improve customer convenience, especially passengers. However, since tidal floods are still frequent, comfortability has not yet gained maximum value.

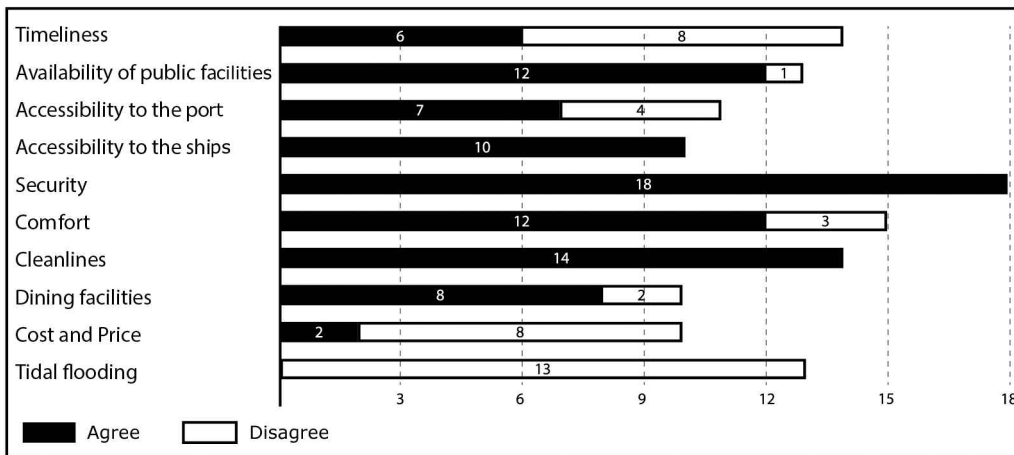


Figure 3. The actor's implications on each objective

Stakeholder roles are demonstrated by convergence and divergence that result in three things: the relationship between actors without the involvement of goals, the goals between actors in the same objectives, and the relationships between actors that have been collaborated with the goals. Convergence between actors by collaborating the goals is shown in Figure 4.

Figure 4 shows that the strongest convergence relationship is between port management and business actors and between port management and field officers. The relationship of port management with field officers is coordinative whereas with

business actors is mutual need. Port management is concerned to improve service excellence through the provision of shopping and dining facilities, while business actors need to run and improve their business. The relationship between the ticketing agent and the field officer and port management is moderate as most ticket agencies have off-ports branches so they are not significantly affected by the policies applicable within the port. The relationship between field officers and business actors is complementary. The relationship between passengers and all other actors shows weak convergences, since they are target

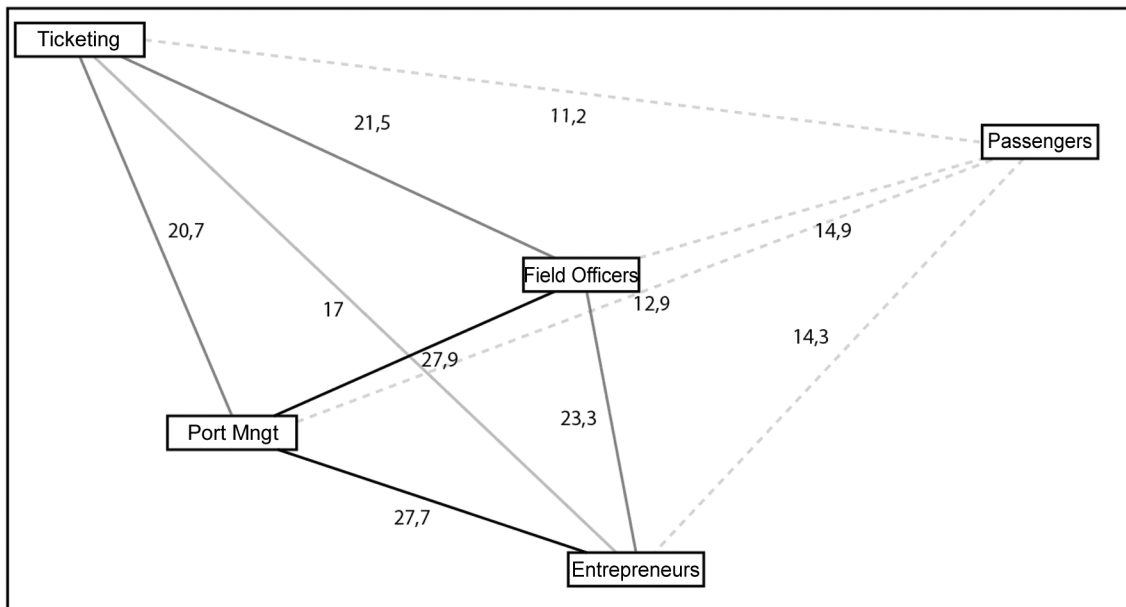


Figure 4. Convergence between actors by collaborating the goals

- Weakest convergences
- Weak convergences
- Moderate convergences
- Strong convergences
- Strongest convergences

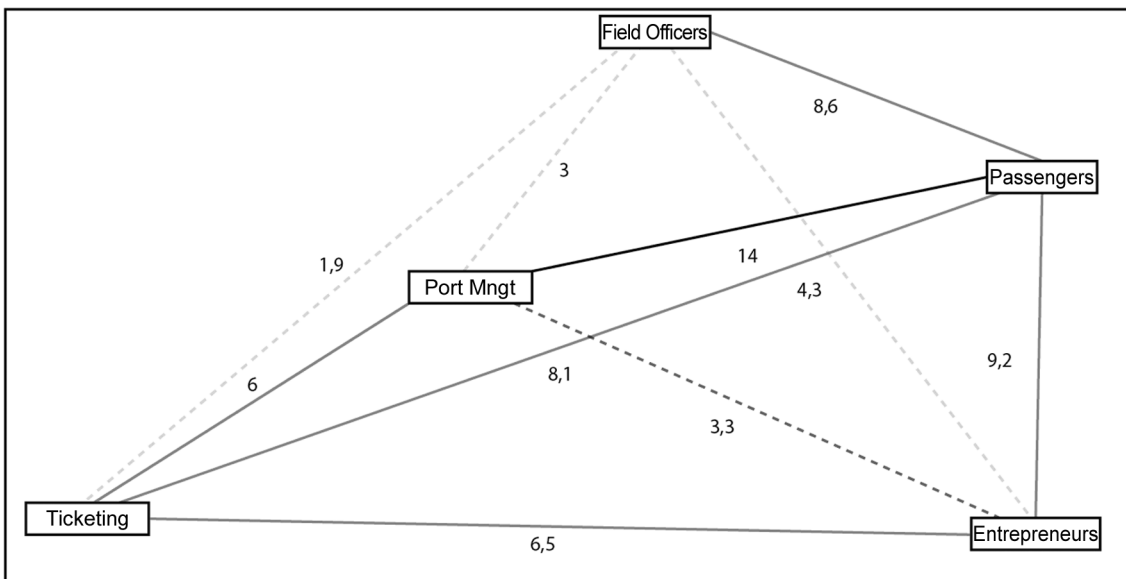


Figure 5. Divergence relationship among actors

- Weakest convergences
- Weak convergences
- Moderate convergences
- Strong convergences
- Strongest convergences

variables or end users that depend on all the existing stakeholders. The divergence relationships among stakeholders in the three divergences, which have incorporated collaboration with objectives, are shown in figure 5.

Figure 5 shows that the relationship between port management and passengers shows very strong divergences, since they are not directly connected. Port management, ticket agents, field officers, and business actors have a weak divergence, because basically the four actors are connected. Passengers have a strong divergence with business actors and field officers because during the waiting, they will be in constant contact so that it is possible that there is a crossing of interests between them. Meanwhile, passenger relations with ticket agents show moderate divergences as they relate only once during each trip, when purchasing a ticket.

The first and second objective analyses will be used as a

baseline to formulate a port management model. Both analytical tools are equipped with FGD and in-depth interview. In-depth interviews were conducted on key figures involving stakeholders. The formulation involves university academics who will provide input based on the results of their research. The in-depth interview results are formulated into a model, which will be discussed through FGDs to obtain input and justification on the model. The Port management model based on empirical study in Tanjung Emas Semarang is shown in Figure 6.

Figure 6 is a port management model obtained from the research results. Based on this model, the regulator shall consist of the Ministry of Transport and the port authority responsible for the determination, implementation and monitoring of regulations. If there is a problem in the implementation, it is recommended that the applicable laws and regulations be revised. Regulators are also authorized in



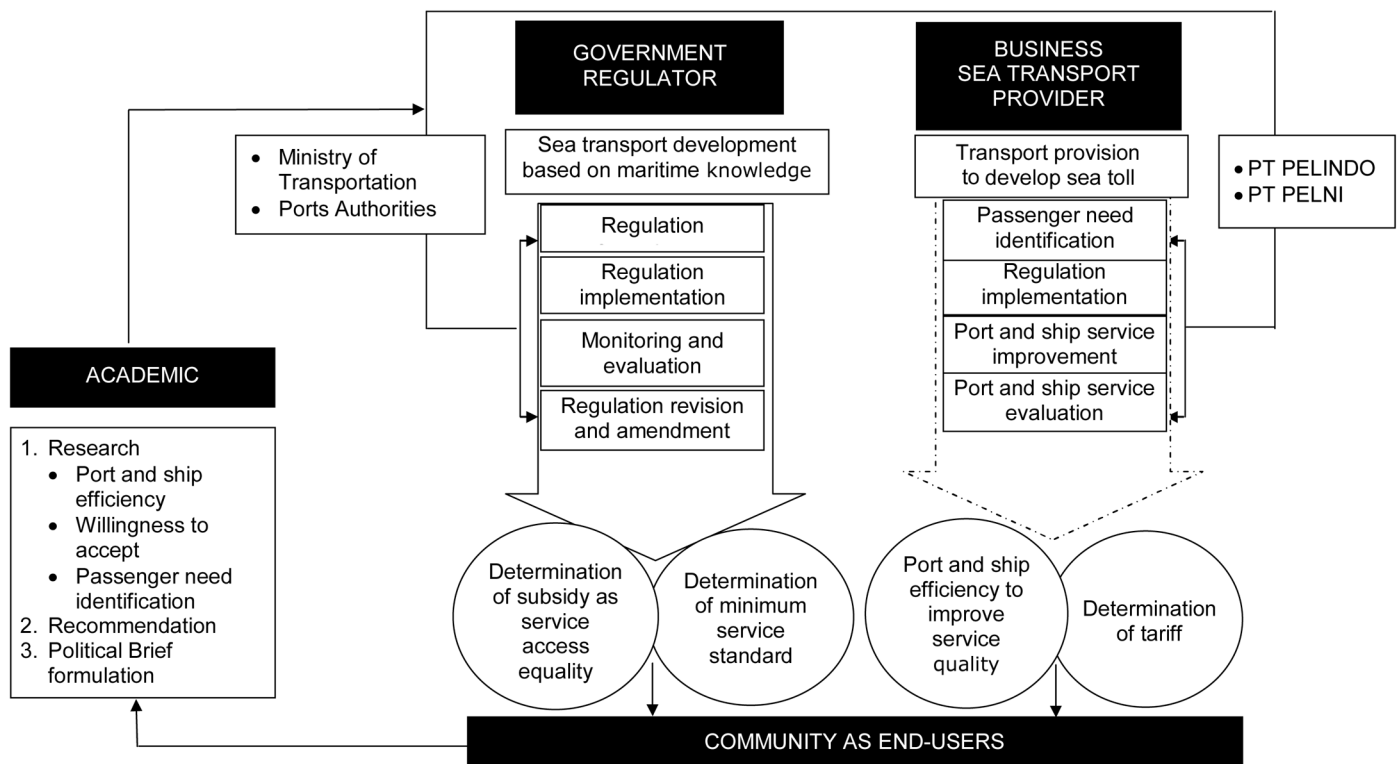


Figure 6. Port Management Model to improve Service Quality for Passengers

determining ticket prices and setting minimum service standards. Regulators are supported by business actors to improve the efficiency of port services to achieve service excellence. Academics have the duty to provide input to regulators and executors through research conducted in the form of academic texts for policy determination.

## 5. Conclusions

The type of service excellence required in the port of passenger ships is identified based on the needs and interests of all stakeholders, especially passengers. Service excellence is determined by four main components, i.e security, eligibility, facility and comfortability, and accessibility. The main players in improving service excellence are business actors, port management, field officers, ticket agents, and passengers. Passengers are the most dependent variables so that they do not have a strong convergence relationship with all other actors. The main actors in improving service excellence at the port are port management and business owners.

This research recommends a port management model that involves all stakeholders with the regulator as its central figure. Service excellence will be achieved when the regulator can involve all supporting actors, namely business actors and field officers.

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