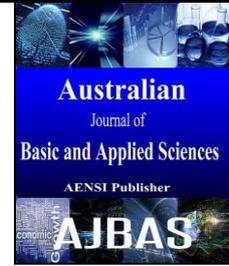




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**Development Factors of Shipping Industry Areas to Support the Regional Innovation System in Lamongan District, East Java**

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**ABSTRACT**

The central government has established the industrial road map through MP3EI to support the shipbuilding industry. The region of Surabaya, Gresik, Lamongan and Tuban areas will be developed as the national shipping industry. The purpose of this study is to formulate the shipbuilding industry development cooperation to support the development of regional innovation systems. The goal and objectives are to identify the support for the shipbuilding industry in Lamongan, and the descriptive analysis to identify the factors that influence the development of the shipbuilding industry. The method is using a theoretical review of the literature and the descriptive analysis from the results of depth interviews with stakeholders in Lamongan. The results of this study are the factors that influence the development of the shipbuilding industry.

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**INTRODUCTION**

Master Plan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI) is a breakthrough regionally based economic development that is designed with an unusual strategy. To achieve this MP3EI has 3 main strategies, namely: (1) Economic development potential through economic corridor, (2) Strengthening national connectivity, (3) Strengthening human resource capability. The central government has determined that Surabaya, Gresik, Lamongan and Tuban areas will be developed as the shipping industry cluster to support MP3EI.

The shipping industry development requires the innovation of technology to compete with other areas and also overseas. Shipping business should improve their skills and competencies in the strong interaction between organizations inside and outside the shipping industry cluster, in order to increase the total capability and innovation, as well as creating a unique competitive advantage (Jenssen, J.I., J.I. Innovation, 2003). The shipping industry cluster cannot be separated from the consideration of the geographic concentration of business shipping, seaports, logistics systems, and universities. Innovation policies in many countries recognized the importance of place-based innovation system (location), where each party (universities and

businesses) are able to manage the network, facilitating collaboration, develop shared direction and act as a 'door' to the regional broader system (Kilpatrick, S. and B. Wilson, 2013).

Development of the shipbuilding industry cluster includes at least linkages between the upstream industry, the intermediate industry and the downstream industry. To develop the shipbuilding industry requires support relevant institutions both private and government sectors, especially in enhancing the competitiveness of the industry. The importance of government policy to support the establishment of a shipbuilding industry cluster, which includes (1) in the early stages of cluster formation, strong government support for the establishment of industrial incubators; (2) business networks, especially long-term relationship between the companies and support of financial institutions, and (3) human resources management in the long term (Shinohara, M., 2010).

The innovation process is expected to improve the competitiveness of the shipbuilding industry through interaction and collaboration among relevant actors. To enhance the innovative capability is an important factor in building regional competitive advantage with the techno-economic paradigm, where local innovation capabilities shaped by the ability of regional innovation actors and cooperation in the innovation process (Pekkarinen, S. and V.

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Harmaakorpi, 2006). Innovation is not a process that is isolated from the company, but rather a complex process that is collaborative, interactive, and systemic consisting of arrests, the creation and diffusion of knowledge through an array of multiple and specific actors (da Silva Monteiro, J.P.V., *et al.*, 2014). The concept and some empirical evidence of their successful practical experience shows that competitiveness and social cohesion of a country, region or community is strongly influenced by the development of "innovation system" of countries, regions or communities. The dynamics of innovation systems shows how a nation is able to control, exploit and develop the knowledge, innovate and diffuse these innovations, and proceed in a variety of learning and adapting to change.

### **Methodology:**

The method used the literature review to determine the variables and descriptive analysis of the results of in-depth interviews with stakeholders in Lamongan. To determine the importance of factors that influence the development of the shipbuilding industry in Lamongan used Linkert scale (1-5). The factors that will be analyzed include: (1) transportation facilities and infrastructure, (2) utility, (3) government policies, (4) development cooperation, and (5) the port. Respondents were selected using the purposive sampling technique to the stakeholders related with the development of the shipbuilding industry in Lamongan.

## **RESULTS AND DISCUSSION**

Type the shipbuilding industry in Lamongan consists of large-scale and small-scale shipbuilding. Maritime Industrial Estate is established by the government to support investment in the development of the port and shipping industry. The demand for new vessels and ship repair in this area is large, following the establishment of Lamongan and surrounding areas as a Special Economic Zone (SEZ) of the maritime industry. There are three large-scale shipbuilding industry is that it operates only PT. DPL with the activity of the ship improvement and repair, and the other two industries, namely PT. LMI and PT. DPS is still under construction. There are 7 small-medium industries (SME's) with total production of ships 33 units a year with the amount of labor involved about 140 people. The other activities are logistics services to support the exploration and exploitation of oil and gas. PT. LIS is one of the enterprises that designed, built and operated the Lamongan Integrated Shorebase. PT. LIS handled an offshore facility of the oil companies that range in northern regions of East Java and the northern island of Madura, and also operate for all activities related to heavy equipment services.

The result of study obtained the factors that influence the development of the shipbuilding industry in Lamongan as follows: (a) maritime industrial development cooperation, (b) government policy, (c) utilities, (d) transport infrastructure, and (e) seaports. Factor of maritime industrial development cooperation has a high level of importance in order to support the development of the shipbuilding industry in Lamongan. It is important the indicators associated with the development cooperation is supporting the development of the shipbuilding industry, as well as linkages between the upstream and downstream industry, and also ship component industry. Cooperation between and downstream industry development is very influential because it can lead to efficiencies in the production process of the shipbuilding. If there is no connectivity or cooperation between supporting industry and the shipbuilding industry, the price of domestically produced ships will be more expensive due to the limited number of ships and components industry, and dependence on imported materials and components of the ship.

Factors government policies have a high level of importance in influencing the development of the shipping industry. The policies are related to the establishment of regional spatial plans to support the development of the shipbuilding industry specific areas. The determination of the spatial plan makes it easy for businesses to carry out the construction, as well as in the maintenance of the associated permit and licence.

The availability of utilities is an important factor in supporting the development of the shipbuilding industrial area, particularly support the provision of electrical energy and water supply. Availability of electrical energy strongly supports the development of the shipping industry. Electrical energy supply constraints will affect the performance of the production process of shipbuilding. The electricity demand in the shipbuilding industry, it have been currently supplied by PLN (state-owned enterprise). In addition, the shipbuilding industry itself also provides a backup generator as electrical energy if the electrical energy supplied by PLN impaired or blackouts.

The shipbuilding industry cluster needed the building of cooperative relationships between the upstream industry, intermediate industry and downstream industries. Shipbuilding industry is an industry that is highly dependent on the supply from upstream and downstream industries and between industries. In the context of agglomeration economies, the ability of a cluster of exciting companies associated with a set of labor that can be used simultaneously, customer base and supplier, knowledge spillover, and low transaction costs (de Langen, P.W., 2002). The role of transportation

infrastructure and seaport becomes essential to support mobility and logistics with other areas. The seaport is able to stimulate the entire value-added chain of regional economic activity by developing supplier relationships, business-related area, attract inward investment, economic activity (Chang, Y.C., 2011). The existence of large-scale and SME shipbuilding industry is supported by maritime based human resources, namely the availability of higher education institutions in the field of shipbuilding, ITS

and polytechnic of shipbuilding, as well as the largest Hydrodynamics Laboratory BPPT in Surabaya, as well as the design center of shipbuilding (NaSDeC). Regional innovation cluster initiatives apparently trying to like a comprehensive strategy to provide a balanced view of the power industry, the potential for innovation and regional assets, as well as the synergies between them (Yu, J.B. and R. Jackson, 2011).

**Table 1:** Development Factors for the Shipbuilding Industry

Variables	Respondent					Mean
	R1	R2	R3	R4	R5	
Transport infrastructure						3.7
Availability of highway	3	4	5	2	5	3.8
Availability of trucking services	3	3	4	3	3	3.2
Availability of facility piping	4	4	4	4	5	4.2
Utilities						4.1
Availability of clean water	3	5	5	2	5	4.0
Quality of clean water	3	2	5	4	5	3.8
Availability of sewerage treatment plant	3	3	5	3	5	3.8
Availability of electrical power supply	5	5	5	5	5	5.0
Availability of oil fuel	3	4	4	3	5	3.8
Government Policy						4.2
Spatial Development Plan	5	5	5	4	5	4.8
Incentive for the industrial activities	3	3	3	4	5	3.6
Maritime Industrial Development Cooperation						4.6
Cooperation between upstream and downstream industry	5	5	3	3	5	4.2
Cooperation with the supporting industry	5	5	5	5	5	5.0
Seaports						3.6
Port and supporting infrastructure	5	5	5	5	2	4.4
Type of ship	4	4	4	3	3	3.6
Production capacity of shipyard	4	4	4	4	2	3.6
Building new facilities	3	4	4	4	3	3.6
Waiting time for building the ship	4	4	4	4	1	3.4
Time to order the ship	3	4	4	4	1	3.2
Cost for building the ship	4	4	4	3	1	3.2
Performance shipyard	5	5	5	5	1	4.2
Utilities of shipyard	4	4	4	3	1	3.2
Research and development	4	4	4	3	1	3.2
Capacity to repair the ship	4	4	4	5	1	3.6
Capacity building the new ships	4	4	4	4	1	3.4

Source: result of the analysis, 2014.

### Summary:

The development of shipbuilding industry special area in Lamongan is not only supported through a top-down approach by the central government, but also from local government through a bottom-up approach. The efforts that have been made unable to encourage the formation of shipbuilding industrial clusters reliable and competitive. Some important factors to be considered in the development of the shipbuilding industry on the special area are following:

- Cooperation among related industries with the shipbuilding industry like as upstream and downstream industry;
- Government policies on the spatial arrangement of regions, regulation and permitting or licensing in the area, including instrument development through incentives and disincentives;

- Infrastructure services related to utilities and transportation systems that support the development of the area both for industrial processes, mobility, and logistic support;

- Seaports and its supporting infrastructure includes docks, warehouses, shipyards and the loading and unloading activities are important in the shipbuilding industry.

### REFERENCES

- Chang, Y.C., 2011. Maritime clusters: What can be learnt from the South West of England. *Ocean & Coastal Management.*, 54(6): 488-494.
- da Silva Monteiro, J.P.V., P.A. Neto and M.T. Noronha, 2014. Understanding the ways and the dynamics of collaborative innovation processes: the case of the maritime cluster of the Algarve region

(Portugal). *Urban, Planning and Transport Research: An Open Access Journal.*, 2(1): 247-264.

de Langen, P.W., 2002. Clustering and performance: the case of maritime clustering in The Netherlands. *Maritime Policy & Management.*, 29(3): 209-221.

Jenssen, J.I., J.I. Innovation, 2003. capabilities and competitive advantage in Norwegian shipping. *Maritime Policy & Management.*, 30: 93-106.

Kilpatrick, S. and B. Wilson, 2013. Boundary crossing organizations in regional innovation systems. *Regional Science Policy & Practice*, 5(1): 67-82.

Pekkarinen, S. and V. Harmaakorpi, 2006. Building Regional Innovation Networks: The Definition of an Age Business Core Process in a Regional Innovation Sistem. *Regional Studies*, 40(4): 401-413.

Shinohara, M., 2010. Maritime cluster of Japan: implications for the cluster formation policies. *Maritime Policy & Management.*, 37(4): 377-399.

Yu, J.B. and R. Jackson, 2011. Regional Innovation Clusters: A Critical Review. *Growth and Change.*, 42(2): 111-124.