

Prima, Irfan Teguh; Ash-Shidqi, M. Hazmi; Aristya, Opi

Article

Development of vocational marine schools in Indonesia as a strategy for rediscovering Indonesia's maritime potential

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DEVELOPMENT OF VOCATIONAL MARINE SCHOOLS IN INDONESIA AS A STRATEGY FOR REDISCOVERING INDONESIA'S MARITIME POTENTIAL

Irfan Teguh Prima
Department of Economics, Faculty of Economics
Universitas Indonesia
Depok, INDONESIA
irfan.teguh@ui.ac.id

M. Hazmi Ash-Shidqi
Department of Economics, Faculty of Economics
Universitas Indonesia
Depok, INDONESIA
muhammad.hazmi@ui.ac.id

Opi Aristya
Department of Economics, Faculty of Economics
Universitas Indonesia
Depok, INDONESIA
opi.aristya@ui.ac.id

ABSTRACT

As a nation gifted with approximately 5.8 million km sq of water areas and abundant marine biodiversity, Indonesia is expected to be able to prosper its citizen by utilizing its potential maritime sector. Unfortunately, maritime sector in Indonesia is still neglected. Vocational school of fisheries and marines is a breakthrough designed to improve the utilization of maritime sector. This paper attempts to provide analysis of factors impeding the development of marine vocational schools in Indonesia and possible solutions for the impediments. The research was conducted using literature review and direct observation at a marine vocational school in Tuban, East Java. Based on the observation, factors that impede the development of marine vocational schools are related to the curriculum design and capital invested. The solutions proposed consist of emphasizing technical skills in curriculum design, improving capital investment of public sector, and maintaining partnership with state-owned enterprises in maritime sectors.

Keywords: Fisheries, Marine, Vocational School.

1 INTRODUCTION

Indonesia is well-known as the largest archipelago consisting of approximately 17,000 islands from Sabang to Merauke and 7.9 million km sq territorial areas – in which 25% of it is land territory and 75% of it is sea territory. Its coastline length is up to 95,181 km, the fourth longest in the world after the United States, Canada, and Russia. Indonesia is also gifted with abundant marine diversity as reflected by the existence of 8,500 species of fish, 555 species of seaweed, and 950 species of coral reef in the ocean (Ark, 2010). Its maritime potential is estimated to gain annual economic benefit up to Rp12,000 trillion (Sutardjo, 2013).

Despite owning abundant resources from maritime sector, the proportion of economic benefit contributed by the maritime sector is still small and many of inhabitants in coastal area are living with incomes that fall beneath the poverty line. Based on the data released by Kehati Foundation, 60% of Indonesia's population live in coastal areas and majority of them are highly dependent upon sea as their source of living or source of income; yet, they are still not able to earn proper standard of living due to inability to optimally utilize the marine resources – as reflected by poverty count index in coastal areas which up to 0,32. According to the Central Statistics Agency (BPS), the marine sector's contribution to Gross Domestic Product (GDP) of Indonesia was only about 22% in 2013, while the growth was only 7% in the second quarter 2013 (BPS, 2013). The underutilization of marine resources is mainly caused by the

lack of involvement of local stakeholders in coastal areas, particularly the local fisherman. In addition, this unfortunate situation is exacerbated by the low quality of human resources which impedes the ability of local inhabitants to optimally utilize the marine resources in their areas (Wahyuningsih, 2009).

Fisheries sector is the largest contributor of the utilization of maritime sector since 60% of the inhabitants of coastal areas are fisherman. Unfortunately, Indonesia's fishermen still use both traditional tools and traditional methods for fishing; moreover, they are also unable to adapt with the price volatility happening in the market. Those factors trap them to be low-income groups whose incomes are vulnerable to fall into beneath the poverty line. Improving the quality of education for inhabitants of coastal areas is an essential step that must be taken by the government to maintain better qualified human resources. A breakthrough designed recently to attain this goal is the establishment of Vocational School of Marine and Fisheries (SUPM-N). However, it seems as if there was no serious effort made by the government to properly manage the quality of vocational school of marine and fisheries in Indonesia. It can be observed by the condition of its learning facilities.

There are some researches analyzing about vocational schools in Indonesia; yet, those researches examine about vocational schools in general. In this paper, the authors attempt to scrutinize a specific kind of vocational school which is vocational school of marine and fisheries. The issues addressed in this paper are factors that determine the success of vocational school of marine and fisheries, factors that impede its development, and the possible solutions to increase the employment prospects for graduates of vocational high school of marine and fisheries.

2 RESEARCH METHODS

This research was conducted using the combination of descriptive analysis and qualitative method. Descriptive analysis was conducted by doing not only direct observation at two vocational schools of marine and fisheries at Tuban, East Java, but also using a variety of existing literatures to support our observation. The direct observation was conducted on July 2014 so that the obtained data was the latest information. Basically, the observation was purposed to find out the real implementation of education system in the vocational schools of marine and fisheries. Several things that we observed including the curriculum designed, learning activities, and also the track record of the alumni.

The qualitative method was conducted by having in-depth interview with the teachers and/or the principal of the particular marine and fisheries vocational school. In the in-depth interview session, the issues discussed including (but not limited to) teaching methods, the expected competencies of students, the relevance between the expected competencies and the provision of teachers and other supportive facilities, the quality of teachers and students, and financial issues. In addition, to draw the track record of the alumni, we collected data which refers to the unemployment rate of the graduates, the current occupation of the graduates, and whether or not their institution has collaboration with some business institutions to channel its graduates, especially in the maritime industry in Tuban and its surrounding.

3 RESULTS

a. Literature Review

Newhouse and Suryadarma (2009) explain the existence of comparative advantage in the form of higher salary by being a graduate of vocational school in comparison to be a graduate of senior high school. The observation was conducted in some countries including Egypt (El-Hamidi, 2006), Israel (Neuman dan Ziderman, 1991), and Thailand (Moenjak dan Worswick, 2003). Their explanation is also endorsed by the survey conducted by World Bank in 2009 in Indonesia which explains that the graduates of vocational school have slightly better qualification in comparison to senior high school graduates (Gropelo *et.al*, 2010).

Unfortunately, the development of vocational schools in Indonesia is not running as smooth as what expected. There are several essential problems which have to be dealt with. The main problem is related to the incompatibility between the qualification of the graduates and the qualification required by the business sector (Darajati, 2009); consequently, the employment rate of graduate of vocational school is still relatively low. The incompatibility is due to the lack of public sector capital investment towards the improvement of quality of vocational education.

In order to investigate the learning situation in vocational school of marine of fisheries, an observation was conducted. The direct observation was conducted in Tuban, East Java. Tuban is a district located in the north coast of East Java Province and possessing 65km coastline. Tuban is famous for its marine and fisheries sector – one of the central districts of marine and fisheries sector in Java Island. Based on the data released by BPS, marine and fisheries sector in Tuban are the largest contributor for its gross regional revenue and its proportion keep increase annually; yet, still in the low level of increase (see figure 1).

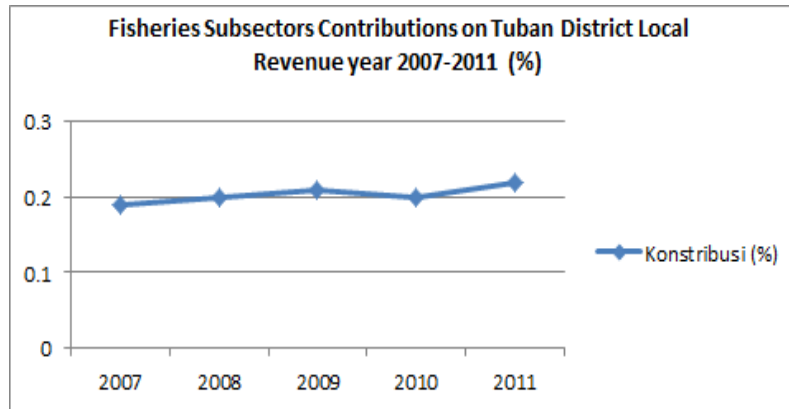


Figure 1: Fisheries Contribution on Regional Revenue of Tuban 2007-2011

The significance level of contribution of marine and fisheries sector in each district in Indonesia is calculated by using Location Quotient (LQ) as a variable calculation. Location Quotient is a method used to illustrate the significance level of contribution of a particular sector toward the economy of a region. LQ is obtained by comparing the share of a particular sector in Tuban and the share of that sector to the economy of East Java Province. If the value of LQ obtained is greater than 1 ($LQ > 1$), it describes that the sector contributes significantly to the economy of a region. According to the calculation of Tuban's regional BPS, the value of LQ for marine and fisheries sector in Tuban was always greater than one from 2007 to 2011 (Ni'mah, 2013).

b. Observations Results

There are two marine and fisheries vocational schools that we observed in Tuban, Muhammadiyah Vocational School of Sailing and Tuban Christian Vocational School of Sailing.

Muhammadiyah Sailing Vocational School in Tuban

Muhammadiyah Sailing Vocational School in Tuban was established in 1996. It was initially a vocational school of agriculture and mining. It was turned into state-owned marine and fisheries vocational school which under the authority of The Ministry of Maritime and Fisheries Affair, and then, it was turned into Muhammadiyah Sailing Vocational School which under the authority of The Ministry of Education and Cultural Affair.

Muhammadiyah Sailing Vocational School has three major departments:

1. The Department of Engineering of Fishing Vessel (Mechanical)
2. The Department of Nautical Fishing Boat (Deck)
3. The Department of Fishery Production Technology (Processing)

There is compulsory certification test for each department. The certification test is not fully executed by the school itself. National standardized certification test for students majoring fishery production technology takes place at state-owned marine and fisheries vocational school in Tegal. On the other hand, certification test for nautical fishing boat students takes place at Muhammadiyah Sailing Vocational School and those are handled by the Department of Transportation and the Ministry of Education and Cultural Affair as the examiners who have fulfilled national standard.

Mr. Margo and Mr. Suyanto were our sources of information for the interview. Mr. Margo is one of The Indonesia's Fishing Masters and Mr. Suyanto is the head of fishing vessels management who has had

approximately 15 years of sailing experiences in some part of the ocean all over the world. Both of them are teachers of Muhammadiyah Sailing Vocational School.

According to our sources of information, there are 23 teachers and 19 others employees (administration staff and cleaning service staff) to assist 639 students in Muhammadiyah Sailing Vocational School. The teachers for specific qualification should be the experts of particular specification who have numerous experiences and also must have attained at least a bachelor degree of marine and fisheries department. Unfortunately, there is a shortage in the supply of experts who are willing to be a teacher in Muhammadiyah. It is due to the salary gap between being a teacher and being a sailor. By working as a captain and/or crew of the vessel, the experts can get a salary which is equivalent to Rp5,000,000 up to Rp7,000,000 per month. Meanwhile, by being a teacher, particularly as a teacher at a private school, the salary is only about Rp700,000 up to Rp2,000,000 per month; therefore, the average age of teachers in the school itself are 35 years or older who consider themselves as gaining enough earning and working experience to compensate their opportunity cost for education.

Muhammadiyah Sailing Vocational School has various lab equipment and other supporting learning equipment for the preparation and training of certification test. However, some essential equipment for specific technique and skill training, such as ship navigation tool which costs more than 20 million rupiah, is not owned by the school due to its unaffordable price. From the observation that the authors conducted, there were also some supporting learning facilities in the laboratory which did not fulfil the safety standard and learning standard. It is caused by the lack of funding and financial assistance received by the school; moreover, the school has not charged any tuition fee for its students for three years; consequently, its financial sources only rely on the assistance given by the alumni and financial assistance proposals proposed to various companies. So, improving the quality and quantity of supporting learning facilities is surely not an easy task.

In order that the curriculum designed can flexibly adjust with the demand for labour from industrial sector, Muhammadiyah Vocational School of Marine and Fisheries modifies approximately 25% of its initial state-designed curriculum and adjusts it with the standard of industrial sector demand. It also cooperates with many companies, both domestic and foreign companies, to channel its graduates so that they should not struggle competing to find a job after their graduation – the list of companies which have cooperation with Muhammadiyah Vocational School of Marine and Fisheries are written in appendix.

According to both Mr. Margo and Mr. Suyanto, there is a phenomenon in which a shortage of labour supply exists for many of shipping and fisheries corporations in Tuban because there are still few students who are interested in continuing their study to vocational school of marine and fisheries. In addition, majority of its students come from other region, not from Tuban itself. It is so unfortunate since many of youth in Tuban prefer to study and live in urban areas instead of extending their knowledge related to the utilization of abundant marine resources of their hometown. On the other hand, there are also people who are not interested in the vocational school due to the physical entrance examination – because they deem themselves as incapable to pass the examination.

Tuban Christian Vocational School of Sailing

Tuban Christian Vocational School of Sailing which was known as a state-owned vocational school of agriculture in 1970 has 4 major departments:

1. The Department of Sailing Fishing Vessel
2. The Department of Commercial Sailing Vessel
3. The Department of Mechanical Engineering of Fishing Vessels
4. The Department of Information Technology

The department of information technology is the least preferable option for students.

There are 23 teachers provided to assist 300 of its students and fortunately, it has no problem either related to the shortage supply of teacher or the supporting facilities. According to Mr. Eko – the principal of Tuban Christian Vocational School of Sailing – the school is immensely assisted by its high dedicated alumni who are willing to be a teacher for their alma mater; moreover, it is also financially assisted by the alumni, the regional government, other entities, and also the funding coming from the tuition fee, so that it can run the annual school development smoothly.

The curriculum is designed fully on the basis of the national standard of The Ministry of Education and Cultural Affair. It is deemed as sufficient qualification for the students to find a job field since it has already maintained cooperation with some industrial marine sector in East Java; moreover, there is also a shortage of labor supply for marine and fisheries industry in East Java; therefore, finding a job which is in line with their qualification is not a complicated matter as long as they have such a strong willingness to work on that field.

The similarity between Muhammadiyah Vocational School of Marine and Fisheries and Tuban Christian Vocational School of Marine and Fisheries is the majority of students of theirs come from other region, not from Tuban itself. The local stereotype which associates the graduates of vocational school of marine and fisheries with traditional fishermen whose job is not deemed as either prestige or promising for the local inhabitants of Tuban becomes a disincentive for them to register study to vocational school of marine and fisheries.

4 DISCUSSION

There are three issues discussed in this paper. Those consist of the provision of supporting learning facilities, designed curriculum, and the role of teacher.

As an education institution which aim is to provide specific qualification for students to be able to find a job despite owning a high school certificate only, vocational schools of marine and fisheries are expected to be able to provide such a good supporting learning facilities since each department in the school require a lot of experiments to teach student with the method of learning by doing. However, based on the direct observation conducted, the condition of supporting learning facilities is somehow not adequately decent to support the expected learning outcome for students which are to be optimally able to utilize the marine resources and to invent a new technology used to support the utilization process. Some of essential vessel tools such as navigation tools, radar, and sound navigation and ranging, are not owned by the vocational schools of marine and fisheries due to its unaffordable price. This unpleasant condition may be caused by the lack of financial assistance given by the government, particularly The Ministry of Education and Cultural Affair.

Operational Cash Transfer Program (BOS) is one of programs designed by the government as a financial assistance. It was begin in 2013. Each registered vocational school receives Rp1,000,000 per student that must be used for 13 objections including the provision of text books, stationeries, and laboratory equipment, examination funding, temporary teachers salary, annual maintenance expense and so forth. The amount of government funding received must be deficient; therefore, the biggest proportion for the development of school comes from highly dedicated alumni.

The establishment of vocational school of marine and fisheries is a precious breakthrough which development must be well planned in order to be able to generate better quality of human resources who are able to optimally utilize the abundant marine diversity which Indonesia gifted with. The solution that we suggest is not only the provision adequate financial assistance specifically for the supporting learning facilities, but also the provision of sponsorship scheme for companies to maintain cooperation with vocational schools of marine and fisheries which means that the government will assist to maintain the cooperation between companies and vocational schools of marine and fisheries.

The next issue discussed is related to the designed curriculum. Recent problems emerging unemployment is the incompatibility between the qualification of the graduates and the qualification required by the business sector. As we observed, both Muhammadiyah and Tuban Christian Vocational School of Marine and Fisheries have different approach to design its curriculum; thus, both of them share different rate of graduate employment. Tuban Christian Vocational School of Marine and Fisheries has more rigid curriculum which is fully based on the curriculum arrangement of the ministry of education affair. On the other hand, Muhammadiyah Vocational School of Marine and Fisheries has flexible curriculum design of which 25% adapted to the demand of the marine and fisheries industry. In this competitive era, the curriculum of education should be designed to adapt with the demand of business sector to be able to compete in finding a decent occupation, for instance many of the graduates of Muhammadiyah Vocational School of Marine and Fisheries find their occupation that in line with their qualification due to the modification of its curriculum design.

The role of teachers in the learning process also takes such a substantial part to improve the development of marine and fisheries vocational school. Both of the vocational school that we observed have limited amount of experts to be teachers – They have a problem regarding the shortage of expert

teacher supply, even though there are some highly dedicated alumni who are willing to be teachers, it seems as if there were not many of alumni who would like to do so. The salary gap between being a teacher and being a sailor or working on the commercial vessel becomes the most considerable opportunity cost for the graduates to dedicate their knowledge as teacher. Only those who have experienced enough in sailing or other occupations they used to work in, who willingly work as teachers to share their knowledge and experiences; therefore, many of the teachers for specific qualification has been more than 35 in age. Because in this age, they intend to live peacefully with their family without necessarily have to leave them for months to occupy their tasks as a sailor.

Eventually, Indonesia needs roughly 778.122 people who graduate from the school of marine and fisheries or the school of sailing (Suyasa, 2013) since the huge maritime potential of it has not yet equiponderated with adequate supply of labour in marine and fisheries sector. In Indonesia, there are only 176 of marine and fisheries vocational schools. On the top of that, there are only two of them in Tuban, East Java – despite the maritime potential that Tuban owned.

As a coastal area in East Java, Tuban is estimated to be a potential maritime district; yet, the potential is still underutilized since there are only 18.551 labor for marine and fisheries sector in Tuban (Dinas Perikanan & Kelautan Tuban, 2010). In 2007 up to 2011, marine and fisheries sector can only contribute 2,45% for the employment rate in Tuban and only contribute approximately 2,02% for gross regional revenue in Tuban. The data is the proof of the underutilization in maritime sector of Tuban.

Despite the promising career path offered by channelling their graduates to several companies, the rooted stereotype in society is still such a big disincentive for students to include the vocational school of marine and fisheries to their top options of future education institution. The stereotype is the factor which underestimates the future career of the graduate of the vocational school. If the mindset of local inhabitants remains into the glass ceiling, the shortage of marine and fisheries sector labor supply will remain unsolved and the government programs designed to improve the utilization of maritime sector cannot run smoothly as planned. In order to lure students to continue their study to vocational schools of marine and fisheries, the government has to exemplify successful narratives regarding the successful businessmen in maritime sector. The amelioration of rotten stereotype is also the expectation of Mr. Eko, the principal of Tuban Christian Vocational School of Marine and Fisheries. However, stereotype is such a rotted mindset in society which cannot be simply eliminated. Persistent efforts must be committed by the government to overcome such a hindrance by generating organic change within the society.

Mr. Suyanto, one of the specific qualification teachers in Muhammadiyah Vocational School of Marine and Fisheries, expects that the government will empower the exertion of domestic human resources or people whose citizenship belongs to Indonesia, especially those who live in the maritime potential coastal areas. The fishing facilities of Indonesia's fishermen must be put enough concern so that their fishing products can compete in international scale business. In addition, the government also need to rectify the maritime sector regulation by strengthening our territorial supervision for instance by requiring foreign vessels which get into Indonesia's territory to hire Indonesian ship crew(s), just similar with the regulation applied in many other countries. This policy can also provide broader job opportunity for the graduates of vocational schools of marine and fisheries.

The optimization of maritime sector is an important duty for Indonesia. It must be handled persistently to provide significant contribution from maritime sector towards the economy of Indonesia. Neglecting the current problem can result into wasted maritime potential.

5 CONCLUSIONS

Based on the conducted observation, the development of vocational school of marine and fisheries has an essential part in the development of Indonesia itself since Indonesia is the owner of abundant marine resources which is not yet optimally utilized to contribute to both regional scale economy and national scale of economy. The designed curriculum, qualified teachers, supporting facilities and cooperation with the business sector are the substantial key for successful education system. Nevertheless, limited information makes us unable to draw a conclusion about the output distinction or similarity between the flexible curriculum designed which tend to be business adapted curriculum and the curriculum arranged by The Ministry of Education and Cultural Affair.

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APPENDIX

The following table summarizes the list of companies which cooperate with the observed vocational schools of marine and fisheries.

Table 1: Lists of Companies

No	Tuban Christian School of Sailing	No	Muhammadiyah Sailing Vocational School
1	PT. Pudji Utami Jakarta	1	International Fisheries Company from Japan, Canada, Spain, USA, Peru, Taiwan, Trinidad & Tobago, South Africa, etc.
2	Sekai Hikari Indonesia	2	Indonesian and International Cruise Ship Company
3	PT. Harini Jakarta	3	Fisheries Processing Industry in Bali, Sidoarjo, Gresik, etc.
4	Budi Agung Binatara Jakarta	4	Ships Manufacturing Industry in Bali
5	BBPPI Semarang	5	Studying at AMNI Semarang, STAIN Pati, etc.
6	TPPI Tuban		
7	PT. Mijasa Mitra Pati		
8	Tuna Long Line Indonesia Assoc, Bali		
9	CV. Prila Bali		
10	Antariksa Komputer Tuban		
11	PT. Surya Timur Line		
12	LPK Samudera Pekalongan		
13	Tafcinco Jasatama Segara Semarang		
14	PT. Dwi Karya Reksa Abadi Merauke		
15	PT. Minatama Mutiara Timika		
16	Indonesia Fisherman Assoc, Tegal		
17	PT. Surya Timur Line (Shipping)		
18	Another Government Institution, etc		

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