UMT’S FUTURE MARITIME EDUCATION PROGRAMS IN ENHANCING MALAYSIANS COMPETITIVENESS IN THE MARITIME INDUSTRY
(MASA DEPAN PROGRAM PENGAJIAN MARITIM UMT DALAM MENINGKATKAN DAYA SAING MALAYSIA DALAM INDUSTRI MARITIM)

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Abstract: The Malaysian maritime sector is contributing significantly towards the national economy. Human capital development, particularly relating to maritime industry will be the determining factor in the advancement of this country as a maritime nation. It is imperative that Malaysian institutions of higher learning respond to the changing situation by producing manpower equipped with the relevant technical and managing skills. The establishment of Universiti Malaysia Terengganu (UMT), particularly the School of Maritime Business and Management is a step forward towards realizing the need to fulfill the manpower in the maritime sector to face the future challenges. In this respect, the School has responded to the changing situation by introducing several relevant programs. This paper provides an overview of the importance of the maritime sector to the Malaysian economy and the need to fully utilize the ocean resources by strengthening the maritime education.

KEYWORDS: Human resource, academic program, maritime cluster, maritime studies.

Introduction

Sea as Malaysia’s economic lifeline, Malaysia as a coastal state has the right to explore and exploit both living and non-living resources for economic exploitation in a zone adjacent to its territorial sea. According to UNCLOS III of 1982, article 56, the coastal state has sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities, for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds (United Nation, 1983).

Malaysia’s economic growth will be linked to many aspects of the ocean, particularly to
her EEZ areas for exploration and exploitation of economic activities such as offshore oil and gas harvesting. Thus, to become a developed maritime nation and to utilize her EEZ resources in a sustainable manner, Malaysia has to pay more attention to the development of her commercial shipping and shipbuilding sector as well as the maritime education and training capability to produce competence human capital for the future market.

Malaysia lies in the tropics (Lat. 1 – 8°N, Long. 100 – 119°E), and consists of Peninsular Malaysia and the states of Sabah and Sarawak. By virtue of an extended jurisdiction of the Economic Exclusive Zone (EEZ), Malaysia has maritime areas which are much larger than its land mass (see Diagram 1.1).

Malaysia’s maritime characteristic is accentuated by the fact that it is a nation fragmented by intervening waters, with the South China Sea separating Peninsular Malaysia from Sabah and Sarawak. Being a coastal state, Malaysia’s dependence on the ocean is pervasive. This reliance stretches into a wide spectrum of critical areas such as trade, energy resources, transportation, employment, food source, leisure, tourism, security and safety, among others.

Malaysia is a small open economy that is competing from the periphery of Asia and is fast becoming one of the most successful economic and pro business environments within the Asian zone. It is located along the Straits of Malacca as shown in Diagram 1.2, that has sustained its strategic position as the main highway connecting the East and the West, with more than 60,000 vessels plying the Straits each year, 30% of the world’s trade and 50% of the world’s energy pass through this Straits (JPN, 2007).

For centuries, the maritime industry has always been important to Malaysia and its economic activities have blossomed based on the maritime sectors which have contributed significantly to Malaysia’s economic growth.

Diagram 1.1: Malaysia Economic Exclusive Zone Areas.

Source: Adapted from 1979 Malaysian EEZ Map (The New Map, No. 26, Tambahan No.1, No.5745, 21 December 1979), Department of Survey and Mapping.

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studies, it is agreed that the establishment of a specialized training institution is necessary to fit and meet the industry needs.

In meeting the above mentioned needs a special study was conducted to uncover the possibility of developing tailored program which tackles the main issues in the maritime industry. The finding (H. Madzli, 2005) shows that there appears to be a gap in the higher learning centers in providing courses that meet today’s demand. A total of top 40 companies involved directly in the field of logistics, transportation and maritime agencies were being interviewed in solving this dilemma. The output was ecstatic. 79% of the respondent acknowledges the need to establish a degree program in Maritime studies. An almost 90% agreed that there is definitely most timely that such programs were needed in this declining stage of the employment of human resources in the maritime industry. In another study done by the Asean Port and Logistics directory 2005 (IMEX, 2005), a total of 862 companies urgently require professionals and semi-professionals to fill various job descriptions.

Further, in another study done by Petronas Training and Education (PETRONAS, 1999, 2003) has come up with an idea towards tackling the needs of the Malaysian Maritime development agenda known as the Maritime Education and Training Master Plan (METMP). The study showed 6 areas of education development in order to mature in the International maritime industry. Amongst those areas are;

i. Design, Manufacture, and Construction;
ii. Shipping and Waterborne Operations;
iii. Offshore Energies;
iv. Living Resources;
v. Supporting Services; and,
vi. Other Marine Resources.

The design includes boat, ship building, design and repair. The manufacturing includes maritime equipment and instrument. The construction includes the fabrication of offshore structure. The shipping and water borne operations includes freight and passenger transportation, logistics and terminal and port operations. The offshore energies comprise of ocean energy, petroleum, gas and Renewable resources/energy. The living resources comprise of fishing and environmental issues. Supporting services include maritime services; maritime authorities and classification societies (See the Malaysian Maritime Cluster).

*Diagram 1.2 The Straits of Malacca. Source: Author.*
A structure for Malaysian maritime industry can be effectively managed by an integrated and centralized maritime related knowledge and information to guide external and internal sector management, correct incentives and effective policies can be introduced to manage the Malaysian Maritime Cluster. What is needed is the participation from government, education institutions, industry as well as the political will to effect a change in systems-centered thinking and planning the future of the industry by actively seeking to encourage the development of a competitive maritime education.

Seaport is a land facility designated for reception of personnel or material moved by sea, and that serves as an authorized port of entrance into or departure from the country in which located. Seaports are important to a trading nation like Malaysia because their

Source: Author.

Malaysia has 0.44% of the world's population in 2013, represents 0.49% of the world's economy, yet accounts for 1.07% of world seaborne transportation, Malaysia GDP 2013 was 5.0%. Malaysia is also external competitive, ranking 12th (out of 135 economies) in year 2013 (Source: http://www.worldbank.org/).
economy depends on port efficiency. Therefore, a competence and trained worker are important to the maritime industry. Training a new worker to get a competency is essential, it is costly but necessary. Maritime industry employers may hire an experienced and competent worker who has worked from another sector, but it will cost more in terms of salary, the number of workers qualified are lower and there is no guaranty that their previous experience and competency to handle a new task such as port equipments and working flow are the same with the environment new port. That’s where Maritime Education and Training (MET) come to play their role, teaching as “An interactive process, primarily involving classroom talk which takes place between teacher and pupil and occurs during certain definable activity (Edmund, 1966). By providing a proper training and lesson to maritime students, new trainees for professional courses, number of workers with the right qualification added with the skills and experience needed, maritime worker will be able to provide a better service with their best conditions.

To achieve the goals of industrialization and become a developed maritime nation with a knowledge based economy, productivity-driven growth and enhanced competitiveness, will depend on how the Malaysian Maritime Cluster is managed and how the strength of the maritime human capital is sustained. Thus, the birth of a strong maritime education basis and an effective policy development in the maritime education could be realized and mobilized by the creation of sustainable maritime academic programs based on the future demand and requirements.

University is an institution of higher education and research, which grants academic degrees in a variety of subjects. Maritime education span multiple disciplines and the ideal MET will offer premier ocean knowledge and outstanding opportunity to study issues confronting the global scenario in climate change, maritime trading and economic fluctuation, island and peripheral and also coastal oceans and offshore studies. Mapping of the maritime courses in the Malaysian local universities has been carried out to identify the relevancy and viability of the courses offered as a guide and can be adopted for the new MET programs. Further, there are three (3) major fields in the maritime cluster consist of; maritime studies (See Figure 1.0), marine science (See Figure 1.1), maritime engineering and nautical science (See Figure 1.2).

**Malaysian Maritime Education and Training**

Maritime industry provides the basis for the growth and development of marine-related activities such as: ocean and coastal shipping,

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**Maritime Studies**

<table>
<thead>
<tr>
<th>Maritime Policy and Law</th>
<th>Maritime Management</th>
<th>Maritime Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. International Maritime Trade Policy and Law.</td>
<td>i. Shipping and Port Management.</td>
<td>i. Port and Shipping Operation.</td>
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Figure 1.1: Marine Science Specialization.

<table>
<thead>
<tr>
<th>Marine Science</th>
<th>Maritime Engineering and Technology</th>
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</thead>
<tbody>
<tr>
<td>Marine Biology</td>
<td>Naval Architecture</td>
</tr>
<tr>
<td>ii. Marine Conservation</td>
<td>Hydrodynamics.</td>
</tr>
<tr>
<td>iii. Marine Ecology</td>
<td>Resistance and Powering.</td>
</tr>
<tr>
<td>iv. Marine Biotechnology</td>
<td>Seakeeping and Maneuvering.</td>
</tr>
<tr>
<td>v. Marine Ecosystem Dynamic</td>
<td>Geomorphology.</td>
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Source: Author.

The inclusion of Malaysia in the International Maritime Organization (IMO) white list, a list containing those countries which fulfilled the Provisions of the STCW95 Convention has further evidently shown Malaysia’s capability in maritime training and education. There are 19 smaller institutions providing specialized or advanced training, supplement the education and training need of the maritime industry in Malaysia. Furthermore, in an effort to increase the number of qualified seafarers, the Malaysian Government launched an interest free loan scheme called the “Seamen Assistance for Study Fund 21”. The purpose is to encourage seafarers to pursue their studies in order for them to qualify as officers in Malaysian Merchant vessels. Malaysia is going to continue its efforts to promote maritime transportation and provide competent human capital in the maritime field. In relation to that, Malaysia has several maritime institutions that provide maritime training and education.
degree programs related to maritime studies, Universiti Malaysia Terengganu (UMT) and Universiti Teknologi Malaysia (UTM) already provide the faculty for future human capital in the Malaysian maritime industry. Malaysian Chartered Institute of Logistics and Transport (CILTMT) is the custodian for logistics and transport accreditation body and one of the maritime courses in UMT has been accredited as a professional program with this added value, more professional in the maritime industry will be produced.

Nowadays, not much of training work has been done at rationalizing the number and optimizing the facilities in the maritime education due to the escalating of the cost to maintain these facilities. Therefore the new approach of teaching and learning mechanism for the future maritime education system should be developed, for example, the system via simulation approach and embedded with the port and ship facilities is a foundation for teaching maritime students how to be a professional and ready to work on a real ship or port environment. In the competitive maritime market, a new breed of approach will cause waves among the traditional maritime education and training (MET) providers or universities. This approach will offer alternatives to an audience or maritime students need for fresh thinking in the maritime studies with a fresh training angle. The system is a tool for teaching maritime students how to be a professional and ready to work on a real ship or port environment.

An Overview of the Universiti Malaysia Terengganu (UMT) and School of Maritime Business and Management (SMBM)

UMT started as fishery training center in Universiti Pertanian Malaysia. Later it was known as Universiti Putra Malaysia Terengganu (UPMT). In year 2000 the university branch was upgraded to Kolej Universiti Terengganu. Later it was further upgraded to Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM) in year 2002. On 1st February 2007, become a full University and called Universiti Malaysia Terengganu (UMT). The university is located 22 km from Kuala Terengganu with a total land area of 55 hectares.

Presently, UMT has nine schools and three institutes. The university offers various courses and services. The university offers courses at diploma, degree, masters and Ph.D level. The higher education ministry has identified UMT to focus in maritime and related programs.

The largest school in UMT is the School of Maritime Business and Management (SMBM). There are two programs offered in the SMBM conducting the maritime courses namely:

1. Program of Maritime Management (Bachelor Degree in Maritime Management) that has been accredited by The Chartered Institute of Logistics & Transport (CILT); and,

2. Program of Nautical Studies and Maritime Transportation (Bachelor Degree in Nautical).

Currently, the faculty has 83 academic staff and 23 supporting staff. This year, the undergraduate enrollment for maritime studies (Maritime Management and Nautical studies) amounted to 158 students and it is projected to rise to 300 students by the year 2020.

Students taking the above programs have to undergo 6 months of industrial training in the various organizations and industries, especially in the maritime environment during industrial training. Additionally, the curriculum needs to incorporate training and exposure to maritime safety.

As for the maritime studies specialization subjects to be taken, they were carefully selected so as to ensure that the graduates would be able to perform the functions to be carried out by an experienced and competent worker to certain extend. Among the career path for maritime studies are ships servicing companies, ports and terminals, logistics companies, transportation companies, ship building companies, ship operators, public maritime agencies, oil and gas exploration companies or shipping equipment supplier.
Teaching and Learning: UMT Approach

Adult Learning Approaches

Besides using pedagogy approaches (the art of teaching), lecturers and demonstrators implant Andragogy (adult learning) approaches in teaching and learning activities. Malcom Knowles identified that adults are relevancy oriented, practical in determining their direction of learning. Knowing some of their preferable, UMT considers the following teaching and learning approaches:

1. Adults are relevancy-oriented. Teaching and learning approaches activities must have a correlation between theories, conceptual, and practical.

2. Adults are practical. Lecturers must tell students explicitly how the lesson will be useful for them on the job and embedded informal educational manner.

Quote by Pablo Picasso: Everything you can imagine is real. The simulation defines as an imitation or representation, as of a potential situation or in experimental testing and representation of the operation or features of one process or system through the use of another (American Heritage® Dictionary, 2009). Simulation models built can be used to improve many facets of maritime studies and professional course implementation, especially for adult learning approaches to gain their knowledge in the maritime knowledge fields. In general, this program helps in to: Improve equipment utilization; reduce waiting time and queue sizes in the port; balance workload allocating resources efficiently; study alternate investment ideas; and train maritime students in overall system behaviour and job related performance. The ideas for improving a process in the maritime industry can be simulated, tested, and justified prior to implementing them in the actual system and excellent for maritime education and training providers.

Contextualize Learning Approaches

Now the world is rapidly changing due to globalization and learning technique is being revolutionized where industry requires a workforce that is more self-sufficient and autonomous. The university must always think ahead to produce student with contextualize learning approach that introduce students to real application with real work condition instead of using conventional techniques. The demand from industry and cutoff budget from stakeholder will make university difficult to fulfill the requirements. Base on that factor CBT is more reliable to use as a tool for teaching and learning.

Leading to that UMT toward of using OBE-CSL) technique (Outcome Based Education (OBE) and Student Centered Learning (SCL), which is reliable and efficient when theory and practice merged into one package for teaching and learning processes. The curriculum also embedded with some basic hand-on skills such as port and terminal management, ship/boat handling, ship simulation, safety and security process in the port for them to know and feel the real situation in the maritime business.

Excursion and field work (Figure 1) is arranged to industrial or venue in Malaysia for students to grasp working environment, application, visualization, real application in industry and students has also been compulsory for industrial attachment at the final year
program. Curriculum development committee’s consists of Industry Experts, Professional Academia and professional body that serve several of maritime areas in their teaching and vast experience.

Future Programs

The declaration of an EEZ under UNCLOS III (United Nation, 1983) provides an entitlement to explore and exploit for economic gain, but should have a prerequisite to the sustainable use of resources. However, Malaysia as a coastal state has not fully used her own factor endowment in EEZ areas due to its ship industry being in its infant stage and offshore technology is in disadvantage, as well as the high barrier to entry in the ship industry sector. Thus, the capability to explore and exploit the EEZ areas is limited; indicating that the development of a coherent EEZ management is required and sustainable supply of competence and professional workers is crucial to enhance local competitiveness in this sector. Thus, the development of the suitable courses as well as courses offered in the future market is important.

In terms of size, ship industry in Malaysia is small relative to the world market, generated RM7.36 billion in revenue and provided 31,000 jobs in 2010 (MIGHT, 2011). Ship industry, especially shipbuilding and repair sector are an important intermediary to adopt innovation and to translate national and foreign demand into new products, processes, create specific education and training. Also, the relationship between shipping, ship industry, ports and terminals with the MET might strengthen in the long-run competitiveness by higher levels of integration of the sector by strengthening ties amongst them. For an example, there seems to be a potential for increasing the interaction between the shipyards, shipping companies or offshore oil and gas sector with the local Universities to develop a new technologies or techniques. As well as producing sustainable human capital in this sector. This may give the local universities better opportunities to experiment and explore in the technology development phase and stimulate the innovation in the shipping companies or offshore oil and gas sector need. The more innovative the individual firms or sectors are, the stronger the maritime cluster becomes as a whole.

MET or Universities currently are competing with each other in order to produce graduates complete with qualification and experience. Lately a new problem arises where an over qualification workers start to increase. A student with higher qualification settle with a lower job offer and lower salary are a waste of talent, resources and money. It’s even worse when the new graduates start as a trainee for half a year or a year.

Therefore, it is important for universities and private sector/maritime industry to set the same table and develop new courses (academic courses and commercial courses) that meet the requirement from the private sector. With this approach, students may reduce unnecessary subject not related to their field of interest and concentrate on the area that will be used a lot when they start to work, the new approach to innovate local contain in the higher education environment should be developed to ensure local universities are in the same playing field with their counterpart. Improving competitiveness is central to raising the underlying rate of growth of the quality of local higher education especially in the maritime education field.

The evolution of maritime studies as an emerging discipline has resulted, to a large extent, from the increasing and varied demands of the industry. The School of Maritime Business and Management from UMT is planning to venture into areas which are necessary but not well explored in Malaysia. Some of the potential areas are:

**Maritime Archaeology and Underwater Technology**

Maritime archaeology, in its most basic form, is the study of material culture related to human interaction with the sea. It involves the study of ships and shipwrecks, maritime infrastructure, maritime exploitation, maritime
identities and landscapes, seascapes, and other types of heritage, both tangible and intangible. Underwater Technology is an exploration of underwater ocean technology on vehicles, systems, sensors and instruments that enable the exploration, survey and management of the oceans. This course will help students to assess market opportunities, new technology developments, trends and systems development, environmental policies. Key contents include: Maritime Archaeology, Underwater vehicles; Acoustic and imaging systems; Oceanographic instruments; Navigation and positioning systems; Vehicle and system communication systems; Robotic manipulators; Handling systems; Diver systems.

**International Maritime Logistic and Transport**

This course will emphasize local and international trade also addressing common management issues related to the effective management, awareness of rules and regulation pertaining to the safety and standard. Students will be exposed to maritime transport and logistics, international modes of transport, marine transport, and air transport, road transport, rail transport, multimodal transport, Halal Hub, Halal Logistic, selecting a mode of transport, transport documents, transport insurance, export packaging, containers, and e-logistics. The logistics and supply chain management concepts in the maritime transportation chain and operation will be integrated by exploring the various aspects of maritime logistics strategy and implementation.

**Coastal and Offshore Management**

To understand the behavior of coastal and offshore natural environment and structures, it is necessary to study the existing relationships between the structures, properties of materials, the technique in which the structure is designed and constructed, management and operational safety, and the way of the structure respond through the marine environment. The course will cover knowledge of maritime management, Integrated Coastal Zone Management (ICZM), physical oceanography, design, production techniques, safety and security.

The program will expose students in professional training development, integrating skills, synthesis and knowledge application in specific areas that covered coastal and offshore industry base on “Know-how concepts”.

**Conclusion**

We have noted the importance of the maritime industry to the Malaysian economy and the crucial aspect of the marine related education curriculum in order Malaysia can fully utilize the ocean resolution by developing expertise in maritime-related science, technology and management and by strengthening maritime education and the labor market. During this time, a growing number of maritime courses have been launched and offered worldwide. It is therefore becoming clear that this is not a temporary fashion, but rather a major area of maritime studies that continually grows.

Even though the maritime industry is dynamically changing their environment (Facilities, technology and system), the present maritime educations are of traditional manner with limited capacity of maritime facilities such as ports and ships. Until now, not much of training work has been done at rationalizing the number and optimizing the facilities in the maritime education due to the escalating of the cost to maintain these facilities. Therefore, this paper determines the rationale to develop a future program and new approaches toward enhancing the competitiveness of the local Maritime Education and Training providers. The new approach is a tool for teaching maritime students how to be a professional and ready to work on a real maritime industry environment.

Effectiveness of the Maritime Education and Training provider toward human capital, competency in maritime industry plays a vital role in international trade, global logistics and supply chain. This industry is associated with a high level of uncertainty due to the operation in a dynamic environment in which risk may affect...
their performances, thus the competency of workers is vital. With the era of unprecedented global change, the maritime industry faces a variety of risks that not only can be seen internally, but also as a result from uncertain environments due to that exposure of this element and should be taken seriously by the Maritime Education and Training provider. These external risk events are directly and indirectly influencing maritime industry performances in terms of business sustainability, service reliability and financial aspects. Systematic recruitment drive that matches available jobs with available skills, providing ample training and development programs, favorable employment conditions, safety of working environments and career growth prospects. If the Malaysian economy wishes to stay ahead of its competitors, the maritime sector serves as a valuable resource that would improve the national’s standings as a maritime nation.

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