

RESHAPING MARITIME UNIVERSITY

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Abstract

This study aims to investigate actions to reshape maritime universities from existing forms to more effective structure to meet full spectrum needs of the maritime sector in particular the research activities in support of the maritime economy and society. The meta-synthesis method is used to understand new and future requirements of the maritime industry and to develop course of actions to assume new missions for maritime universities.

The maritime transportation and related industry is a vital element of the global economy, in that it services world trade by connecting markets in different parts of the world, moving 90 percent of goods and commodities throughout the world. It is also back bone of the industry transporting feedstock and oil for producing all type of manufactured goods as well as it is comparatively low cost when compared with the other modes of transportation. Maritime universities play a crucial role to support the maritime industry not only providing seafaring officers but also manpower for other sectors of this very wide industry, as well as supporting research and development activities. As the maritime sector is changing rapidly, maritime universities should review their role, vision, mission, objectives and tasks and subsequently they need to reshape themselves to fulfil their responsibilities to meet large spectrum expectations of the respective sector.

Key Words: Maritime University; Requirements of Maritime Industry; Maritime Education and Training; Innovation.

Introduction

The maritime universities/faculties/schools are generally known as the education and training institutes which schools seafarers. Following the significant change in the business and industry after 1970s this approach has changed and they added computer science, maritime management, maritime economics, port and terminal management, naval architecture, oceanography and hydrography, computer science subjects in their programmes which are closely relevant to the new requirements of industry. Maritime schools transformed to maritime faculties and adopted traditional engineering and management programmes. Improved simulators in these institutes facilitated many research activities in maritime field

and provided full support for naval architects, mechanical and marine engineers as well as construction works at ports and off-shore facilities. But technology rapidly improves and full automated ships and ports requires the crew not only an act an operator but enable to understand automation theory, capabilities and limitation of automated systems.

The traditional approach absorbed by Maritime Education and Training (MET) institutes to admit students who are trained to become seafarers is increasingly becoming deficient to meet growing requirements of the global shipping industry. Further pressure is being placed on MET institutes to revise the *modus operandi* used to enrol students due to the dynamic nature of the seafaring labour landscape. Nowadays it is very hard to enrol qualified young people for maritime schools due to unwillingness of young generations to go to sea duties which have hard living conditions. Livingstone & Cahoon (2015) states that “Due to the limited knowledge, MET institutes have about the students they admit, their expectations and career ambitions; it is difficult to effectively retain them on board ships.

Also the employment areas of the seafarers are in a large spectrum such as at shipyards, shipping and logistics companies, ports and terminals, marinas etc. Additionally the deployment period of seafaring is shortened due to hard working conditions at sea in particular at developed countries. BIMCO/ISF Manpower Report 2016 estimates the shortage of Seafaring officers is 97,000 at 2020 and 147,500 at 2025. This situation enforces the revision of the programmes and their contents to prepare the seafaring officers also for their future roles and encourage the young people to attract maritime schools. The Germanischer Lloyd and Fraunhofer CML (2014) study with 100 ship management companies reveal the fact that most sensitive area is found to be the crewing with 88 percent of the companies. Although education is the primary mission of universities, application of science and technology in support of business and industry has also become quite important. The innovation which is the driving element of the economy also shapes the structure of the universities. The number of the research centres and institutes is now more than academic units on the organization charts of the most universities. Universities are now playing a major role to support technological improvement of society (Demirel 2015). The main aim of the contemporary education is not to school the students only for their occupation but also being pro-active and open minded people capable creative thinking to respond new requirements and suitable to create innovation. The digital era facilitated our life but it has also introduce new problems which require people equipped with knowledge of digital technology. The invention becomes highly important in challenging world economy and this leads all to improve their research and development capabilities, subsequently the scientific research

activities in the universities increased significantly. Additionally improved IT technology facilitated to reach the information and expedited cooperation, collaboration and coordination between different professions and scientific fields. All technologic improvements reflect the shipping industry quickly. Thus maritime schools should closely track the improvements in industry. McComb (2014) famous CEO of Fifth & Pacific Companies states that “The reinvent-or-die challenges that used to be rare catastrophes in business have practically become the new normal-but without much direction about how to meet them. So we started compiling what we found to be the *truths of transformation*”. He defines the real factor which drives the contemporary business as “Transformation is an era, not an event.”

In order to survive in today’s competitive environment of the economy, the business and industry need more support from universities. The cooperation between university and industry is a vital issue for both parties and they need to reorganize themselves for future.

Research Method

The aim of this study is to do a research on the transformation of the maritime schools to a full spectrum maritime university with particular stress on existing and future requirement of maritime sector in particular the research activities in support of the maritime economy and society. The research is a meta-synthesis which is based on a comparative study on the generally assumed principles, applications and best practises in different institutions and, existing situation, possible course of actions to improve the situation. In the first step it is intended to understand the new role and missions for the maritime universities in the light of the needs of maritime sector taking into account the related improvements in the world. The eligibility of the existing role, structure and composition of the maritime schools to meet expectations of the related sector is overviewed in the second phase. Finally the categorised, grouped and associated findings of the second steps are for discussion and subsequently results will be evaluated to formulate possible/probable solutions to be proposed.

Research

The requirements of the Maritime Sector

The Maritime Transportation System is global in nature, in that it services world trade by connecting markets in different parts of the world, moving 90 per cent of cargoes and commodities to all corners of the world. Yet international Maritime transport employs over 1.5 million seafarers and many more ports and logistics personnel, who are responsible for the safe and reliable delivery of food, raw materials, energy and consumer goods to the world’s seven billion people every day (IMO 2013)

The shipping industry covers a large spectrum of professions are introduced in the Figure 1.



Figure 1: Actor s of the Shipping Sector

Practically, the movement of seafarers from vessels to landside jobs in ports and ship management establishments has been identified as a primary contributing factor to the global shortage of ship officers. Thus the need to focus on ship officer retention has been informed by the findings of the existing literature (such as recurring wastage and reduction in the number of years spent at sea by officers) that the shortage of ship officers is not necessarily influenced by low recruitment figures but rather by the early movement of ship officers to shore based jobs [1]. The seafaring officers are deployed at most of the job areas of shipping sector considering they are more suitable to accomplish the missions directly related to shipboard duties. Considering the seafaring officer back grounded personnel requirement of the maritime sector, maritime schools should consider diversified programmes which prepare their graduates not only for sea duties also for shore duties are; Various Operations and Technical positions at the Shipping companies; Marine Surveyors at Classification Societies, Port Authorities, Insurance Companies; Advisers/Consultants endowed with Maritime Law; Desk/Project and Action Officers in the Shipyards; Desk/Project and Action Officers at Maritime Administration; Stevedore and Lashing Captain/Manager, Cargo Surveyor, Average Adjuster; Managerial and technical positions at Ports and Marinas; Technical positions at machinery and supply providing companies; Pilot at Ports, Test Captain and Engineer at Shipyards; Managerial and technical positions at marine infrastructure and off-shore facilities; Lecturer/trainer and researcher at maritime institutions/schools

The new ships are equipped with digital technology and fully automated. Unmanned ship projects are in the horizon. The next generation seafaring officers are expected to be attired with IT and automation background to operate ships of the future.

The suitable jobs at shore for seafaring officers

The European Union SAIL AHEAD project aims at providing an on-line guidance tool for a second career for captains. The outcomes of this project cover mapping of competencies and profiles required for at least 10 alternative career paths ashore. The project aims to meet expectations of the maritime sector from seafaring officers at shore duties and defines jobs which require strictly employment of seafaring officers. As a result of SAIL AHEAD Project the following job profiles are found suitable for deck officer at shore: Coast Guard Officer, Chief Executive Officer (CEO), Operations manager, Designated Person Ashore (DPA), Quality Manager, Occupational Health and Safety Manager, Maritime Lecturer, Maritime Auditor, Maritime Surveyor (Inspector – Auditor), Marine Advisor/Consultant, Port Authority officer, Pilot, Arbitrators. Additionally Stevedore/Lashing Captain, Cargo Handling Manager, Port Facility Security Officer (PFSO) can be included in the above mentioned job profiles. Many shipping companies also started to operate as a logistic company and/or have a logistics component. So seafaring officers should be equipped with logistics knowledge to be more efficient in the shipping companies. Ketchum and Pourzanjani (2014) made a study considering the development of a European Masters programme for former seafarers. The possible job opportunities are introduced as Surveyor, Ship and Port Operations/Management, Maritime Science, Coastal Management, Trade and Finance, Maritime Administration, PSC, Engineering, Maritime Law, Naval Architecture, Logistics Management, Environmental Protection. Actually both results Sail Ahead and this study support each other. These job areas are also in line with professions introduced in Figure-1. Depending on the requirements of the job the mariner is pursuing, they should take additional education and training. This could be a short or mid-term specialization course or a post graduate study. An advanced degree is an essential element for those seeking employment in the Maritime Law, Logistics, Naval Architecture or Trade and Finance sectors.

Existing Organization and Management System of the Maritime Schools

The following issues are considered essential elements to identify the existing organization and management systems of the universities;

The mission, aim and objectives: The main mission of any university is education and training with the objective of providing qualified manpower for the industry Research is the second mission of university which also covers relations with the community. The aim is now to deliver the upper level knowledge to the community and provide research in support of technology.

Governance and administration: The existing organizations of the universities are based on functions such as academic units, research and innovation centres and administrative support

units. The academic units are mainly organized as faculties or postgraduate institutes. The research units are named as research, innovation, technology transfer centres or institutes.

Learning and teaching: Learning and teaching methods have drastically changed. The new system is based on satisfaction of learning outcomes which force both students and lecturers spend more time for independent studies based on researching different sources rather than classical course books. The laboratory and simulator hours are increased. On-the-job training becomes an important element of learning and teaching under the control of academician.

Research: Today it becomes an essential role competing with the education. The research and education are now inseparable functions in particular for postgraduate studies. The number of the research units in university is increasing. The lecturers are spending more time for research and their involvement in research also increases the quality of the lectures delivered.

Student administration and support services: The lifelong learning and new teaching methods have changed the demography of the students. The young and older students are taught in the same classrooms. The teaching hours enhanced out of the working hours.

Financial planning and management: The number of the private universities is significantly increasing against the state universities. These universities need a perfect financial system to enhance their capabilities and more importantly to survive. The state universities also look for additional financial support by enhancing their cooperation with business and industry.

Management of quality assurance: All universities are looking for accreditation by an internationally reputable accreditation and rewarding bodies to facilitate the employment of their graduates in the sector. The accreditation facilitates cooperation and student/lecturer exchange among the universities and provides transfer of innovations and best practices.

Institutional relation with the community: Universities need close cooperation with community to get benefit from the acquis and experiment of the government, business and industry. Most universities are assuming a critical role in the techno parks established by the industry and companies are establishing permanent liaison offices in the universities to ensure best coordination and cooperation. On-the-job training has become a significant part of the academic education and many studies are initiated to match vocational and academic studies.

Discussion

Latest Improvements in the Higher Education:

As far as concerning the Higher Education system in the Western Hemisphere, the Bologna Declaration of (1999) is the commonly recognized and respected document which establishes a common policy and main principles on higher education to meet the requirements of the modern community. The objectives aimed by the declaration may be resumed as; Adoption

of common system for graduate and undergraduate studies which is easily readable and comparable; Establishment of a compatible crediting system which facilitates the free movement and exchange of students, teachers, researchers and administrative staff, Establishment of European-wide co-operation in quality assurance to promote higher education. The importance of ‘dynamic knowledge-based economy in the world’ became a strategy after declaration of European Council’s Lisbon Strategy (2000) and specific importance was given for research activities for “economic growth and employment the EU”. A European Commission communique (2005) clearly stated that ‘European universities employ one-third of European researchers and produce 80% of fundamental research in Europe.

OECD CERi (Centre for Educational Research Institute) (2008) has organized an Experts Meeting on “University futures and new technologies” and a Discussion Paper based on six different scenarios has been submitted at the end of these meeting which mentions below issues:

- Reshaping their organization and management system adopting strategic management concept
- Establishment of flexible structure to respond continuously changing requirements
- An improved financial system and coordination units to secure cooperation with business and industry supported with a strengthen PR activity to establish a strong link with society
- Powerful Learning Centre serves for all types of education models and also organization cooperated.

Stakeholder concept become important as a part of the Strategic management. Freeman (2011) states that “The stakeholder concept can be useful in integrating some of these issues (plans and systems of the plans for business level entities, role of the corporation in the social systems, social responsibility of the business, behaviour of the large group of the populations of the organizations and their environments) around the concept of organization strategy, that is around the issues of how organizations can configure themselves and take actions to align themselves with the environment. The university may adopt this concept in the following areas:

Economic: To handle a university with only student fees and government financial aids is not sufficient today. The research activities need more financial support and this can be achieved by close cooperation with other parties which require research and innovation for improving their business.

Technological: To handle research projects are generally costly. The universities needs to find partners which may support the research activities. So they may follow the technological improvements and match their research activities with the expectations of the industry.-

Political: The acquisition of the universities is sufficient to adopt themselves to new rules, regulations and political improvements but they need to be organized for that.

Social: The NGOs have a great influence on the society to shape a new social order. Any institution should be very sensitive to understand the new social approaches introduced by NGOs to be able to redefine their new roles and responsibilities.

Managerial: The new role of the manager is to keep an eye on society and the economy in addition to existing functions. A manager cannot estimate new course of actions without taking into account the new expectations of the people and economic developments.

To operate a university is now very similar to handle a business company. So, the presidents, rectors, deans cannot act only as a manager to direct their academic units but also act like a businessman or CEO to provide better opportunities for their universities. Technological developments have led to significant changes in the posture of the business life and workforce. These developments have also emerged new occupations and changed structure of existing professions. Furthermore, as new professions appeared to meet the new posture of business, some professions have disappeared accordingly. The rapid change of technology required update of occupational knowledge permanently. New professional competency requirements made education as a continuing lifelong learning activity.

The Role and Mission of Universities

The main aims of the education is to provide qualified human element for the society not only equipped with vocational knowledge but also dressed up with culture. To achieve that close cooperation between educational institutions and the business world is required. A World Bank (2007) survey proved that it is still insufficient. The survey showed that of a large segment of the business sector (55%) were not satisfied with the education given in the universities and only half (48%) of the universities is reported to be willing to cooperate with the business sector. The cooperation between the business sector and research organizations are recognized as less than 10%. To provide collaboration, cooperation and coordination between universities and industry both parties require to create suitable tools and systems.

General Considerations for Seafarers' Educational Requirements

The educated young generation in the developed countries have no intentions to work at sea due to heavy working conditions at sea and this attitude also spreads in the developing countries. The average working at sea time reduced to 5-6 years in many countries and trend goes down. This situation increases shortage of the seafaring officers worldwide. The officer shortage is estimated to be 92,000 for 2020 and 147,500 for 2025 (BIMCO/ISF 2016). IMO

has started a 'Go to Sea' initiative to call the young people to become a seafarer and also advised additional education opportunities enable seafarers also working at shore duties.

Another reason for shortage of seafaring officers is deployment of these persons at shore facilities. The people with seafaring officer experience are found rather suitable in many jobs at maritime industry such as at ports, shipyards, logistics centres. Actually we should associate these two situations; seafaring officers who look for a job opportunity at shore and maritime industry's requirement to deploy seafaring officers at shore. This leads us to conceive a combined and complete education institute which responds education requirements for all parts of the maritime sector, may be called as 'maritime university'.

The post graduate programmes delivered by many different institutions are closely related for the professions at shore and in support of maritime industry. Nowadays more over 50 master programmes related to the maritime industry are delivered by distance learning.

Grouping the Education Functions in a Maritime University

Conventionally, the core element of a MET institute is composed of Maritime Operations (Navigation) and the Marine Engineering departments which are generally called as *Maritime Faculty*. In order to stand apart the same name it may be called as 'Maritime Operations Faculty'. Port and Terminal Management, Maritime Business Management, Shipping and Logistics Management, Safety and Security Studies, Risk Management, Maritime Economy and Finance may be collected under the 'Maritime Economy and Management Faculty'.

Naval Architecture is an inseparable part of the shipping industry and has close relations with Mechanical and Marine Engineering. The naval architecture and mechanical engineering departments specialized on marine engines may establish a 'Maritime Engineering Faculty' having special purpose laboratories, testing facilities and a training ship shared with other faculties is required. The marine engineering department may also be a part of this faculty. Off-shore facilities, huge sea infrastructures, energy production from sea-based wind-mills give a special importance to the hydrography, oceanography, energy, environment protection. The maritime technology will be likely a rising area in the next decade. A Maritime Technology Faculty is required to catch highly profitable opportunities of future.

Suitable postgraduate schools are inevitable for master, doctorate and post-doctoral studies as well as conjunction with research activities. A continuous education centre (CES) is essential to meet the additional training requirements of the maritime sector. There are many jobs that require technician-level personnel ranging from mechatronics to hospitality services for maritime sector. Associated Degree Schools are best institutes to train this kind of personnel.

As mentioned before research is an inevitable function for a modern university. A maritime university is required to establish incubators to support small size research activities; research

centres for dedicated research activity, even a Maritime Excellency Centre to provide full support for national, regional or international maritime industry. It may also participate to techno-parks as required basis. The training ship should not be considered as a tool to provide practical sea training for cadets but creates a good opportunity for scientific research. The different size and type training ship and boats may serve as a research platform and real laboratory for all department of the university.

Conclusion

The maritime sector is a driving element of the world economy composed a lot of function which are closely related and supporting each other. The improvement of world economy and maritime transport created new job areas which require qualified human elements for shipping companies, shipyards, ports and terminals, marinas etc. The task of the maritime schools is now not only education and training for seafaring officers for sea duties but also deployable at for different field of the maritime sector. Rapidly developing maritime sector now requires a composite education and training institute capabilities to educate qualified personnel for diversified jobs and support scientific research requirements of the sector. A Management Board should be formed in accordance with stakeholder concept. The president or rector should be capable of assuming the role of a CEO in a company.

The faculties, community colleges, postgraduate schools will be the key academic units. The delivery of professional and personal development programmes is now an important function of the academic units. A “common planning unit” responsible for improvement of contemporary graduate and undergraduate programmes as well as open and distance learning and personal development programmes is required. A maritime university should focus on economy, management, maritime and commercial law as well as finance which is the driving force of all commercial activities. The structure of the university should embrace all these fields to provide better knowledge for all elements of the institute. The main faculties are considered as; Maritime Operations Faculty (ex- Maritime Faculty), Maritime Economy and Management Faculty, Maritime Engineering Faculty, Maritime Technology and Environment Faculty (Marine Science).Postgraduate Schools for Economic, Management and Human Science Natural Sciences and Engineering, Associated Degree Schools and Continues Education Centre for Life-long Learning is required.

A maritime university is required to establish incubators to support small size research activities; research centres for dedicated research activities, even a Maritime Excellency Centre to provide full support for national, regional or international maritime industry. They may also participate to techno-parks as required basis. Each research units should be manned with core permanent staff and augmentees under the matrix organization concept.

The universities produce and sell “goods” like a commercial company. That requires establishment of a commercial system including “marketing, pricing, public relations,

advertisement, budgeting, financing, procurement, purchasing” etc. A department led by an collecting all these functions under an umbrella is vital for the survival of the university. Total Quality Management is vital to ensure the quality of the production of university.

Finally, the maritime universities should have a dynamic and flexible structure to respond not only the existing but future requirements of maritime sector in today’s challenging World.

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