

Sustainable and Quality Manpower Supply for Shipping Industry: System Approach

Submitted by
The International Association of Maritime Universities
(IAMU)
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“Request for input on Trends, Developments and Challenges
for IMO’s strategic framework for 2018-2032

1. Short description of the overall topic

We live in a global society, which is supported by a global economy – and that economy simply could not function if it were not for ships and the shipping industry. Shipping is truly the lynchpin of the global economy: without shipping, intercontinental trade, the bulk transport of raw materials and the import/export of affordable food and manufactured goods would simply not be possible¹. It is generally accepted that more than 90 per cent of global trade is carried by sea and that is why **quality manpower supply is the most important factor driving sustainability in maritime transport.**

The world fleet grew by 3.5 per cent during the 12 months to 1 January 2015², but the current shortage of officer corps seafarers is forecast to worsen and risks impacting carrier profitability, according to Drewry’s recently published *Manning 2014 Annual Report*³.

A shortage of competent seafarers, particularly officers, to operate the increasingly sophisticated vessels is a challenge for the industry; high-quality engineering officers will be particularly in demand as tighter emission regulations require ships to burn lighter fuels in sophisticated new engine designs⁴.

The highest priority of the international shipping industry remains the safety of life at sea. It is anticipated that the sustainable development goals developed by IMO also address issues such as seafarer training, further improvements to navigational safety and the promotion of an effective safety culture⁵.

It is also common knowledge that 75-96% of marine casualties are caused by some form of human error. Therefore, there is a direct cause and effect relationship between the competence of seafarers through quality MET and successful and environmentally responsible Globalization⁶.

¹ International Shipping Facts and Figures – Information Resources on Trade, Safety, Security, Environment; IMO, © Maritime Knowledge Centre 6 March 2012.

² UNCTAD Review of Maritime Transport 2015.

³ <http://www.drewry.co.uk/news.php?id=275>

⁴ Seminar on CSR activities for the shipping industry, Speech by Koji Sekimizu, Secretary-General, International Maritime Organization, 26 April 2012, Singapore;

⁵ Sustainable Development IMO World Maritime Day 2013, INTERNATIONAL CHAMBER OF SHIPPING (ICS).

⁶ <https://sites.google.com/site/icqmeas> 2015

Many dangerous shipping practices originate from substandard MET, which results in substandard skill levels of Officers and Crew. Consequently, such Human Factor issues are highly correlated to conditions of industry Safety, Security and Environment Protection levels⁷.

It is also reasonable to take into account that Globalization stimulates growth in the international trade and that increased International Shipping itself is one of the major factors in this process.

The building of newer and more technically sophisticated ships and port systems to meet this increased demand for seaborne trade, along with new IMO requirements for regulating safety, security, protection of environment, will demand, **more than ever, well trained and educated personnel both on board and ashore**. Viewed in this light, it is easy to see why sustainable development needs a sustainable maritime transportation system and why sustainable shipping needs sustainable and quality manpower supply.

It is recognized that **human resources and human element are of utmost importance** for development of the **sustainable maritime transportation system**. It is also understood that such industry challenges as reduced ship manning, crew fatigue, crew overload, overregulation, administrative burden, and the attraction of young people to the industry are tightly related to quality of human resources. Taking into account the IMO Secretary-General's statement at the 2015 International MET Symposium at WMU, "Effective standards of training remain the bedrock of a safe and secure shipping industry, which needs to preserve the quality, practical skills and competence of qualified human resources"⁸, IAMU proposes the following topic for IMO 2018-2023 Strategic Direction: «**Sustainable and Quality Manpower Supply for Shipping Industry: System Approach**».

2. Narrative of the trends and developments

Practically all manpower surveys carried out in the 21st century are still predicting **the shortages of properly qualified ship officers**; this is something the stakeholders cannot afford to ignore.

In accordance with BIMCO / ISF MANPOWER Update, the Supply / Demand Balance in 2000 estimated a worldwide shortfall of 16,000 officers or 4 % of the total workforce⁹. In 2005 the estimates indicated a modest theoretical worldwide shortfall of 10,000 officers or 2 % of the total workforce¹⁰. The results in 2010 suggest that the situation is one of approximate balance between demand and supply for ratings with a modest overall shortage of officers (about 2%); the implication being there is currently not a serious shortage problem for officers in aggregate. This does not, of course, mean that individual shipping companies are not experiencing serious recruitment problems, but simply that overall supply and demand are currently more or less in balance. This is perhaps not surprising given the sharp contraction in the demand for sea transport in 2009 combined with significant growth in total seafarer numbers.¹¹

⁷ Creating Common Worldwide MET Excellence, Joint Vision Statement of the Tripartite Round Table Forum convened by the IAMU jointly with representatives of Maritime Administrations and the Shipping Industry, Saint Petersburg, 21st of September 2009.

⁸ Joint Resolution of the Conference and Tripartite Round Table Forum convened by the Ministry of Transport of the Russian Federation jointly with Admiral Makarov SUMIS and Representatives of MET Institutions, Maritime Administrations and the Shipping Industry, International Practical-Research Conference "MET: Trends & Challenges in the XXI Century", Saint Petersburg, 2015.

⁹ BIMCO / ISF MANPOWER 2000 UPDATE, The worldwide demand for and supply of seafarers, 2000.

¹⁰ BIMCO / ISF MANPOWER 2005 UPDATE, The worldwide demand for and supply of seafarers, 2005.

¹¹ BIMCO / ISF MANPOWER 2010 UPDATE, The worldwide demand for and supply of seafarers, 2010.

Drewry indicates that for approximately the same period of time there is, however, an expanding gap between the supply and demand of properly educated and trained seafarers. In 2008, Drewry also predicted officer shortfall at 34,000 against 498,000 total, rising to 83,900 by 2012 assuming current supply levels and fleet growth. **The loss of prestige of marine professions in traditional maritime countries and the shortage of qualified teaching staff** in many countries will threaten the ability of the world to provide truly competent seafarers. **The loss of such a critical mass of skilled and experienced Human Resources, therefore, poses a threat for the World Shipping Industry and the ocean environment in general**¹².

Further, Drewry estimates the current officer supply to be 610,000, representing a shortfall of 19,000 personnel. **This shortfall is forecast to rise to 21,700 by 2018 given that there will be a requirement for an additional 38,500 officers by this time.** The shortage of officers remains, especially among senior engineering ranks and for specialist ships such as LNG carriers¹³.

Regardless of the accuracy of these estimates, and bearing in mind the current market volatility, it is likely that there will be a continuing worldwide shortage of officers and a surplus of ratings for the foreseeable future.

The shortfall of seafarers has negative impacts on the shipping industry as a whole; whereas both the on-board and on-shore maritime related work posts face manning problems that may directly threaten the existence of shipping activity and the sustenance of maritime know-how¹⁴.

It is clearly recognized by the industry that **the world needs more competent personnel at sea and ashore than ever before.** The mandatory implementation of STCW provisions by a national authority increases barriers to entry for sub-standard maritime education providers that lack the necessary resources. Even in cases where monetary resources are adequate for a shore-based physical plant, other constraints persist. One such major challenge that many maritime institutions experience, regardless of location, is their inability to attract appropriately qualified instructors. The typical pool of applicants for license-track faculty openings is relatively small. The turnover among faculty, especially those with experience on board specialized risky vessels such as tankers and LNG ships, is exceptionally high. Furthermore, while many mariners who pursue the teaching option may have the professional skills, they rarely possess formal preparation in pedagogy and instruction, and hence, may have a lengthy learning curve towards becoming effective educators. This has a major impact on the effectiveness of the instruction provided which for deck students is about one-half of the total four-year academic credits required for graduation, and close to 60% for engineers.

Although all world class maritime institutions invest routinely in expensive simulator technology for effective education and training, there is no real alternative to the experiential learning that takes place on board a ship and is a requirement for any approved MET program. However, very few countries today have sufficient on board training (OBT) facilities of their own and this is presently emerging as a serious global concern¹⁵.

¹² http://www.drewry.co.uk/publications/view_publication.php?id=325

¹³ <http://www.drewry.co.uk/news.php?id=275>

¹⁴ The Role of the Maritime Institutions on the Shortage of Officers. M. Magramo, L. Bernas, J. Calambuhay & G. Eler John B. Lacson Foundation Maritime University, Iloilo City, Philippines, International Journal on Marine Navigation and Safety of Sea Transportation, Volume 4 Number 4 December 2010.

¹⁵ Shashi Kumar, 2015 World Maritime Review (not published).

Currently, more than 1.5 million people are employed as seafarers. If the global economy continues to grow, more highly trained and qualified seafarers will be needed. Related activities such as shipbuilding, ship repair and ship recycling will also have growing requirements for manpower resources.

If the global fleet increases in size by 70% between now and 2030 (as has been widely predicted, based on the growth trend of the last five decades), the current number of 500,000 officers needs to be increased to 850,000. If half the existing officers retire by 2030, that means 600,000 new officers will need to be recruited and trained from now. This equates to an annual requirement for officers in the order of some 40,000. This is a real challenge. Clearly, further effort must be made to bring new generations into seafaring as a profession. Seafaring must be seen to appeal to new generations as a rewarding and fulfilling career. At the same time, a number of factors are combining to make ships themselves more complex and sophisticated than ever before. **Environmental pressures**, the need to operate at optimum efficiency in difficult economic times and the quest for **sustainable development**, are all factors that raise the bar with respect to the skill levels of seagoing personnel¹⁶.

It is obvious that the STCW Code requires all seafarers to be properly qualified for the position that they hold on board, and the ISM Code requires the company to assess and document the position of responsibility and individual competency of each crew member. Instructors, supervisors and assessors themselves are also required to be appropriately qualified. However, while it is recognized that the current STCW Code's levels of competencies are minimum levels to assure safe and environmentally responsible shipping, these minimum levels are not sufficient to cope with the increasing size and complex nature of many of today's ships¹⁷.

3. Supporting data

The following extracts from indicated sources demonstrate supporting evidence for the proposal:

- The labour shortage is attributed to factors such as an ageing workforce in the throes of retirement, and the difficulty in recruiting seafarers with sufficient experience and qualifications¹⁸.
- Touching upon maritime casualties, in 2014, the total number of maritime accidents increased by 10% in comparison with the previous year, according to the statistics provided. The IMO Secretariat recorded 799 lives lost or missing last year. If you look at the statistics over the last decade from 2004-2014, 4,784 lives were lost on passenger transport by sea. **Obviously the human element must have played a part in those accidents**¹⁹.
- As it was reported by “Maritime Today” (October 30, 2015, the future operating costs of *ships* will increase exponentially due to **innumerable new regulations** (*overregulation*), **the low competence of seafarers**, the high bargaining power of the oil majors, stricter rules regarding maintenance and repairs carried out in ports, the advent of more

¹⁶ Circular Letter No.3578 - World Maritime Day-2015, 17 August 2015

¹⁷ Alert, Issue No. 20 April 2009; website: http://www.he-alert.org/objects_store/alert_20.pdf

¹⁸ http://www.he-alert.org/filemanager/root/site_assets/standalone_article_pdfs_0605-/he00760.pdf

¹⁹ SECRETARY-GENERAL'S ADDRESS, OPENING OF THE SECOND SESSION OF THE SUB-COMMITTEE ON HUMAN ELEMENT, TRAINING AND WATCHKEEPING, 2 TO 6 FEBRUARY 2015.

sophisticated onboard machinery and increasing consolidation in the marine equipment and services sector, resulting in more bargaining power for fewer, larger companies²⁰.

The low competence of seafarers relates also to the trend of moving the centre of crewing into cheaper (*developing*) countries, while overregulation substantially undermines the sustainability of quality manpower supply of industry in future.

In this context it is absolutely clear that to maintain sustainable development of the industry, MET systems need a stable supply of qualified instructors²¹ while also creating and continually maintaining [Global] Maritime Academic and Instructors Resource Database, which contains qualifications, experiences and specialization of each teaching staff members at MET institutions²². It has also become prudent to create, keep and update information on MET teaching materials by building a special e-Platform for these purposes²³.

The following outcomes from the IAMU research project submitted to HTW 2 **directly or indirectly link safety, regulation challenges and sustainability of shipping in general and quality manpower supply**²⁴:

- "Overregulation" is catastrophic for a ship (company) when there is a "shortage of crew", especially if they both exist together with "low crew qualifications". It is accompanied by an enormous "overload". When "overregulation, unskilled seafarers" and "overload" combine, they create a vicious circle of "continuous raising of overregulation levels";
- Even in conditions of stiff competition, "overregulation" in the shipping industry can be avoided or its negative impact can be reduced by educating and training highly qualified seafarers, company shore-based staff and ship inspectors;
- Decreasing of seafarer's qualification is equal to increasing his/her "workload". It entails increasing the fatigue level and reducing the level of safety, security and the attractiveness of shipping industry;
- One of the causes of "overregulation" in the shipping industry is cheap and poorly-qualified crews;

4. The challenges facing the maritime community

Future demands for seafarers will be driven by a number of factors. They are:

- (1) the future growth of world trade, and hence the growth of the world fleet;
- (2) the future growth of ship productivity, which will be determined by the technology embodied in new ships;
- (3) the changing vintage of the fleet, which will alter the crew levels required for safe and *quality* manning;
- (4) changes in the required levels of manning to comply with national and international conventions as and when they alter;
- (5) changes in the flag composition of the world fleet, because this affects overall manning totals;

²⁰ Ship Operating Costs on the Rise, Posted by Eric Haun, Friday, October 30, 2015, <http://www.marinelink.com/news/operating-costs-ship400197.aspx>

²¹ Takeshi Nakazawa, IAMU, Be part of the international network of advanced maritime universities, Alumni Conference, Myanmar, 2015.

²² WORLD MARITIME UNIVERSITY, (c) Financial sustainability, C 114/14(c), 9 June 2015.

²³ Updating information on MET teaching resources ePlatform, IMLA, HTW 1/INF.5 11 December 2013.

²⁴ IAMU understanding of some Human Element issues, Submitted by the International Association of Maritime Universities (IAMU) HTW 2/INF.2, 30 October 2014

- (6) changes in the proportions of non-national crews used by shipowners and ship management companies, as this affects the ‘typical manning levels’²⁵;
- (7) changes in securing qualified instructors in MET institutions taking into account the situation gap between seafarer supplying and demanding countries; and
- (8) significant changes in methodology of MET initiated by ICT (Information and Communication Technology).

The continued growth in world trade [and possible supply / demand imbalance in number and quality of seafarers], has placed intense pressure on capacity building and the sustainability of Maritime Transportation System. **The challenge for IMO is to support, encourage and render assistance to administrations and the shipping industry to expand their capacity and responsibility in order to successfully handle the increased demand for sustainable and quality manpower supply; – otherwise there is a risk of losing safety and efficiency in the industry.** *When the available capacity does not meet the incoming demand, serious problems can ensue*²⁶.

From a global perspective, capacity and the responsible expansion of administrations and industry can be achieved not only by capital investment into manpower supply. **Similar capacity increases can also be achieved by improving the international standards or implementation efficiency of existing standards and systems through systematic analysis and tight collaboration of global networks within administrations, industry and MET institutions.**

Therefore, the current updated data of the labour market highlights that the shipping industry is likely to face a challenging future for crewing. There are many uncertainties, for instance where the next generation of seafarers comes from, but the results indicate that the industry will most probably face a continuing tight labour market, with recurrent shortages for some officers, particularly if shipping markets recover.

Unless measures are taken to ensure a continued rapid growth in the number of qualified seafarers, especially for officers, and/or to reduce wastage from the shipping industry, existing shortages are likely to intensify over the next decade. Supply appears likely to increase in many countries, but the positive trend that has been established for training and recruitment over the past few years must continue to ensure a suitable future pool of qualified seafarers. It is important to stress that the shipping industry requires well qualified and high calibre seafarers capable of adapting to change and handling the wide range of tasks now required of them. Any training programme provided must ensure quality is not compromised in the quest for increasing quantity²⁷.

High quality maritime education and training are the bedrock of a safe and secure shipping industry. Quality is a key aspect of this to ensure seafarers are competent in their onboard roles and prepared for career advancement. This should be a universally accepted requirement from shipping, but the best method for training crew is not yet agreed upon.

²⁵ BIMCO/ISF Manpower Update: The Worldwide Demand for and Supply of Seafarers 2005. UK: Institute for Employment Research, University of Warwick. 93pp.

²⁶ http://www.blueminegroup.com/aai/pdf/cs_Intermodal.pdf

²⁷ BIMCO/ISF MANPOWER 2010 UPDATE, The worldwide demand for and supply of seafarers, 2010.

Interpreting the economic principle of Pareto optimality²⁸, a final conclusion can be drawn as follows: it is impossible to maintain the safety, efficiency and therefore the sustainability of the shipping industry while not keeping or reducing the resources for quality manpower supply, or raising in a timely manner the resources for safety and protection of the environment by additional regulations.

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²⁸ https://en.wikipedia.org/wiki/Pareto_efficiency