

# Challenges of Maritime Education in Iran

**Capt. A. Sargazi<sup>6</sup>**

Senior Lecturer, Chabahar Maritime University (CMU), Chabahar, Iran,  
A.Sargazi@cmu.ac.ir

## **Abstract**

*The safety of life at sea is the major priority of international shipping industry. In this regard, the issues such as seafarer training, improvements to navigational safety and the promotion of effective safety culture have been appropriately and effectively addressed by international maritime regulatory bodies such as IMO.*

*Human error contributes to more than 80% of all maritime accidents. In many cases, the information that could prevent the accident is available to but not used appropriately by those responsible for safe navigation of the vessels concerned. This is mainly because of the lack of sufficient knowledge in using navigational equipment and interpretation of the available information. Therefore, the importance of maritime training cannot be neglected. This paper aims to highlight the issue of global seafarer's shortage in the future, and its effect on Maritime Education and Training (MET). Additionally, it attempts to explicate the role of MET in general and Iranian Met in particular. Finally, the paper outlines the challenges that the Iranian MET faces at present and in the future.*

**Key words:** MET, Competency, Seafarers, Challenge, Supply and Demand.

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<sup>6</sup> E-mail address: [A.Sargazi@cmu.ac.ir](mailto:A.Sargazi@cmu.ac.ir)

Postal Address: Faculty of Marine Engineering Maritime Department, Chabahar Maritime University

## 1. Introduction

It is a 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 globalization. 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 levels (IAMU, 2015). Moreover, future shortage of skillful personnel is another threat for the industry. That is, the future of shipping industry is daunted with uncertainty, ambiguity and dangerous practices.

An effective system of MET can assist to improve the quantity and quality of competent and skilled seafarers to serve the shipping industry. In fact, through such a system, seafarers will receive high levels of training which could be challenging, motivating and being prepared to enthusiastically take up a maritime career.

## 2. World's Supply and Demand of Seafarers

Current trends and challenges in the maritime industry indicate that the future of the industry is a blend of complication, ambiguity, contradiction, speculation and misperception. Available forecasts of seafarer market are methodologically built on the existing practices and does not effectively consider future sustainability of maritime development goals developed by IMO. This could be due to the absence of clear perception of sustainable maritime development as such.

The world fleet grew by 3.5 per cent during the 12 months to 1 January 2015, but the current shortage of officer corps seafarers is forecast to worsen and risks impacting carrier profitability (Drewry Report 2014). A shortage of competent seafarers, particularly officers, to operate the increasingly sophisticated vessels is a challenge for the maritime industry; high-quality engineering officers will be particularly in demand as tighter emission regulations require ships to burn lighter fuels in sophisticated new engine designs (IAMU, 2015).

Almost all seafarer surveys carried out in the 21st century illustrate the serious shortages of properly qualified ship officers around the globe. According to the Manpower Update published by BIMCO/ISF (2010), the shipping industry is facing a shortage of seafarers, especially officers, and the shortage is likely to exist for many years in the future. As a result, this would threaten the continuous development of the world's shipping industry. This report urges that the Supply/Demand Balance in 2000 estimated a worldwide shortfall of 16,000 officers or 4 % of the total workforce. In 2005 the estimates indicated a modest theoretical worldwide shortfall of 10,000 officers or 2 % of the total workforce (BIMCO/ISF, 2010). The worldwide demand for seafarers in 2010 was 1,384,000, among which the demand for officers was 637,000 and for ratings is

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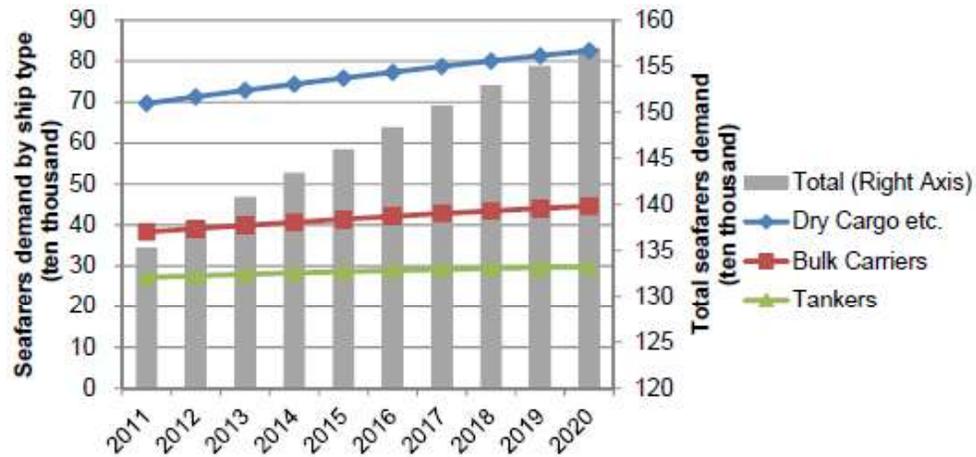
747,000. While the worldwide supply of seafarers was 1,371,000, among which the supply of officers was 624,000 and of ratings is 747,000. These figures indicate that the shortage of the officers was 13,000 while that of the ratings was balanced (BIMCO/ISF, 2010).

Japan Maritime Center (JMC) (2013) looks at the issue of seafarers' supply and demand from an entirely innovative angle. JMC reports that the seafarers demand strongly relates with cargo movement, economic conditions, etc. However, in the forecast conducted by BIMCO/ISF, these are not explicitly considered. JMC conducts the seafarers demand forecast considering indicators of economic forecast by the flow of economic condition, cargo demand, number of necessary ships, and seafarers demand. The results of JMC survey are shown in Table 1 and Figure 1.

**Table 1: Seafarers Demand Forecast**

	Japan Maritime Center	BIMCO/ISF		The gap of supply and demand based on supply forecast by BIMCO/ISF	
	Demand	Demand	Supply	Japan Maritime Center	BIMCO/ISF
2015	1,458,811	1,523,440	1,454,199	-4,612	-69,241
2020	1,569,148	1,593,198	1,555,281	-13,867	-37,917

Source: Japan Maritime Center (2013)



**Figure 1: Change in Seafarer's Demand Forecast by Ship Type**

Source: Japan Maritime Center (2013)

Drewry's estimates are slightly different with above figures. According to the Drewry report (2012) the projected growth in cargo carrying fleet between 2012 and 2016 is expected to raise the demand of officers to about 31,000 thus increasing the officer requirement from 560,000 to 591,000 as illustrated in

Table 2. On the other hand, the report highlights a substantial increase in officer supply from Eastern Europe and the Indian subcontinent with a little improvement from the Western and Central Europe.

**Table 2. Projected officer supply/demand balance ('000)**

	1990	1995	2000	2005	2011	2016
<b>Officer Demand</b>	448	427	420	476	560	591
<b>Officer Supply</b>	403	409	404	466	544	575
<b>Apparent Surplus/ (Shortfall)</b>	-45	-18	-16	-10	-16	-16

Source: Drewry (2012)

Drewry (2014) suggests that 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 carriers.

Regardless of the accuracy of these estimates from different sources, and considering 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. Additionally, from the above statistics, it is quite obvious that the world needs more competent personnel at sea and ashore than ever before.

### 3. Maritime Education and Training

Until the 1970s, the standards of training, certification and watch keeping for seafarers were established by individual governments, without acknowledgement of other countries. These standards varied widely, despite the shipping industry having already been recognized as an international industry. For the first time, the STCW<sup>7</sup> Convention was established in 1978, to standardize the basic requirements on training, certification and watch keeping for seafarers at an international level. The Convention set up the minimum standards on training, certification and watch keeping for seafarers that Party States are required to meet or exceed. The convention had many shortcomings, therefore the STCW 1978 Convention has been amended several times with a view to constantly improve safety at sea via optimum training of seafarers. The major amendments took place in 1995 and 2010 to particularly incorporate new sets of requirements that have substantially upgraded the original Convention and Code. The final amendment was intended to include all agreed changes since 1995, addressing new technology and inconsistencies in interpretation and update provisions. In addition, this Convention is perceived as better tackling the human error concern (IMO, 2014). During the process of amending of STCW Convention, it was revealed that 70 – 85% of maritime accidents were

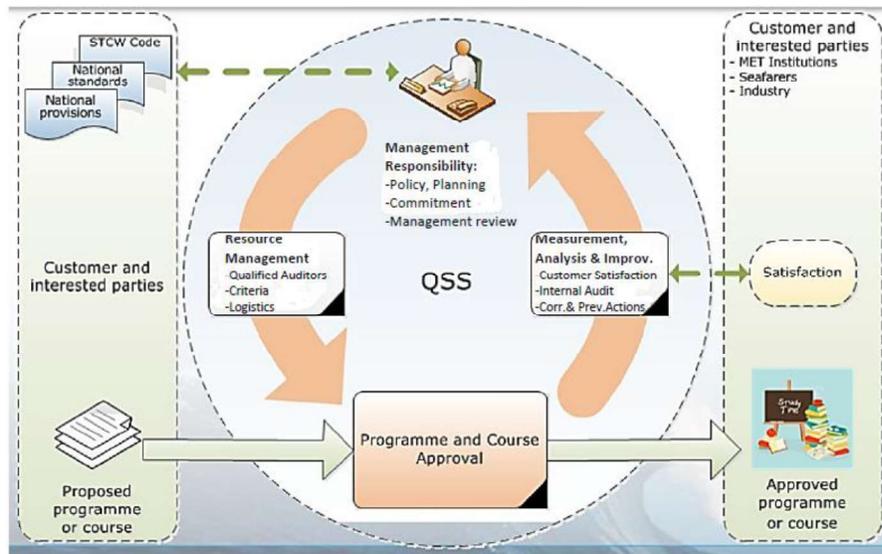
<sup>7</sup> Standards on Training, Certification and Watch keeping

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caused by human errors. It was also recognised that these problems were mainly occurred due to multinational, multi-linguistic and multicultural environment of the ships. Therefore, it was proposed that the education and training of seafarers should be enhanced through gaining soft skills, such as leadership and communication skills to minimize these problems (IMO, 2007).

Although STCW Code emphasizes on proficiency and competency of seafarers, the importance of academic knowledge and education has not been diminished especially for the operation and management levels. Therefore, it can be a daunting task for universities and institutions to determine the type of education required and strike a balance between competence based and knowledge based learning (Fisher & Muirhead, 2005).

As a result, the current programmes being used for maritime education and training (MET) by all institutions around the globe are based on the implementation of STCW 1978 convention and its subsequent amendments in 2010 convention, which entered into force on 1st January 2012. The framework and process of MET certification based on latest STCW is shown in Figure 2.



**Figure 2. The process of MET Certification system**

Source: EMSA (2013)

As shown in Figure 2, MET institutions exist and operate in an open environment and are interdependent with elements and conditions existing in the system. When designing quality standards, MET institutions need to be sensitive and responsive to industry and regulatory requirements and provide programmes relevant to client needs (EMSA, 2013).

#### 4. Maritime Education and Training in Iran

Apart from Iranian naval training that has a long history (which is beyond the scope of this paper), the merchant navy education and training under STCW requirement in Iran dates back to early 1980s, before which the training needs of Iranian merchant fleet officers (in the fields of deck, engine and radio) were fulfilled by Asian and European Naval Academies (i.e. Pakistan, India, United Kingdom, Belgium,...). After Islamic revolution, Iran has made serious endeavours to have its own MET; that is, a comprehensive MET system has been formed in Iran. The initial step was taken by Chabahar Maritime University (CMU) affiliated to the Iranian Ministry of Science, Research and Technology and under strict supervision of Iranian Port and Maritime Organization as the representative of IMO. Since then, several professional institutes have been established offering MET programs and have made great contributions to the development of the shipping industry in Iran. All the Iranian MET programmes comply with the international and national requirements.

Iranian maritime education system, that leads to competency certificates, is divided into different programmes; namely, academic education and vocational education. Iran has at least five main maritime training institutes at various levels, complying with either of these programs. The higher maritime education is open to all students who graduate from high schools (12 years). After passing the Annual National University Entrance Examination, they can enter into these maritime universities and institutes. Iran's MET system is shown in Figure 3. Additionally, the sequence of maritime career through an academic MET is illustrated in Figure 4.

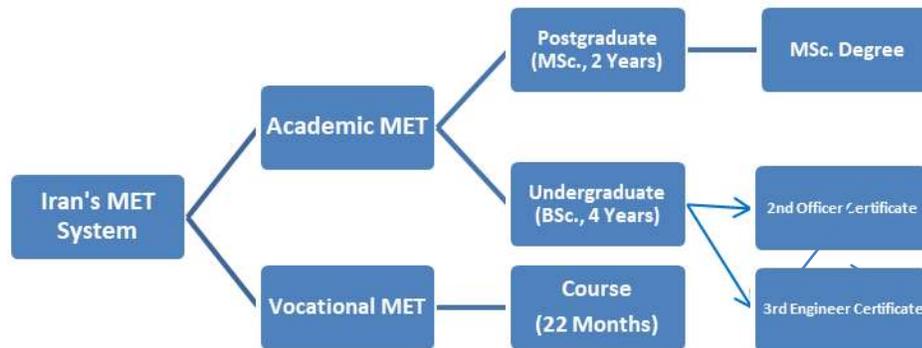


Figure 3: Iran's MET System

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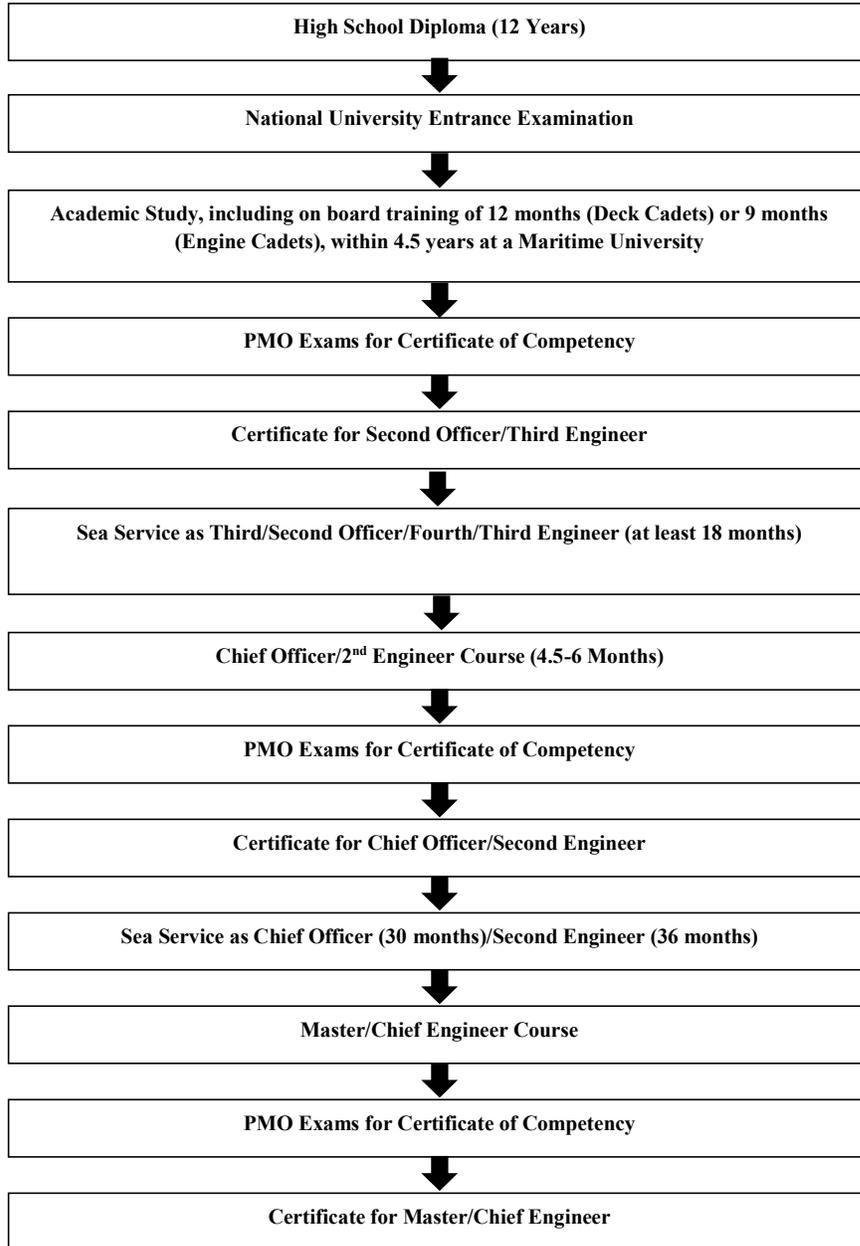


Figure 4: Career Profile of Academic Maritime Education in Iran

As can be seen from Figures 3 and 4, academic MET in Iran mainly takes place in national universities, such as Chabahar Maritime University (CMU), with English as the medium of instruction. MET courses take Maximum 4.5 years (1668 hours for Second Officer course and 1586 hours for Third Engineer course), 3.5 years of which will be university/theoretical training and 9-12 months of which will be practical training (onboard training) (PMO, 2016). At the end the mentioned period, successful cadets will be awarded a BSc. Degree. However, unlike maritime universities in most developed and some developing countries, the university BSc. degree is not recognized as a competency certificate, unless the candidate passes the competency exams conducted by IMO representative in Iran (i.e. PMO). That is, the eligibility of university graduates for pursuing a seafaring career, immediately after university graduation and later promotions, is only approved through attending PMO exams. Further preparation, for promotion to higher maritime ranks, is carried out by shipping companies (i.e. employers) and/or private institutions through different courses, and Iranian universities are not involved in these courses as yet.

In addition to university courses, there are a wide range of short and sandwich courses being offered mainly by private institutions, which are licensed by Iranian port and maritime authority. The details of all Iranian maritime courses are shown in Table 3. It is very important to note that Iran offers a variety of MET programs complying with STCW-2010 requirement to suit different needs of Iranian shipping industry.

**Table 3: Maritime Courses Offered by Iranian Institutions**

	Major	Course	Application Range
1.	Deck Training Courses for Ships Engaged on Unlimited Voyages	Master Mariner	GT ≥ 3000
		Chief officer	GT ≥ 3000
		Second Officer	GT ≥ 3000
		Able Seafarer	GT ≥ 500
		Deck Rating	GT ≥ 500
		General Rating	GT ≥ 500
		Ship's Cook	GT ≥ 500
2.	Engine Training Courses for Ships Engaged on Unlimited Voyage	Chief Engineer	KW ≥ 3000
		Second Engineer	KW ≥ 3000
		Third Engineer	KW ≥ 750
		Able Seafarer Engine	KW ≥ 750
		Engine Rating	KW ≥ 750
3.	Electro Technical Training Courses	Electro Technical Officer	--
		Electro Technical Rating (ETR)	--
4.	Proficiency Crew Training Courses	Basic Training	GT ≥ 500
		Advanced Fire-Fighting	GT ≥ 500
		Medical First Aid	GT ≥ 500
		Medical Care	GT ≥ 500

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		Fast Rescue Boats	GT ≥ 500
		Safety and High Speed Craft Systems	GT ≥ 500
		Advanced Training for Oil Tanker Cargo Operations	GT ≥ 500
		Basic Training for Liquefied Gas Tanker Cargo Operations	GT ≥ 500
		Advanced Training for Chemical Tanker Cargo Operations	GT ≥ 500
		Advanced Training for Liquefied Gas Cargo Operations (With Liquefied Gas Tanker Training Program Entrance)	GT ≥ 500
		RADAR and ARPA Simulation at Operational Level	GT ≥ 500
		Ship Security Officer	GT ≥ 500
		Security Awareness	GT ≥ 500
		Seafarers with Designated Security Duties	GT ≥ 500
		Efficient Deck Hand	GT ≥ 500
		Bridge Resource Management, Leadership and Ship Handling	GT ≥ 500
		ECDIS (Operational Level)	GT ≥ 500
		ECDIS (Management Level)	GT ≥ 500
		Survival Craft and Rescue Boats Other Than Fast Rescue Boats	GT ≥ 500
		GMDSS Radio Operator-Registered Operator	GT ≥ 500
		GMDSS Radio Operator-General Operator	GT ≥ 500
		Ro-Ro Passenger Ships Safety	GT ≥ 500
		Passenger Ships Safety	GT ≥ 500
5.	<b>Pilot Training Courses</b>	Pilot Training	--

### 5. Challenges and Suggestions for Iran's MET System

Despite all mentioned arrangements in MET and its strict compliances with STCW, which is being enforced by Iranian Ministry of Science, research and Technology and Port and Maritime Organization (PMO), the shipping industry, as well as maritime education in Iran are facing significant (but rectifiable) challenges. In one hand, there are shipping companies swiftly retrieving from minimum five years of heavy sanctions imposed by western countries, which will be in urgent and growing demand of competent and well trained officers in the near future (in addition to the forecast shortage presented in earlier section). On the other hand, there are maritime universities and institutions which are exploiting their full potentials to train skilled officers in response to routine shortages predicted by the industry. The followings are the list of challenges that MET in Iran faces along with suggestions to improve the condition of MET in accordance with international standards as much as possible:

- Attempts should be made towards paving the way for acceptance of university degrees as competency certificates by IMO representative.
- Although Iranian maritime universities are offering postgraduate programs, but they must be promoted to offer preparation and refreshment courses higher than second mates and third engineers courses as well (e.g. mate, masters, second and chief engineers).
- Investment and capital shortage in development of Iran's MET are major concerns. Although, the government is devoting annual increment to MET, but it is absolutely not sufficient for maintaining and promoting the standard of MET as per the requirement of shipping industry and in response to the seafarers' shortages.
- Iranian universities and institutions offering MET courses should be encouraged to adopt modern maritime teaching instruments such as simulators more than before.
- In order to train competent officers, MET institutions need to employ the latest technology in their training equipment. That is, old and outdated equipment are to be replaced by the state of the art facilities.
- There is a lack of professional maritime instructors/lecturers with both theoretical knowledge and practical (shipboard) experience.
- The English knowledge of new entrants (cadets) into maritime career is quite unacceptable and has become one of the main causes for miscommunication in their career.
- A better co-ordination between regulatory bodies and MET institutions to be exercised.
- With the present MET capacities in the country, Iran has the potentials to be converted into a seafarer supplying country.
- Since the MET institutions are fully complying with the requirements of STCW 2010 and offering courses at an international level, the Iranian MET institutions can turn into a maritime training hub for the region and accept international trainees.

## 6. Conclusion

This paper was set out to contemplate an important issue of maritime training and education in Islamic Republic of Iran. The current trends in shipping industry, along with supply and demand of seafarers in a global scale have been discussed in detail. The results showed that the shortage of competent officers is a serious threat for the future of maritime industry; and obviously, Iran is no exception and will definitely suffer from the lack of skilled and trained mariners. An insight has been presented regarding Maritime Education and Training (MET) in general, and present situation of Iranian MET in particulars. Finally, a comprehensive list of challenges and suggestions is given with the aim of enhancing the quality and quantity of MET in Iran to successfully confront and

diminish the shortage of seafarers in the future. However, the MET system must ensure that quality is not compromised in the quest for increasing quantity.

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