

# The Key Factors in Ensuring the Quality of Maritime Education in Ukraine

Olha Kibik

*the Department of National Economy  
National University «Odessa Law  
Academy»*

Odessa, Ukraine

<http://orcid.org/0000-0001-9587-578X>  
kibik@ukr.net

Liudmyla Nikolaieva

*the Department of Marine  
Transportation  
National University «Odessa Maritime  
Academy»*

Odessa, Ukraine

<http://orcid.org/0000-0001-6872-5102>

Iuliia Khaiminova

*the Department of National Economy  
National University «Odessa Law  
Academy»*

Odessa, Ukraine

<http://orcid.org/0000-003-4557-7500>

Vitaliy Bereza

*the Department of Marine  
Transportation*

*National University «Odessa Maritime  
Academy»*

Odessa, Ukraine

<http://orcid.org/0000-0003-0335-7876>

**Abstract - The paper looks into a set of issues related to the management of seafarers' work in the global maritime job market. The peculiarities of the development of the seafarer job market were examined. The relevance of the seafarers training quality arises due to changes in the global freight market and system of experienced seafarer training. Work on vessels with the flag of convenience has certain peculiarities that impact performance and that have to be considered at training and upgrading the skills of the maritime specialists. The components of the training mechanism for competitive maritime specialists intending to work in national and international markets were substantiated. The necessity of diversification of the sources for financing maritime education was substantiated.**

**Keywords - seafarers, maritime education, seafarer job market.**

## I. INTRODUCTION

Professional skills and characteristics of workforce largely determine the level of competitiveness of the national economic system at the international level. According to «Strategic Trade Development Roadmap (STDR)» the third strategic goal in the development of Ukrainian economy for the next five years is to increase the level of knowledge and skills required for enterprises to carry out international trade [1]. Representatives of maritime specialities, in particular seafarers, are actively employed in the international market. High level of qualification of these specialists is a precondition for the development of the national economic system and strengthening of its positions in the system of international division of labour.

Ukrainian seafarers offer their employability in the world seafarer job market, which is a specific segment of the global job market. Presently, more than 1647500 seafarers are employed in the global maritime job market. Together with the Republic of China, the Philippines, the Republic of Indonesia and the Russian Federation, Ukraine belongs to the countries that supply the largest amount of human resources to the global seafarer job market. At the same time, Ukraine is in the top five countries that supply

ratings (the Philippines are at the top of the list). The Republic of China is the largest supplier of officers, then come the Philippines, India, Republic of Indonesia and the Russian Federation. According to the BIMCO experts, as of 2015, the over-supply in the maritime job market is 102500 people. The report of BIMCO/International Chamber of Shipping Manpower published in 2016 that describes the development prospects of demand and supply in the seafarer job market says that as of 2015 774000 officers and 874000 ratings worked on the cargo ships [2]. Analyzing the change in demand and supply in the seafarer job market since 2000, the following should be noted. Throughout the period there is a steady trend of excess demand for officers over supply and excess supply of ratings over demand. The current demand and supply situation shows a deficiency of 16500 officers and an excess of 119000 ratings [3].

In 2010 a relatively stable balance of maritime workforce demand and supply was observed in the maritime job market in comparison to 2000 and 2005. It was due to the crisis of 2008 that impacted merchant shipping. Nevertheless, the BIMCO report said that certain shipping companies faced difficulties with filling their vacancies of senior officers and engineers in certain markets [3].

As of 2015 the global demand for seafarers was estimated at 1545000 people. The maritime industry needs approximately 790500 officers and 754500 ratings. Thus, the demand for officers increased by approximately 24.1 %, whilst the demand for ratings increased by approximately 1.01% in comparison to 2010.

The paper of [3] presents scenarios of the seafarers' job market development until 2020 based on the determination of the relationship between increase of demand for human resources and speed of tonnage growth. According to the most probable scenario, during the next 10 years the demand for the seafarers will decrease a little and the quantity of the seafarers will remain approximately the same. It is supposed that the level of employment in the industry will remain approximately the same as in the previous decade and the amount of seafarers quitting the industry will be about 1 %

per year. The current deficit of officers might remain if the volumes of seafarer training do not grow and the speed of quitting the job does not decrease.

The forecast for the growth of the global merchant marine until 2025 that determines demand for the seafarers, attests the fact that the tendency for growing deficit of demand for the officers even in the context of the employment and training level growth, and cutting officers' positions in the last five years.

By 2020 officer shortage in the global job market will reach 92000 people and by 2025 a break between demand and supply for the officers will reach 147500 people [2].

However, currently the disproportion between supply and demand is not the most important point. In the report of 2010 the importance of the qualification of the officer personnel was emphasized. The report of 2015 also raised concerns about the decline in competence standards, which, as experts say, will intensify over the next decade [2]. There are a clear trends in the quantitative growth of the demand for officers and in the qualified crew in general.

In 2015, 69000 Ukrainian seafarers offered their ability to work in the global seafarer job market or 4.18 % of the world supply of seafarers [2]. Compared to 2010, the supply of Ukrainian seafarers decreased by 8.4 % due to the shortage of 10000 ratings. The officers supply increased by 4600 people or 10.1%.

## II. THE PROBLEM FORMULATION

Many scientific publications were concerned with the economic, legal, social and psychological aspects of the activity of Ukrainian seafarers in the global maritime market.

A set of issues related to the activity of Ukrainian seafarers in the global job market, researched by scientists, can be grouped as follows: problems of labour rights protection of the seafarers working under convenient flag; training of the future officers and gaining respective skills; seafarers social security; psychological aspects of seafarers professional activity.

The papers of V. Zhikhareva [4], M. Primachev [6] and other authors [5], [7] were concerned with the trends of development of the maritime job market and the role of Ukrainian seafarers therein.

In our opinion, the most covered issue in the scientific literature is the legal support of labour, which is still relevant nowadays.

The importance of the issue is initially due to the global nature of the job market and the development of the convenient flag practice. The peculiarities of legal regulation of labour relations include the impossibility of regulating exclusively at the national level, both when searching a job, working on a vessel, paying wages and complying with the contract terms.

Numerous papers were concerned with the legal protection of seafarer rights, including those of S. Voloshina [8], Y. Sergeev [9] and others [4], [5], [10]. Generally, these papers consider the problems of international legal regulation of Ukrainian seafarer work, violation of labour

and payment conditions the seafarers are facing when working on the convenient flag ships. The regulations and laws that regulate relations between ship owners and employees are analyzed. In particular this are the conventions of the International Labour Organization (ILO), aimed at protecting the rights of seafarers. Special attention is paid to the ILO Maritime Labour Convention 2006 and the analysis of the consequences of its ratification by Ukraine.

Of course, the protection of seafarers labour rights in the process of hiring, contracting and repatriation remains relevant in the situation where most Ukrainian seafarers work in the global job market on vessels with the flag of convenience in severe competitive environment in the sector of ratings and officers supply.

The necessity to raise the issue of quality and professionalism of the crew members keeps the studies on the training of future officers up to date [6], [7], [11], [15], [16], [17].

Two directions of research in the maritime education and training (MET) system are highlighted.

The first direction is connected with the analysis of existing problems of maritime education and training system [5], [7], [14], [15], [16], [17], [18].

The second direction is connected with the review of the prospects of seafarers training due to development of digital technologies, the formation of new competencies and, accordingly, changes in the educational system [17], [20], [21].

The tendencies of automation and digitalization in shipping show the following challenge. Skills and, accordingly, maritime education system in the medium and long terms will be different from what is required today. Reference [18] noticed "IT knowledge is important for on board work and for seafarers' career in general".

The paper "Transport 2040: Automation Technology Employment - The Future of Work" investigated how maritime sectors will develop as a result of automation and digitalization, forecasting trends of the demand for seafarers. Thus, it is expected that by 2040 demand for seafarers will decrease by 22% as a whole. But "despite high levels of automation, qualified human resources with the right skill sets will still be needed in the foreseeable future" [19].

The activity of Ukrainian seafarers is globally oriented. Their professional competence must be correspond to the standards of the global labour market.

Accordingly, the issue of training seafarers system in Ukraine is in general in its correspondence with the requirements of STCW Convention and Code, taking into account the latest amendments [7], [11], [15], [16].

Despite numerous scientific publications devoted to the peculiarities and problems of employment relationship on the vessels with the flag of convenience, the issues related to the social and psychological peculiarities of work in modern conditions remain relevant. This, in turn, determines the relevance of ensuring appropriate training of specialists not

only in higher educational institutions but also during the work career.

### III. RESULTS

Development prospects of the seafarers job market state the following. If the maritime industry is interested in a sufficient supply of skilled and competent seafarers, the important task is to improve maritime education, promotion of maritime careers and proper provision of seafarers.

Prevalence practice of the flag of convenience causes the formation of “crews of convenience” from emerging countries, including Ukraine, which results in certain problems, both between employers and seafarers and inside the crews [4], [5].

Particularly problematic issues are wages, taxation and social security of seafarers [5], [10]. The factors were analyzed that determine the salary level of a seafarer under the flag of convenience. At the moment, the issues of taxation of an income earned working for a foreign ship owner remain unresolved. The work of the seafarers on the vessels with the flag of convenience is connected with cases of violation of contractual conditions of labour and payment, late payment of wages, groundless employer-initiated termination of the contract, no insurance against risks and expenses in case of pirate seizure of the vessel with the following compensation for physical and moral damage, double accounting practices, non-payment of benefits in case of illness, refusal to provide medical care, in particular, coverage of medical expenses upon available documentary evidence, non-payment of disability compensation of death benefit to a seafarer, etc.

In scientific papers it is noticed that the MET system provides training for high-level specialists and corresponds with the requirements of the STCW Code and STCW Convention [7], [15].

The specialists’ training in the seafaring specialties is conducted by 7 higher educational establishments of Ukraine. The number of students enrolled in 2017 for the first year of study is 5380 [15]. For comparison, more than 200 maritime academies have been opened in China.

New requirements for the training of seafarers, in particular, in the field of modern technology and management competencies were introduced by Manila Amendments [11], [13], [14], [15]. Modern officers are able to ensure the implementation of the current disciplinary rules on the members of the crew, to maintain a positive psychological climate in the ship's team, to take care of the safety and health of the crews. This requires further development of maritime education and training systems.

With the adoption of the Law of Ukraine “On Higher Education” it was possible to eliminate to a certain extent the discrepancy between the requirements of the Manila Amendments and the current legislation of Ukraine by systematizing the processes of standardization of training.

Currently, in the training of specialists in the maritime industry a competent approach is used with a clear definition of the competencies for each level of training and performance of professional activities, in accordance with the state sectoral standards [16].

Taking into account the requirements of the STCW Convention and Code, a Standard of higher education in the speciality 271 “River and Maritime Transport” has been developed and implemented since 2018 [22].

This Standard contains the main competencies that are inherent in highly qualified maritime specialists. In accordance with the Standard the main goal of specialists’ training is to develop the skills for solving problems characterized by complexity, increased difficulty level and uncertainty. However, in reality, there are many obstacles to the formation and maintenance of seafarer’s sufficient level of competence.

The following drawbacks of the maritime education system of Ukraine can be noted.

Reference [7] defines the non-compliance of Ukrainian legislative base to the international requirements as the main problem of maritime education and training system. It is remarked that in Ukraine there is no unified authority to which maritime personnel would be subordinated.

Practical consolidation of theoretical skills is the necessary component for quality maritime education.

The use of computer simulators is considered as the basic of the main means of training. Simulators simulate on the operator's screen practical situations.

A prerequisite for the achievement of high educational results is the consolidation of theoretical knowledge in the course of sailing practice [15]. The interaction of leading shipping companies with universities within the framework of “cadet programs”, giving sponsor support to maritime training institutions, creating their own training centers provides an certain level of theoretical and practical training of cadets.

Shortage of high-quality teaching staff is one of the problems which higher education can solve [15], [18]. In order to acquire the necessary knowledge and skills of higher education cadets, it is necessary for the teachers of technical and professional courses are to be experienced professionals in their profession. For example, in China, specialized disciplines are taught by visiting experts from the UK, Spain, France, Germany and other countries. Most Ukrainian institutions cannot provide adequate funding for such projects. Accordingly, the system of encouragement of teachers and instructors should be improved.

Entry into the European higher education model determines the relevance of the development of communicative skills.

Taking into account the specifics of the working conditions of Ukrainian seafarers, the formation of the foreign language communicative competence of future sailors is extremely important [16]. There are positive examples of language training for seafarers in other countries. For example, graduates of Chinese maritime academies speak three foreign languages. Graduates of the maritime institutions in Ukraine, as a rule, have a sufficient level of English. Social adaptation on board also depends on acquisition of English speaking skills by seafarers.

Management of personnel working in the merchant maritime shipping has its own peculiarities [12]. The main

specific features of the management of marine personnel should include hierarchy, monogender features, closeness, multinational environment, cyclicity of work, team approach to task performance etc.

Scientists have formulated a system named Psychological characteristic of the special conditions of the seafarers of long-distance voyage [13]. The main features of seafarers training that should be taken into account are as follows: psychoemotional tension, due to awareness of responsibility for the work results, serious physical and mental stress, the intense impact of adverse environmental factors, the risk of exacerbation of anxiety and depression, awareness of the potential threat to life and health due to accidents, elemental forces, threat of being captured by the pirates, specifics of interpersonal relations within the crew, lack of information and other factors can be specified as psychological special conditions of seafarers during the contract, affecting the efficiency of their work.

Growing problems in work relations are also caused by the changes in shipping. These are reduction of time spent at the port, reduction of the crew size due to technical improvement and automation of vessels. The seafarer job is connected with the separation from the family and home, a closed and small circle of communication in a multinational crew. This leads to psychological tension in the crew [5], [10]. Development of information technology, on the one hand, to some extent allows to maintain contact with the family and relatives, and on the other hand leads to a deeper isolation and a feeling of loneliness.

In addition to professional competence, new amendments to the International STCW Convention require from the officers the skills of an effective manager, which involves building and development of leadership skills. Building skills in counteracting stress situations and adaptation of personnel, effective teamwork, etc. is of particular importance among the training programs for highly skilled seafarers.

The key factors of the officer's leadership skills defined by scientists and documents [11]. The main should be the emotional stability, commitment, the combination of initiative with pragmatism and self-control, the propensity to reasonable risk, openness to new information, optimism, flexibility of thinking that helps solving tasks in a non-conventional manner, resoluteness, and others.

Currently, the shipowners are interested in seafarers capable of performing managerial functions, that is, to provide commercial and technical management of vessels in service. This trend demands increasing requirements for seafarers' business education. However, in the above-mentioned Standard insufficient attention has been paid to this aspect of training.

According to the analysis of the state of maritime education in Ukraine, we can conclude that many problems of the current stage of development of maritime education in Ukraine are caused by funding shortfall.

Lack of funding doesn't allow maritime institutions to update and develop training bases, to involve teachers with high scientific qualifications and practical skills in the process of training maritime specialists.

The problem of insufficient funding can be gradually addressed by diversifying the sources of funding.

Diversification requires intensifying the involvement of business sector in financing of maritime education, particularly in the context of development of dual education. Increasing the degree of transparency of financial activity of educational institutions, their expenses in particular, would allow to attract private investors more actively.

Another solution of the problem of financing and improving the quality of maritime education is to enhance the development of maritime clusters, where maritime educational institutions should play an active role.

In the absence of Ukrainian merchant fleet, the majority of graduates find employment in foreign companies. Therefore, it is about exporting knowledge and skills of maritime professionals. At the expense of seafarers' foreign exchange earnings, the national economy receives significant foreign exchange investments. Thus, working in international shipping sphere, seafarers are earning from USD 925 to USD 15400 per month [23], which is significantly higher than the average wages in Ukraine. Wages received abroad, paid in foreign currency, come to Ukraine. The amount of revenue annually range from USD 500 thousand to USD 2 bln. This has a positive effect on the balance of payments, purchasing power of the population, banking system, investment and currency markets. Therefore, despite the restricted budget, state funding of maritime education shall be continued.

#### IV. CONCLUSION

The formation and continuous development of highly skilled and creatively active maritime workforce is one of the most important tasks of modern maritime education. The aim is to ensure the sustainable growth of the competitive potential of the maritime segment and the economic system as a whole.

However, Ukraine has not formed a comprehensive concept of maritime employees' competitive potential formation, in particular that of the seafarers A long-term strategy and real mechanisms for provision of competitiveness of seafarers in the national and international markets should be established. Modern conditions suppose that training and retraining of maritime professionals is to be carried out with the use of interactive teaching methods and invokes the development of practical component. The use of such methods is costly Diversifying the sources of funding is considered as a solution for the problem of the lack of funding.

Thus, so far, there is a problem of training and providing the sea vessels with skilled officers. According to the BIMCO study, during the analysis period the demand for skilled officers was significantly higher than the supply and this will continue in the future.

Ukrainian officers are highly skilled and demanded in the global job market. However, the improvement of training level of Ukrainian seafarers is growing more urgently taking into account the competition with the Philippines for supplying ratings and increasing role of China, first of all, as a supplier of skilled workforce. Ukraine has capacity for training high-level specialists. For

successful management, a modern marine officer must possess a range of competencies that are the basis of use of his potential as a manager. Building and development of communicative competencies is particularly important in the work of the multinational crew.

Both ship owners and scientists pay more attention to the psychological health of the seafarers. Work on the vessels with the flag of convenience has its own peculiarities that affect the operational results and safety of the crew. The specifics of work in the maritime shipping determines the necessity to develop a skill to survive stressful and depressive states, resolve conflicts, get psychologically adjusted not only to the onboard but to the onshore life too. This requires implementation in the training of an appropriate course aimed at mastering the psychological management, the ability to create favourable workplace environment in specific conditions of the voyage.

Thus, Ukrainian seafarers are in demand in the global maritime job market. The marine education system prepares highly skilled and competitive seafarers whose level of qualification corresponds to global standards.

Taking into account the trends in the development of the maritime job market, a further improvement of maritime education is necessary.

Thus, it is necessary to pay attention to the increase of motivation of professors and involve practical specialists in the educational process continue to actively use new technologies, IT knowledge, further development of social and communicative skills, knowledge of leadership and human resources management in the educational process of graduates.

In order to achieve the goal of improving the quality of seafarers' training and retraining, it is necessary to create an effective system of interaction between government agencies, maritime agencies, crewing companies, shipping companies and educational institutions within maritime clusters. Such system will allow, at the expense of public and private investment, to ensure that the knowledge and skills of maritime professionals are appropriate to the conditions of safe maritime activity. In such circumstances training will be more effective and proficient, which will ensure the development of Ukraine as a maritime state.

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