



## Maritime Studies And Shipping Bussines: A Trend Research On Education Programs

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### ABSTRACT

The Schools of Maritime Engineering & Business of the Spanish Universities forms the future professionals of the Spanish Merchant Marine who will sail the seven seas transporting goods in all its various forms. This remains a very important profession however, the importance of these activities it is not usually well known by the rest of the society not directly involved with the maritime world. The professions have been evolving, and the maritime job is not an exception. The marine professionals had opened new gates to develop new activities in other different positions which traditionally were busy by others carriers, for example, shipping companies. However, training in this sense is lacking, nautical students in most of the cases are not trained and specialized in this regard. The idea of this research paper is to quantify and identify the needs for the training and propose a training plan according to current needs in this area. The methodology of this work, has consisted of comparative analysis based on the results obtained from different surveys. The first survey has been conducted in several schools of nautical and maritime studies, considering the different levels existent at training programs, perception from students in relation to major weaknesses and missing elements. The second survey focused on experts in shipping & maritime logistics considering their experience from the trainee students with the objective to identify the core skills that will be required from a professional point of view. The results of both surveys have been combined, performing a comparative analysis in order to define a curriculum model that should cover the academic and business abilities gaps identified during the study.

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### 1. Introduction

The international maritime education and training is regulated by the International Maritime Organization (IMO), in its International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), Adoption: 7 July 1978; Entry into force: 28 April 1984; Major revisions in 1995 and 2010 with the Manila Amendments. This convention is signed by all members, that currently are 169 Member Maritime States and three Associate Members. According to this, every nation will issue a document showing the level of

mariner certification and the capacity and limitations of each (Ziarati (2003)).

Also, there are a number of sub-committees whose titles indicate the subjects they deal with, that in this case, the sub-committee in charge is: Standards of Training and Watchkeeping (STW). On June 25 of 2010, the Manila amendments to the STCW Convention and Code were adopted, marking a major revision of the STCW Convention and Code. The 2010 amendments entered into force on 1 January 2012 under the tacit acceptance procedure and are aimed at bringing the Convention and Code up to date with developments since they were initially adopted and to enable them to address issues that are anticipated to emerge in the foreseeable future (Sletner (2000)).

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## 2. Background

Several studies on the maritime education and training careers have been carried out (Miyashita (2009)). We can remind METHAR (4th EU Framework Programme) or METNET (5th EU Framework Programme). From those studies, a lot of Leonardo da Vinci actions, to improve and look forward in this topic (Gekara (2009)). In relation to the regulations of each option, it is also true that apart from the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers of 1978 (STCW 1978), and the Official Gazettes from States or national regulations, in the elective subjects (Lewarn (2002)), university departments reinforce learning in certain knowledge areas (Hundley et al. (2011)).

As an example, in the Teaching Guide for the Faculty of Nautical Studies of Barcelona is reported as possible job opportunities for graduates, in addition to those already known positions on board ships (Marrero and Carrera (2011)), and among others, the following: Insurance companies, Protection and Indemnity Clubs, Vetting and surveyors, Classification Societies, Banking and finance specialized shipbuilding, Maritime Consultants of Commissioners and breakdowns, The Official Colleges and Professional Association, Shipping companies, Shipping Associations, Shipping Agencies, Port operators, Business Management, Occupational Health and Safety, Logistics, The Activities of freight forwarders, international trade and customs agencies occupies a small proportion also of these graduates (Barnett et al. (2006)).

This situation is applicable to other universities consulted as part of this investigation. Keeping all this in mind, the standard training is well understood by the international nautical community, but due to the changes of the jobs prospectation of the maritime career, the needs of the ex-graduated on the maritime & nautical studies, may be must be adapted to the nowadays situation (Fox and Hundley (2014); González et al. (2014)).

Taking into account the real needs that currently are graduates of the nautical career (Kim (2009)), the question arises, are being prepared in schools really nautical professionals to work a possible scenario other than the onboard navigation ships?

It is true that the most important for power boating should be to promote the vocation of work on board ships as well as training for the exercise of the profession on board (Lewarn (2002)). And it is also true that the maritime training is not exactly a training international trade, and in theory (Barsan et al. (2010)), this field could be covered by other professionals (Horck (2010)), but since the turn is giving the profession in the fields below, maybe you should consider, take greater account of training in this aspect (Lewis and Wigen (1999)).

Among the many factors that keep college graduates navigation, summarize the following three:

- (a) Lack of vacancies on the board of ships.
- (b) Monetary remuneration dwindling.
- (c) Change in the mindset of the students to want to be closer to their families.

In addition, shipping companies, terminals, due to its rapid pace of specialization and implementation of high technologies

of information to all nodes in the national and international maritime business, become a potential core of these employment opportunities (Fox and Hundley (2014)) for graduates marine industry for some reason are unable to continue their career on board (Chung (2009)).

In turn, shipping companies, taking into account all the knowledge acquired through university education, are in our graduates ideal candidates because they know an important part of the maritime business experience as a board (Er (2005)), issues relating to vessel loading and unloading, the procedures of maritime adventure, the need to solve problems with very limited resources and a reduced human team and so on (Constantinou (2014)).

However, it is also true, that to his surprise, in some cases, they encounter the reality that even when they know almost everything on board, are also unaware of much of the content of the work ashore inward (Baylon and Santos (2011)). This point in many cases creates a competitive disadvantage, even next to people with lower formations in this area. By another hand, the existing academic background in this research area has been found limited, according to Ng et al. (2011) 'An additional question is whether the actual features of these programs correspond to the aspirations of the enrolled students. A systematic scientific investigation on this issue is lacking'.

Based on experiences in the classrooms of the Faculty of Nautical Studies of Barcelona, and received suggestions and opinions of industry professionals (Tuna et al. (2002)), the authors have decided to conduct this research to really know what the real situation of current training in these aspects, the idea in the first place to identify:

1. If a business training in maritime and shipping company is required or not
2. If there is currently business-related training maritime and shipping company.
3. If this training, if there is standard in the countries surveyed or fits the reality of each.
4. If this training is sufficient or can be improved.
5. If it can be improved, what aspects should be strengthened?
6. Finally, know what the current status of these studies in maritime training in the countries studied, based on what to investigate, draw the appropriate conclusions and make any proposals that might result from the study.

## 3. Methodology

The methodology has been the development, delivery and monitoring of a survey, which was passed to the following groups of opinion:

1. Experienced Students: Students of the second cycle, already professionals, with experience on board and are completing a degree in nautical and maritime transport.
2. Inexperienced students: A second group consisting of students of the Degree of Nautical Engineering, Marine Engineering and Maritime Engineering (Naval Engineering), all with no work experience.

3. Experts: One group composed of experts in maritime training, maritime business and shipping company.

According to these groups, two types of surveys have been defined to measure each of the opinions for each of the stakeholders (experts and students - potential hirers vs. potential applicants). The survey blocks were defined as follows, including the same questions from the opposite view for each of the two blocks:

The first block of questions included a general opinion on current training for maritime business and shipping companies, importance and existence of related subjects at the university degrees, graduate students at this company's job market ashore and role considered in this market (Figure 1).

The second block of questions, was designed to obtain the opinion related to the knowledge degree of a nautical graduate (from 1 to 4).

The third block, designed to detect relevance from a training point of view on of several key aspects of for maritime business and shipping (1-most important, 8-less important).

Fourth block: designed to determine, the weakness of the current academic plan offered to the nautical studies graduates.

The fifth block, as an open comments area (3 questions) with the objective to catch all the points not covered at previous blocks (Lewarn (2002)).

The sample was composed of 53 questionnaires, including the 3 block samples explained before (experienced students, inexperienced students, experts), and from different countries with nautical education in four continents (Asia, Africa, America & Europe).

4. Results

At the first block of questions, the following subjects were included as seen in the Table 1.

Table 1: Question of the block 1

#	Question for students	Question for experts
1	Do you consider the training in the maritime business and shipping companies as a needed training thru the nautical studies?	Do you consider the training in the maritime business and shipping companies as a needed training thru the nautical studies?
2	Should you consider as "important" to include "mandatory" subjects in maritime business and shipping companies?	Should you consider as "important" to include "mandatory" subjects in maritime business and shipping companies?
3	Should you consider as "important" to include "elective" subjects in maritime business and shipping companies?	Should you consider as "important" to include "elective" subjects in maritime business and shipping companies?
4	Do you currently receive "mandatory subjects" in the nautical studies related to the maritime business and shipping companies?	Do you know if there exists "mandatory subjects" in the nautical studies related to the maritime business and shipping companies?
5	Do you currently receive "elective subjects" in the nautical studies related to the maritime business and shipping companies?	Do you know if there exists "elective subjects" in the nautical studies related to the maritime business and shipping companies?
6	Do you consider that the graduate students from nautical degree have the enough training on the maritime business and shipping companies areas?	Do you consider that the graduate students from nautical degree have the enough training on the maritime business and shipping companies areas?
7	Do you consider that a training internship program on maritime business and shipping companies may be relevant to your training requirement and future professional career?	Do you consider that a training internship program on maritime business and shipping companies may be relevant to their training requirement and future professional career?
8	Do you consider being employed at shipping companies as a potential opportunity in your professional career?	Do you consider the graduates of nautical studies as potential employees of shipping companies?
9	Currently, if you are selected to attend to a recruitment process at a shipping company. Do you feel you will be prepared?	Currently, would you consider being a nautical studies graduate as a favorable/determinant attribute on a recruitment process at a shipping company?

Source: Authors

Obtaining the following results as seen in the Table 2.

As can be seen, for all the questions except number 9, the standard deviation is lower than 0,15. This means, that the opinion of the students and experts are generally aligned. The following main conclusions should be extracted:

- Maritime business and shipping companies training thru the nautical studies is a need according to 97,78%

Table 2: Results of the block 1

#	Question for students	Question for experts
1	Do you consider the training in the maritime business and shipping companies as a needed training thru the nautical studies?	Do you consider the training in the maritime business and shipping companies as a needed training thru the nautical studies?
2	Should you consider as "important" to include "mandatory" subjects in maritime business and shipping companies?	Should you consider as "important" to include "mandatory" subjects in maritime business and shipping companies?
3	Should you consider as "important" to include "elective" subjects in maritime business and shipping companies?	Should you consider as "important" to include "elective" subjects in maritime business and shipping companies?
4	Do you currently receive "mandatory subjects" in the nautical studies related to the maritime business and shipping companies?	Do you know if there exists "mandatory subjects" in the nautical studies related to the maritime business and shipping companies?
5	Do you currently receive "elective subjects" in the nautical studies related to the maritime business and shipping companies?	Do you know if there exists "elective subjects" in the nautical studies related to the maritime business and shipping companies?
6	Do you consider that the graduate students from nautical degree have the enough training on the maritime business and shipping companies areas?	Do you consider that the graduate students from nautical degree have the enough training on the maritime business and shipping companies areas?
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Source: Authors

- 93,78% consider as 'important' to include 'mandatory' subjects in maritime business and shipping companies. 92,89% have the same opinion in relation to 'elective' subjects.
- Only, 68,41% receive 'mandatory subjects' in the nautical studies related to the maritime business and shipping companies. A 16,89% receive elective subjects.
- Only, 17,91% consider that the graduate students from nautical degree have the enough training on the maritime business and shipping companies areas. If considered the answer on experienced students and experts this raises to 24% approx.
- 91,21% consider that a training internship program on maritime business and shipping companies may be relevant regarding the training needs and future professional career?
- Almost 96,44% agrees to consider shipping companies as an option for nautical graduates (experts as employers and students as graduates).

Results related to question 9, can be understood as 91,33% of the students considered they are not prepared for a job interview, however, 76,92% would agree to consider as a plus the fact of being a graduate from nautical engineering at the moment of selecting a candidate on a recruitment process at a shipping company.

In relation, to potential roles to be recruited for on shipping companies, these were the obtained answers from students as seen in the Table 3.

Table 3: Potential roles on shipping companies (student's opinion)

1.- Experienced students	% total	2. Inexperienced students	% total
With actual training I am not able to answer this question	56,00%	With actual training I am not able to answer this question	53,33%
Director	16,00%	Logistics related position	13,33%
Vessel surveyor	8,00%	Sales manager	6,67%
Assistant	4,00%	Operations, traffic, intermodal department	6,67%
Ship broker	4,00%	Management	6,67%
Something related with logistics, traffic and transbord	4,00%	Operations or freight manager	6,67%
Something related with transportation & logistics	4,00%	Any position	6,67%
Vessel dessein	4,00%		
<b>Total general</b>	<b>100,00%</b>	<b>Total general</b>	<b>100,00%</b>

Source: Authors

As can we seen, most part of the students (54% approx.) does not know how which roles should be applicable to them

on the market job on shipping companies. For the rest of the answers, the most frequent areas are those related to operations and logistics functions.

Table 4: Knowledge Areas (average and deviation)

Average	Average				Standard Deviation			
	% None	% Little	% Enough	% Exc.	% None	% Little	% Enough	% Exc.
11 Documentation related with export / import	30,80%	55,73%	10,91%	2,56%	0,22	0,17	0,06	0,04
12 Organizational chart and system of a shipping company	24,24%	54,60%	21,16%	0,00%	0,17	0,18	0,22	0,00
13 Vessel's operations and clearance documentation	33,57%	53,95%	12,48%	0,00%	0,33	0,26	0,16	0,00
14 Shipping company logistics	24,14%	45,47%	30,39%	0,00%	0,11	0,20	0,25	0,00
15 Legals aspects from maritime business	33,68%	44,27%	19,49%	2,56%	0,40	0,23	0,19	0,04
16 Operational aspects of the shipping companies: transhipments & intermodality	26,26%	46,60%	27,15%	0,00%	0,24	0,08	0,22	0,00
17 Commercial aspects from maritime business	40,48%	43,15%	13,81%	2,56%	0,20	0,20	0,15	0,04
18 Relationship with intermodal operators on ports.	30,70%	51,73%	15,01%	2,56%	0,17	0,03	0,16	0,04

Source: Authors

Another way, these were the potential roles areas defined by the experts:

- Customs and documentation.
- Operations, freights, traffic statistics, cargo planner.
- Commercial department.
- Sourcing department.
- Superintendent, vessel management, ISM and ISPS responsible, vessel inspector.
- Quality assurance.

Related to the area knowledge, the obtained results in the Table 4.

Although on average media the knowledge level can be considered as 'little' in all the aspects, if we consider the standard deviation, the distance between observations is significant.

This is due to the fact, that experts have a more 'optimistic' view than the 'inexperienced students' who have the worst view, while 'experienced students' are in the middle of the two points of view as can be seen on Table 5:

Table 5: Knowledge Areas by Group

	1.- Experienced students				2. Inexperienced students				3. Experts			
	% None	% Little	% Enough	% Exc.	% None	% Little	% Enough	% Exc.	% None	% Little	% Enough	% Exc.
11	13,33%	73,33%	13,33%	0,00%	56,00%	40,00%	4,00%	0,00%	23,08%	53,85%	15,38%	7,69%
12	13,33%	73,33%	13,33%	0,00%	44,00%	52,00%	4,00%	0,00%	15,38%	38,46%	46,15%	0,00%
13	13,33%	80,00%	6,67%	0,00%	72,00%	28,00%	0,00%	0,00%	15,38%	53,85%	30,77%	0,00%
14	13,33%	53,33%	33,33%	0,00%	36,00%	60,00%	4,00%	0,00%	23,08%	23,08%	53,85%	0,00%
15	13,33%	66,67%	20,00%	0,00%	80,00%	20,00%	0,00%	0,00%	7,69%	46,15%	38,46%	7,69%
16	0,00%	53,33%	46,67%	0,00%	48,00%	48,00%	4,00%	0,00%	30,77%	38,46%	30,77%	0,00%
17	26,67%	66,67%	6,67%	0,00%	64,00%	32,00%	4,00%	0,00%	30,77%	30,77%	30,77%	7,69%
18	13,33%	53,33%	33,33%	0,00%	48,00%	48,00%	4,00%	0,00%	30,77%	53,85%	7,69%	7,69%

Source: Authors

In relation to the relative importance of the previous subjects on the training programs, these were the obtained as seen the Table 6.

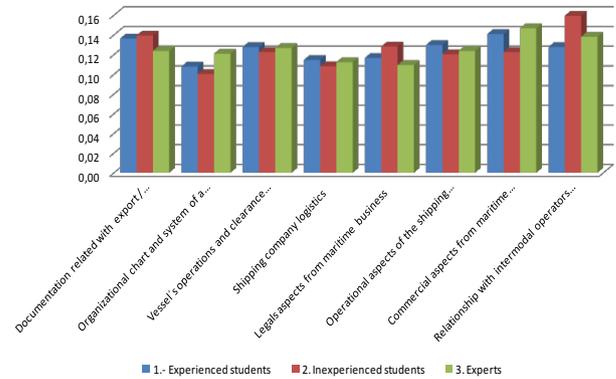
All items have the same relative importance in each of the groups and between them (see standard deviation values), so as a conclusion all same importance should be given to all the items, and all of them should be considered from a training perspective (see Figure 1).

Table 6: Potential roles on shipping companies (student's opinion)

CONCEPT	1.- Experienced students	2. Inexperienced students	3. Experts	Average	Standard Deviation
19 Documentation related with export / import	0,14		0,12	0,13	0,008
20 Organizational chart and system of a shipping company	0,11	0,10	0,12	0,11	0,010
21 Vessel's operations and clearance documentation	0,13	0,12	0,13	0,13	0,003
22 Shipping company logistics	0,11	0,11	0,11	0,11	0,003
23 Legals aspects from maritime business	0,12	0,13	0,11	0,12	0,010
24 Operational aspects of the shipping companies: transhipments & intermodality	0,13	0,12	0,12		0,12 0,005
25 Commercial aspects from maritime business	0,14	0,12	0,15	0,14	0,013
26 Relationship with intermodal operators on ports.	0,13	0,16	0,14	0,14	0,016

Source: Authors

Figure 1: Potential roles on shipping companies (student's opinion).



Source: Authors

In relation with the current weakness of the training, programs the obtained results as seen the Table 8 and the graphical representation in Figure 2.

As can be seen, in average all the items are considered as relevant (all of them above 50%). However, when each of the blocks is analyzed individually, the most homogeneous results rely on the 3 last aspects: lack of visits to shipping companies, port terminals and lack of knowledge of the importance of the shipping business.

Figure 8: Training deficiencies

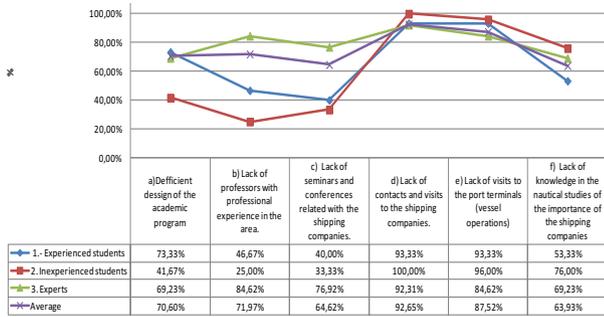
Average	Average				Standard Deviation			
	% None	% Little	% Enough	% Exc.	% None	% Little	% Enough	% Exc.
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17 Commercial aspects from maritime business	40,48%	43,15%	13,81%	2,56%	0,20	0,20	0,15	0,04
18 Relationship with intermodal operators on ports.	30,70%	51,73%	15,01%	2,56%	0,17	0,03	0,16	0,04

Source: Authors

## 5. Conclusions

According to the results, the shipping business and shipping companies are definitely a career opportunity for graduates of the marine industry and maritime transport. It is true that there are training plans, but in most cases are not homogeneous, and although in all faculties is related formations, the sense of both students, as experts do not feel prepared to begin a working life with the knowledge obtained in the classroom.

Figure 2: Graph of the training deficiencies



Source: Authors

The key areas for improvement identified as part of this study were the following: maritime law, documentation related to export/import, the Organizational chart and system of a shipping company, Vessel’s Operations and clearance documentation, Shipping logistics company, from maritime business Legal Aspects, Operational Aspects of the shipping companies: transshipments & intermodality, Commercial Aspects from maritime business, Relationship with Operators on intermodal ports.

In this regard, considering that the shipping business is one of the best ways to learn and teach about globalization, students need to experience it, so it goes without saying that university students must take advantage of studying abroad, international internships, or research opportunities abroad.

The importance of the real experience, thanks to the internship and the periodical visit to the different companies of the sector, is one of the requirements most demanded by the students, and the possibility to know through conferences or even informal speech of the actor of the industry in order to really know how is the real situation inside of this specific sector.

An additional quire, that may help to the nautical graduated students, consist of offer certified courses, made joined with the main associations the shipping sector, assuring the participation of the experts and professionals in exercise for to improve the training for the students, and also for help to the shipping companies to understand the real formation of these candidates. Actually, this kind of courses are usually done by the logistics operator associations, for their employees, and not for the nautical students or graduated. The cost should be a problem, so may be the best option is to offer this courses inside of the compulsory subjects, and may be after passed an examination, the students can get the certificate accordingly.

For sure with this investigation, the authors do not want to substitute the main objective of the nautical studies, the carrier on board the vessels, but it’s also true that not all the students will have the opportunity to sail during all their lives.

Traditionally, on the freight forwarders and the shipping agencies did not have a lot of nautical graduated on their offices, but with the time this phenomenon started to get normal, and now is an extended way to continue on the professional life ashore.

Now should be the time to improve the way to teach and also to accurate this curriculum for the students, also, as commented by the students and the experts, increasing the necessary

topics, but this issue must be adapted to the level of studies, as per the investigation’s result, the most homogeneous recommendation was to structure the curriculum as follows:

- (a) On the initial phase, the students just know the generalities and start knowing what the shipping business is, and can be shared with the enterprise’s subject and other related with.
- (b) On the second phase, the Master or B.S studies, this curriculum must be reinforced having in mind the possibility to get job’s experience on these companies. Also, some experts recommended opening two areas, one only for the nautical studies, regarding the profession on board, and the marine terminals, and other relations with the shipping business. May be in the future, with better economical projections, this recommendation can be done, but now, having in mind that the time does not stop, and the professionals are leaving from the universities, may be the actual curriculum can be updated or improved in order to find better results.

All these recommendations that came from this academic & statistical investigation, must be adapted to the local requirement of the each region, due to the nature of the industry and economy of each region change between one and another, as the already known slogan: ‘think globally, act locally’, due to as (Fox and Hundley (2014)) says ‘globalization is not a passing phenomenon’. It is here to stay. Universities and colleges throughout the world need to recognize that every student needs to have global skills; and the shipping business & companies, as globalization actors or creators, are not an exception.

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**References**

Barnett, M., Gatfield, D., Overgaard, B., Pekcan, C., Graveson, A., (2006). Barriers to progress or windows of opportunity? a study in career path mapping in the maritime industries. *WMU Journal of Maritime Affairs* 5 (2), 127–142.

Barsan, E., Memet, F., Stan, L., (2010). In proceedings of the 7<sup>th</sup> wseas international conference on engineering education. *World Scientific and Engineering Academy and Society (WSEAS)*, 127–142.

Baylon, A., Santos, E., (2011). The challenges in philippine maritime education and training. *International Journal of Innovative Interdisciplinary Research* 1 (1).

Chung, T., (2009). A study on selections of strategic type of business in air-logistics industry clusters. *The Asian Journal of Shipping and Logistics* 25 (1), 83–102.

Constantinou, C., (2014). Enhancing the maritime curriculum with online education and scholarly resources. *Journal of Maritime Research* 9 (3), 67–74.

Er, Z., (2005). International association of maritime universities (iamu) 6<sup>th</sup> annual general assembly and conference. Definitions of human factor analysis for the maritime safety management process.

Fox, P., Hundley, S., (2014). The importance of globalization in higher education, new knowledge in a new era of globalization. Prof. Piotr Pachura (Ed.), 978–953.

Gekara, V., (2009). Understanding attrition in uk maritime education and training. *Globalisation, Societies and Education* 7 (2), 217–232.

- González, A., Carbonell, C., Saorán, J., Torre, J., (2014). 3d modeling for competences development of new degrees within the field of maritime. *Journal of Maritime Research* 8 (3), 71–85.
- Horck, J., (2010). The gender perspective in maritime education and training. *WMU Journal of Maritime Affairs* 9 (1), 93–119.
- Hundley, S., Brown, L. G., Jacobs, A., Fox, P., Didion, C., Sayre, D. R., Hoyer, H. J., (2011). Attributes of a global engineer: Findings from a work-in-progress international survey. American Society for Engineering Education.
- Kim, Y., (2009). An analysis of the measurement of the shipping service quality. *The Asian Journal of Shipping and Logistics* 25 (1), 41–55.
- Lewarn, B., (2002). Maritime education and training - the future is now. *IAMU Journal* 2 (1), 19–24.
- Lewis, M. W., Wigen, K., (1999). A maritime response to the crisis in area studies. *Geographical Review* 89 (2), 161–168.
- Miyashita, K., (2009). Structural change in the international advanced logistics. *The Asian Journal of Shipping and Logistics* 25 (1), 121–138.
- Ng, A., Koo, A., Pallis, A., (2011). Professionalization of the shipping industry via postgraduate education. *Ocean & Coastal Management* 54 (5), 364–373.
- Sletner, T., (2000). Quality system for the implementation of stcw-95 in higher maritime education in norway. *Maritime Policy & Management*, 27 (1), 89–100.
- Tuna, O., Cerit, A., Kisi, H., Paker, S., (2002). Quality system for the implementation of stcw-95 in higher maritime education in norway. *IAMU Journal* 2 (2), 14–23.