

Attractiveness of the Maritime Profession – Student's Perception

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ABSTRACT: The attractiveness of maritime professions has decreased recently, making the shortage of officers one of the greatest problems of the industry. Working conditions as well as the specific work environment have been identified as the major problem maritime industry has been facing with. Additional problem is the seafarers' staying in global shipping. The paper has shown the results of the research conducted to determine the reasons why the students enrol at maritime studies, i.e. at nautical studies; what they expect after graduation; how they see their future in maritime industry, and whether they expect to continue working in the maritime industry permanently. The research itself was conducted in four countries' members of the EU and it lasted for two years. The participants were regular undergraduate students of nautical studies. Statistical analysis was used in the research. Research results show that students choose a career in maritime industry because they think the profession on board will ensure stability and safe future, high paying salary, social status, and prestige. However, most of them want to spend a limited amount of time working on board and continue their career working ashore. All the above issues indicate that the trend of a shortage of qualified seafarers, especially officers, could continue in the future.

1 INTRODUCTION

Supply and demand imbalance, as well as the shortage of officers, especially the graduated ones, have been noticed in the maritime labour market recently [1, 2, 3]. The shortage of educated employees and anticipation of competences the students must possess to perform successfully a job on board are two major challenges seafarer's profession is facing with. Therefore, a special emphasis has been given to maritime education and training that should attract more quality students and produce graduates with needed competences [4].

According to BIMCO Study, a 2% shortage of officers was noticed, and the same study revealed the shortage of European seafarers [5]. World fleet growth, insufficient number of newly educated officers,

decreased attractiveness regarding ashore professions as well as the officers' age contribute to such a situation [6, 7]. Additional problems are demanding working conditions that shorten the duration of the active on board career [8]. According to the International Maritime Organization, the estimated seafarers' active career lasts for 10 years [9], contrasted to the estimated time for a deck cadet to become a deck officer is also 10 years [10].

According to what has been said above, time overlaps between the new officers' promotion and active officers' retirement almost does not exist. Thus, a dis-continuity in the succession of officers could easily occur. Additionally, if the number of active officers who have retired from navigation is greater than the number of newly pro-moted officers, a

shortage of active officers occurs, which consequently instigates a negative trend, i.e. a decrease of the total number of active officers.

Working conditions and tasks the seafarers are facing on board are significantly different from the ones ashore [11]. Besides, long periods of absence and separation from family significantly affect seafarers' decisions on planned periods of navigation, even the career change [12]. Therefore, the employers' major problem in maritime industry is how to find and keep a qualified seafarer [13]. The additional challenge is the opinion of more experienced employees in the maritime industry that majority of students is not entirely aware of working conditions as well as of the characteristics of the career they have chosen [14].

However, students have different goals and expectations after graduation. In the period prior to choosing their career, future students face many, inner and outer, challenges [15]. Schooling, socioeconomic history, the family and friends' influence as well as the expectations resulting from these interactions, are the basic criteria that affect choosing a career [16]. Apart from outer challenges, inner challenges affect choosing a study programme as well. They refer to personal motives for future education and expectations after graduation [17]. Most of the students believe that to live a pleasant life, they have to ensure economic stability. Therefore, they choose high paying professions when choosing a career [18]. Accordingly, relatively higher salaries in maritime industry are a crucial factor when choosing a maritime career. However, it could be assumed that conditions, standards as well as salaries of jobs ashore could improve, which may result in reduced interest in enrolling at maritime universities and programmes. The above-mentioned situation happened in Hong Kong, Taiwan and Korea in 1970s, when, due to a significant development of shipping industry, the young people's increased interest in maritime industry was noticed. However, the economic growth and improvement of living conditions have led to reduced interests in professions in maritime industry. The same thing has also happened in more developed countries like the UK, Japan and France [13].

The analysed literature has shown that research on students who choose an on board career, i.e. on their reasons and wishes as to why to choose that career is rare and is usually conducted in one country. Research results from more countries are usually not compared. One of the types of research on this topic was conducted by Gonzalez, et al. [19] who are of the opinion that major reasons for choosing a maritime career are greater employment possibilities, good salary, travelling and seeing new places. According to the re-search conducted by Saukka [14], it was found out that, the status of the master, which the students find desirable has an important role when choosing a maritime career. Moreover, this research has shown that majority of students hope to become masters one day, i.e. they hope that they will work as officers after 20 years of service.

Therefore, the authors are of the opinion that the reasons why future students decide to enrol at a nautical study programme as well as their intentions regarding an on board career should be analysed. The results could be used to predict the increase or decrease

in the number of educated officers. The additional value of the conducted research lies in the fact that the research itself was conducted in four countries members of the EU and the results were analysed and compared with each other.

2 MATERIALS AND METHODS

A questionnaire was used to conduct the research, whereas data gathered were analysed by statistical method.

A questionnaire consisting of 15 questions was used for the purpose of this paper. Thirteen questions were close-ended questions (any question for which a researcher provides research participants with options from which to choose a response), whereas two were open-ended questions (research participants give their own answers). Open-ended questions were formulated in a way to enable students to add their own answers, which were not included in the close-ended questions.

The research lasted for two academic years. A total of 308 undergraduate students of nautical studies from four EU countries (Spain, Estonia, Latvia and Croatia) have participated in the research.

The students were made familiar with the purpose and the goal of the research. An additional explanation of every question was provided as well. The authorized people of the institutions participants in the research have given the permission to carry out the re-search. The research questionnaire was in written form and it's carrying out lasted for approximately 25 minutes.

In order to compare two or more groups of data whose results were shown as frequencies, Chi-square test (χ^2) was used. It determines whether the noticed differences are great enough so that the results could be applied to the whole population. Value of the test statistics, number of degrees of freedom and statistical significance were presented next to every analysis. Statistical significance 'p' is the basic indicator of a significance with the conditions – $p < 0.05$ (the results could be applied to all students), and $p > 0.05$ (there is no statistical significance). It means that, although differences can be noticed in the sample, it cannot be concluded that they are present in the whole population.

One of the essential goals of the research was to determine the reasons why students choose nautical studies. They were offered 10 answers they had to rank on Likert scale from 1 (totally irrelevant) to 5 (extremely important).

The One -Way ANOVA (analysis of variance) was used for every question to determine whether there were differences between students from different countries. The One-Way ANOVA is usually used to compare means of more than two groups of results, which in this research was the case since the results from four countries were compared. The result of the analysis of variance is F- ratio, and if alongside it $p < 0.05$, there is a statistically significant difference in answers. However, if only One-Way analysis of variance is used, it cannot be determined among which compared groups there are differences. Therefore, LSD (Least Significant Difference) post-hoc test should be

used. After LSD post-hoc test was used in this research, it was possible to determine the arithmetic mean for every country, and consequently make a conclusion on the importance of the criteria.

In the part of the research whose goal was to analyse differences in the answers of the students with and those without navigation experience, data were analysed by t-test (with the goal of comparing arithmetic means of two groups). Therefore, t-test is used to compare only two groups of results: in this case students with navigation experience and students without navigation experience. The results were shown in two tables. The first table shows arithmetic means, standard deviations, and standard errors of the arithmetic means. The second table shows t-test results for every question. Significant differences were determined in questions where the p value is less than 0.05.

3 RESULTS

The question Maritime Studies Were my First Choice was given to the students to find out their reasons and interests to enrol at a maritime university, i.e. to find out how many of them did not want to enrol at maritime studies. They enrolled at maritime studies because they had not been enrolled at desired studies.

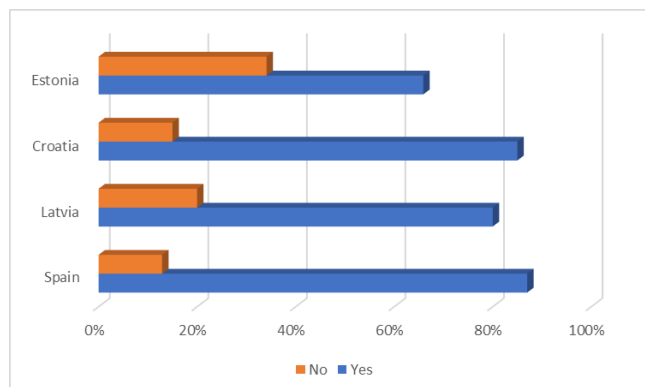


Figure 1. Percentage of students whose first choice when choosing a study programme was Nautical Study Programme

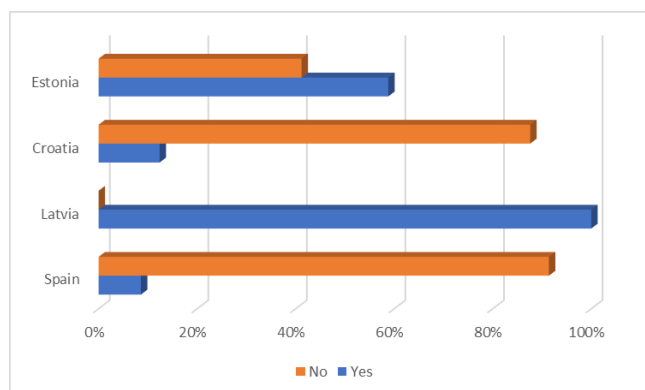


Figure 2. Percentage of students with on board experience

The results show that maritime studies were the students' first choice very often ($\chi^2=107.55$, $ss=1$, $p<0.01$). For the whole sample of students, maritime studies were very often the first choice of studies (in all four countries, more than 50% of the students gave the

YES answer). The analysis has shown that the frequencies of students to whom maritime studies were the first choice and of those, to whom maritime studies were not the first choice of studies, are not about equal in all countries. The frequencies of YES and NO answers statistically differ significantly in different countries ($\chi^2 = 14.27$, $ss = 3$, $p < 0.01$), i.e. maritime studies were the most often the first choice of the students in Spain, and hardly ever of Estonian students.

Table 1. Percentage of students with on board experience - per year

		Year of the study				Total
		1	2	3	4	
I have a navigation experience	Yes	84	88	26	0	198
	%	92.3%	87.1%	40.0%	0.0%	64.3%
	No	7	13	39	51	110
	%	7.7%	12.9%	60.0%	100.0%	35.7%
Total		91	101	65	51	308
		%	100.0%	100.0%	100.0%	100.0%

The question I Have a Navigation Experience was given to the students to determine whether there were differences in answers between the students with and those without a navigation experience. The answers show that the students statistically more often answer that they do not have the navigation experience ($\chi^2 = 25.14$, $ss = 1$, $p < 0.01$). According to the answers given to this question, the students from different countries statistically differ significantly ($\chi^2 = 141.01$, $ss = 3$, $p < 0.01$). All the Latvian students did have the navigation experience, whereas those from Spain had the least navigation experience.

The research was carried out among students of different study years. The results show that even they statistically differ significantly ($\chi^2 = 162.01$, $ss = 3$, $p < 0.01$) as far as the navigation experience is concerned. The number of students with navigation experience grows with the year of study. The reasons for such a situation lies in the fact that educational systems differ in the countries, participants of the research. Educational systems of Latvia, Estonia and Spain are sandwich systems, whereas in Croatia it is a continuing system. Croatian educational system is organised in a way that students, after graduating from nautical high school and can immediately start their career on board. Therefore, even some Croatian students have the navigation experience; however, it is rather small number when compared to other countries, participants of the research. After completing high school education, they usually enrol at undergraduate studies.

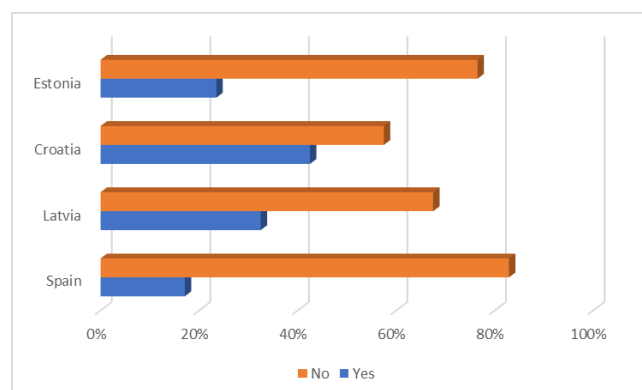


Figure 3. Percentage of students who Come from the Family of Seafarers

The question I Belong to the Family of Seafarers was given to the students to determine how many of them come from families with seafarers' tradition. When analysing the total population of students, they report that they statistically more often ($\chi^2 = 48.34$, $ss = 1$, $p < 0.01$) do not belong to the family of seafarers. However, statistical significance differs significantly ($\chi^2 = 15.64$, $ss = 3$, $p < 0.01$) regarding the country they come from. Croatian students are the ones that the most often come from the family of seafarers, whereas Spanish students the least often come from the family of seafarers. The reason for such a situation could be a long maritime tradition in Croatia that was passed down from generation to generation.

One of the goals of the research was to determine whether the students want to pursue a scientific career, and whether there was a statistically significant difference among the students from different countries regarding this question. The equal division of the answers was noticed. In other words, the students equally often want to navigate for a certain period and then pursue a scientific career, and they do not want to pursue the scientific career at all ($\chi^2 = 0.47$, $ss = 1$, $p > 0.05$). Moreover, students from different countries statistically differ significantly regarding the answers to this question ($\chi^2 = 22.74$, $ss = 3$, $p < 0.01$). Students from Spain most often want to navigate and then pursue a scientific career, whereas those from Estonia rarely have that plan.

The researchers surveyed how many students want to pursue a scientific career only. It was found out that statistically, students rarely want to pursue the scientific career only ($\chi^2 = 199.69$, $ss = 1$, $p < 0.01$). The answers of the students from different countries statistically differ significantly ($\chi^2 = 8.746$, $ss = 3$, $p < 0.05$), i.e. Latvian students the most often want to pursue the scientific career, whereas those from Estonia hardly ever want to follow that plan.

One of the major goals of the research was to determine the reasons why the students choose nautical study programmes. The students were given 10 answers they had to rank on Likert scale from 1 (totally irrelevant) to 5 (extremely important).

The results show that the answers of the students from different countries statistically differ significantly regarding better salary in maritime industry ($F(3, 303) = 4.47$, $p < 0.01$). LSD post-hoc test has shown that Spanish students consider better salary less important than students from other countries. Better salary is equally important to Croatian, Latvian and Estonian students.

The students from different countries consider better employment possibilities equally important, i.e. there is no statistically significant difference ($F(3, 301) = 2.49$, $p > 0.05$).

The criterion Interesting and Dynamic Profession is equally important to the students from different countries ($F(3, 303) = 1.55$, $p > 0.05$).

Students' perception that seafarers' profession is interesting, and dynamic should not change in the near future. The reasons for such an opinion are lifelong learning and education as a result of development of new technologies on board, multicultural and multi-

disciplinary environment and new challenges referring to bigger and more complex vessels.

Table 2. The importance of guidelines when choosing a study programme – per country

Country		Better salary in maritime industry than in other industries	Better employment possibilities	Interesting and dynamic career	Influence of the family	Friends' influence	Procedures and conditions needed to enrol at a study program	Study programme	Reputation of a study programme/department/ faculty	Study programme is seamanish oriented	It is easy to graduate
Spain	N	69	68	70	68	69	68	69	70	70	69
	Min	1	1	2	1	1	1	2	1	2	1
	Max	5	5	5	5	5	5	5	5	5	5
	M	3.72	3.88	4.44	2.34	2.10	2.88	3.83	3.66	3.89	3.33
	SD	.765	.838	.694	1.265	1.100	1.000	.822	.946	.808	.780
Latvia	N	40	40	40	40	40	40	40	40	40	40
	Min	1	1	1	1	1	1	1	1	2	1
	Max	5	5	5	5	5	5	5	5	5	5
	M	4.23	4.28	4.15	2.75	2.40	2.75	3.37	3.50	3.50	3.38
	SD	.800	.847	.864	1.104	1.081	.809	.838	.847	.847	.838
Croatia	N	113	112	112	112	112	112	112	112	112	112
	Min	1	1	1	1	1	1	1	1	1	1
	Max	5	5	5	5	5	5	5	5	5	5
	M	4.02	4.11	4.20	2.46	2.21	2.51	3.06	3.29	3.41	3.26
	SD	.845	.863	1.00	1.162	1.035	1.074	1.06	1.152	1.062	1.097
Estonia	N	85	85	85	85	85	85	85	85	85	85
	Min	2	2	2	1	1	1	1	1	1	1
	Max	5	5	5	5	5	5	5	5	5	5
	M	4.09	4.16	4.22	2.73	2.44	3.04	3.22	3.47	3.82	3.69
	SD	.666	.652	.746	1.095	1.063	.892	.943	.971	.966	.873
Total	N	307	305	307	305	306	305	306	307	307	306
	Min	1	1	1	1	1	1	1	1	1	1
	Max	5	5	5	5	5	5	5	5	5	5
	M	4.00	4.10	4.25	2.54	2.27	2.77	3.32	3.45	3.64	3.41
	SD	.788	.808	.856	1.166	1.067	.997	.993	1.026	.974	.951

Influence of the Family ($F(3, 301) = 2.07$, $p > 0.05$) and Friends ($F(3, 302) = 1.56$, $p > 0.05$) are equally important to the students from different countries.

There is statistically significant difference in students' answers to how important procedures and conditions of enrolling at a study programme are ($F(3, 301) = 5.06$, $p < 0.01$). Procedures and conditions of enrolling at a study programme are less important to Croatian students than to Estonian and Spanish students. There is no statistically significant difference among other countries participants of the research.

Students from different countries statistically differ significantly regarding the question how important the content of a study programme is when enrolling at one ($F(3, 302) = 9.54$, $p < 0.01$). The content of the study programme is significantly more important to Spanish students than to students from other countries. There is no statistically significant difference among other countries participants of the research.

Reputation of a Study Programme/Department/Faculty is equally important to all students and there is no statistically significant difference among countries participants of the research ($F(3, 303) = 1.87$, $p > 0.05$).

Students from different countries differ also regarding the question how important seamanship-oriented programme is ($F(3, 303) = 5.02$, $p < 0.01$). Seamanship oriented pro-gramme is more important to Spanish students than to students from Croatia and Latvia.

Students from different countries differ also regarding the question how easy it is to graduate ($F(3, 302) = 3.73$, $p < 0.05$). The expected easiness of

graduation is more important to Estonian students than to students from Croatia and Spain. There is no statistically significant difference among other countries' participants of the research.

As far as the criteria important when choosing a maritime study are concerned, the students were also given the possibility to add answers not mentioned in the questionnaire. The noteworthy answers were:

1. "There is a greater possibility of promotion in maritime industry."
2. "I want to become the master."
3. "I want to travel."

Table 3. Students intentions after graduation – per country

Country	After graduation, I want to spend my active life on board.	After graduation, I want to gain a navigation experience and then to work ashore in maritime industry.	I do not want to navigate after graduation.	I want to work ashore in maritime industry.	I do not know.
Spain	N	67	67	66	64
	Min	1	1	1	1
	Max	5	5	5	5
	M	3.73	3.61	2.41	2.14
	SD	1.162	1.044	1.289	1.344
Latvia	N	40	40	39	28
	Min	1	1	1	1
	Max	5	5	5	5
	M	3.50	3.45	2.59	2.21
	SD	1.086	1.197	1.272	1.101
Croatia	N	112	112	112	112
	Min	1	1	1	1
	Max	5	5	5	5
	M	3.57	3.80	2.28	1.96
	SD	1.071	1.030	1.195	1.230
Estonia	N	85	85	85	85
	Min	2	1	1	1
	Max	5	5	4	5
	M	3.95	3.47	2.01	2.11
	SD	.800	.867	.919	1.058
Total	N	304	304	302	289
	Min	1	1	1	1
	Max	5	5	5	5
	M	3.70	3.62	2.27	2.07
	SD	1.036	1.020	1.167	1.194

It is important to emphasise that the master's role and tasks have changed over time due to the increase of administrative work. His/her responsibility has increased as the result of the introduction of new regulations. Moreover, the possibility of independent decision making has been reduced due to the adoption of new technologies in communication with a company. The master's participation in decision-making regarding the cargo transported has been significantly reduced as well.

After determining the reasons why the students want to enrol at nautical study pro-grammes, their wishes as what to do after graduation were also determined. The students were offered four answers they had to rank on Likert scale from 1 (it does not refer to me at all) to (it totally refers to me).

One-Way analysis of variance as well as LSD post-hoc test were used for every question. It was determined that there is a statistically significant difference in answers of the students to the question whether they want to spend active life on board after graduation ($F(3, 300) = 2.83, p < 0.05$). Estonian students want to spend active life on board unlike Croatian and Latvian students, whereas other compared groups do not differ significantly.

Table 4. Descriptive data regarding the navigation experience

	I have a navigation experience.	N	M	SD	Std. Error Mean
Better salary in maritime industry than in other industries.	No	197	3.92	.817	.058
	Yes	110	4.15	.715	.068
Better employment possibilities.	No	196	4.06	.786	.056
	Yes	109	4.17	.845	.081
Interesting and dynamic profession.	No	198	4.29	.809	.058
	Yes	109	4.18	.935	.090
Influence of the family.	No	197	2.55	1.184	.084
	Yes	108	2.53	1.139	.110
Friends' influence.	No	198	2.31	1.076	.076
	Yes	108	2.21	1.051	.101
Procedures and conditions needed to enrol at a study.	No	196	2.76	1.047	.075
	Yes	109	2.79	.903	.087
Study programme.	No	198	3.39	.980	.070
	Yes	108	3.19	1.006	.097
Reputation of a study programme/department/faculty.	No	198	3.47	1.065	.076
	Yes	109	3.42	.955	.092
Study programme is seamanship oriented.	No	198	3.66	.998	.071
	Yes	109	3.61	.932	.089
It is easy to graduate.	No	197	3.38	.981	.070
	Yes	109	3.47	.898	.086
After graduation, I want to spend my active life on board.	No	195	3.68	1.056	.076
	Yes	109	3.74	1.004	.096
After graduation, I want to gain a navigation experience and then work ashore in maritime industry.	No	195	3.67	1.044	.075
	Yes	109	3.54	.977	.094
I do not want to navigate after graduation.	No	194	2.31	1.186	.085
I want to work ashore in maritime industry.	Yes	108	2.20	1.134	.109
	No	192	2.08	1.232	.089
I do not know.	Yes	97	2.05	1.121	.114

Table 5. T-test results regarding differences in answers referring to navigation experience

	T	df	Sig. (2-tailed)
Better salary in maritime industry than in other industries.	-2.436	305	.015
Better employment possibilities.	-1.130	303	.259
Interesting and dynamic profession.	1.072	305	.284
Influence of the family.	.182	303	.855
Friends' influence.	.745	304	.457
Procedures and conditions needed to enrol at a study.	-.241	303	.809
Study programme.	1.764	304	.079
Reputation of a study programme/department/faculty.	.389	305	.697
Study programme is seamanship oriented.	.403	305	.687
It is easy to graduate.	-.767	304	.444
After graduation, I want to spend my active life on board.	-.492	302	.623
After graduation, I want to gain a navigation experience and then to work ashore in maritime industry.	1.028	302	.305
I do not want to navigate after graduation.	.753	300	.452
I want to work ashore in maritime industry.	.178	287	.859
I do not know.			

There is no statistically significant difference among students from different countries regarding the question if they want to spend a part of the active life on board, and a part of it working ashore ($F(3, 300) = 2.21, p > 0.05$).

There is a statistically significant difference in the students' answers to the question if they want to spend active life working ashore after graduation ($F(3, 298) = 2.72, p < 0.05$). This wish is less evident among Estonian students than among Croatian and Latvian students. There is no statistically significant difference among other countries' participants of the research.

Students from different countries do not significantly differ regarding the question what they want to do after graduation ($F(3, 285) = 0.53, p > 0.05$).

Results of the research referring to the students with a navigation experience and to those without a navigation experience are shown in two tables. The first table includes arithmetic means, standard deviations and errors of the arithmetic means. The second table shows t-test results for every question.

Previous research has shown that the students do not have a clear picture of the on board career, i.e. they are not entirely aware of the working environment as well as of the characteristics of the profession they have chosen. Therefore, in this part of the research, a parallel analysis of the answers of the students with and those without navigation experience was made. Students with navigation experience are aware of the challenges they can face on board. Therefore, their answers are more significant since they can give a clear picture of the students' opinions on their career on board. However, the research results have shown that students with and students without a navigation experience statistically differ significantly only regarding the answer to one question. Better salary is more important to students with the navigation experience than to those without the navigation experience ($t = 2.44, ss = 305, p < 0.05$). Thus, the navigation experience does not affect the reasons why the students have chosen to enrol at the study nor their intentions and wishes upon graduating. The only noticed difference refers to the answer regarding the importance of better salary in this industry, which is to be expected because of the navigation experience.

4 CONCLUSION

The reasons why the students enrol at maritime studies were analysed in the re-search. The answers can be grouped in two categories, the characteristics of the profession itself and the characteristics of the study programme.

The results have shown that reasons why the students decide to enrol at nautical study programmes are better employment possibilities, better salary, interesting and dynamic profession, greater possibilities of promotion than in other professions, greater possibilities for travelling and their perception of the master's status. Based on the research results, it can be concluded that the students expect the job on board to bring them a safe and stable future, ensure good salary, social status and prestige. Those reasons are similar for the students of all four countries.

The students from all four countries agree that, when compared with other professions, seafarers' profession enables better employment possibilities; it is an interesting and dynamic profession, and statistically significant difference was noticed only regarding the

question referring to the importance of better salary. Spanish students consider better salary less important than other students do.

As far as the reasons to enrol at a study programme are concerned, it was determined that the reputation of the study programme is equally important to students of all four countries. A statistically significant difference was determined in the opinions of the students on the procedures and conditions important for the enrolment at the programme, on the content of the programme, on seamanship-orientated programme, and on the expected difficulty (easiness) to graduate.

The results referring to the students' intentions upon completing the programme have shown that there is no statistically significant difference in answers to the question whether the students want to spend some time working on board and then continue working ashore. However, there is a statistically significant difference in the answers to the question whether the students want to spend their whole active life working on board. Estonian students are the most inclined to do that.

The students' navigation experience did not affect their answers, i.e. there is no statistically significant difference in their answers. Statistically significant difference was determined only referring to the question on the importance of better salary in this profession, i.e. students with navigation experience consider better salary more important than the students without navigation experience.

The results of the research have shown that, after graduation, the students mostly want to gain a navigation experience and then continue their career ashore.

All the above indicates the possibility of the negative trend of not keeping the educated seafarers on board. However, this situation could be improved by better working conditions on board, improving and reducing the time spent on board, and reducing the time of separation from families.

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