

Abilities and Competences of Students and Seafarers for Education Supported by Modern ICT

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The purpose of this paper was to find out whether the higher education has met the necessary requirements for the implementation of the ICT system, in particular the e-learning system in higher education of seafarers. The goal was to explore to what extent the technical and organisational prerequisites for introducing the system have been fulfilled at the very institution—E-learning system provider, and to what extent the full-time maritime students and part-time students-seafarers are ready and trained to adopt such a system. In order to gather insights and make conclusions, the analytical method and the survey of students were used. A total of 930 full-time and part-time students (seafarers) were surveyed. The goal of these surveys was to find out the educational needs of both student groups, as well as their technical preconditions (e.g., having a PC at work or at home, access to the internet, and the like) and competencies (e.g., computer literacy) that are necessary for active involvement in the e-learning system. A particularly interesting part of the research tackled the psychological predisposition of students, i.e., whether they were willing to use the system at all. A special part of the research was focused on issues regarding the costs and the available time that the students/seafarers have for using the e-learning system. The research has revealed that there are neither obstacles nor initial constraints for the implementation of the e-learning system in education of maritime students and seafarers at the University of Split. Moreover, the students have a positive attitude towards the e-learning system, and most of them are very enthusiastic about its implementation. The scientific contribution of this paper is provided by an analytical model exploring and defining the necessary prerequisites for introducing the e-learning system. The advantage of the model lies in its wide and multi-disciplinary approach to all these prerequisites, ranging from psychological to purely technical, financial, time, organisational and other aspects. An interesting issue is the question of “good will” for launching such systems at the institutions which obviously meet all necessary prerequisites for their introduction, including the enthusiasm of their students and teachers. The case study shows that, apparently, the university management and the wider community have not recognised many a benefit of the e-learning system. This sounds paradoxical as it is precisely the very academic community that should act as the designer and the initiator of social changes, in social systems in general and in education systems in particular.

Keywords: ICT-information and communication technologies, e-learnig, distance education, seafarers education

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Objectives and Methodology

The research was basically aimed at gathering data on the material abilities and computer competences of the full-time students and part-time students (seafarers) at the Faculty of Maritime Studies in Split, and at obtaining their views on the application of information communication technologies (distance education and e-learning) in the education and training. A particular concern of the survey was to explore (as far as possible) the financial aspect, i.e., how much the students and seafarers paid for the study and the educational literature. The collected data were examined and interpreted for each of the groups respectively, however the data were summarized and analyzed as a whole in case of respondents' suggestions and whenever the obtained information appeared to be useful for further planning and implementation of distance education and e-learning at the Faculty of Maritime Studies in Split.

Each survey involved a set of additional goals:

- The survey of students was particularly focused on how students perceived the possible role of using information and communication technologies (ICT) in education and training and how they felt regarding the possibility that the Faculty offered some of the models of distance education and e-learning along with the existing conventional way of education. The aim was to find out whether students were ready to accept a model that would be based on the application of new educational technologies;
- As for seafarers, an additional objective of the survey was to detect the specific difficulties in education and training they deal with over their working life. The particular aim was to find out whether the seafarers recognized the possible role of the Faculty in overcoming the difficulties they encountered during their professional training. In addition, one of the goals was to find out whether they had access to the Internet in the workplace/on board ship and their employer's standpoints regarding this issue.

Description of the Survey Designed for Students of the Faculty of Maritime Studies in Split

The survey was exclusively designed for students of the Faculty of Maritime Studies in Split, attending all study programs (nautical studies, marine engineering, maritime electro-technical and information technologies, maritime systems and processes, maritime management, and maritime technologies of yachts and marinas). The survey was conducted on the premises of the Faculty (in the classrooms) on several occasions in the academic year of August 2007 (fall and spring semesters) and the academic year September 2008 (fall semester) (see Figure 1). A total of 630 students were interviewed. The first question referred to the study program the student attended. The aim of the following set of questions (2-9) was to learn more about how students were familiar and using the information and communication technologies (see Figures 2 and 3). Therefore, the students were asked about their computer skills, whether they owned a personal computer, the use of the internet and the access at home or at the faculty. The question about the purpose and use of the Internet with regard to education was particularly important.

The next two questions (10 and 11) (see Figures 4 and 5), considered equally important for the research, were aimed at finding out what the respondents knew about the possibilities of ICT in education and training. The 11th question was fundamental as it asked the students whether they would accept—in addition to the existing, traditional approaches to education—other educational models (distance education and e-learning) supported by

information and communication technologies, should the Faculty offer them such an option. Finally, the survey tried to collect information on the financial costs that the students had to bear during the study.

Description of the Survey Designed for the Seafarers Educated and Trained at the Faculty of Maritime Studies in Split

It was exceptionally difficult to obtain the results of the survey that was carried out among seafarers. As they were professional seafarers, i.e., employed on board ships and boats, the survey stretched over a long period of time. It was conducted whenever a group of seafarers came ashore to acquire further training at the Faculty. From 2007 to 2009 (all semesters), 300 seafarers were successfully interviewed.

The goal of the first two questions (see Figure 6) was to obtain general information with regard to their profession, certificates, and courses they had to complete through additional education and training. The following set of questions (3-5) (see Figure 6) tried to find out the extent of the load—regarding time, money, and other aspects—the seafarers had to withstand during additional education and training. After that (questions 6-8, 10-11, and 14) (see Figures 7 and 8), the seafarers were asked how familiar they were with ICT, what their computer skills were, and how they used the Internet. The sixth question was particularly important as the seafarers were asked whether they were ready to accept new ways of education and training, should a higher education institution offer them such an option. Likewise, it was very important to find out about the on-board possibilities of access to the Internet and the standpoints of both the employer and the ship’s captain regarding this issue (questions 9, 12, and 13) (see Figure 8).

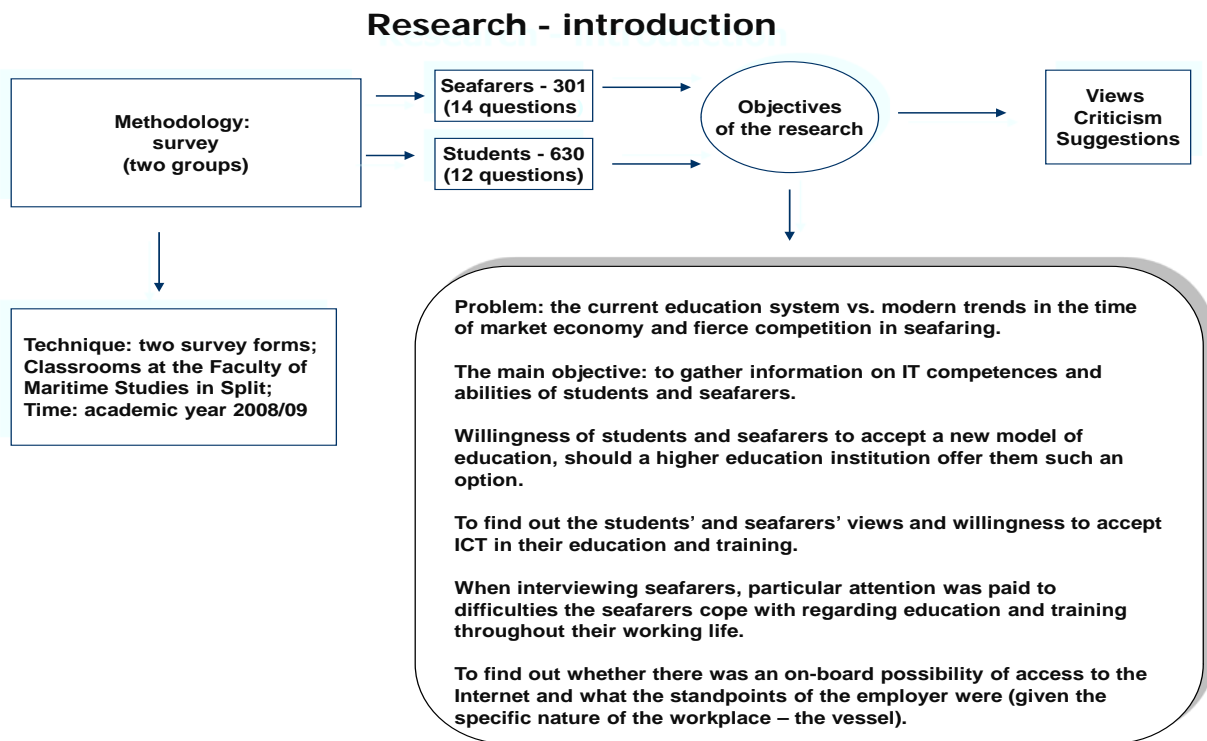


Figure 1. Schematic diagram of the methodology and research goals.

Research Results

It is important to point out that the respondents could provide more than one answer to some questions, i.e., to circle one or more answers. Here are the research findings obtained by the survey of the full-time students and part-time students-seafarers at the Faculty of Maritime Studies in Split.

Views of the Students at the Faculty of Maritime Studies in Split

The survey of students started with a question referring to the study program the students attended. Out of a total of 630 respondents (see Figure 2), 110 (17%) of them were students of Marine engineering—ME, whereas, 153 (24%) respondents attended Nautical studies program—NS, 81 (13%) respondents studied Maritime electro-technical and information technologies—MEIT, while the rest of respondents 286 (46%) attended other study programs (maritime management, maritime systems and processes, or maritime technologies of yachts and marinas) (see Figure 2).

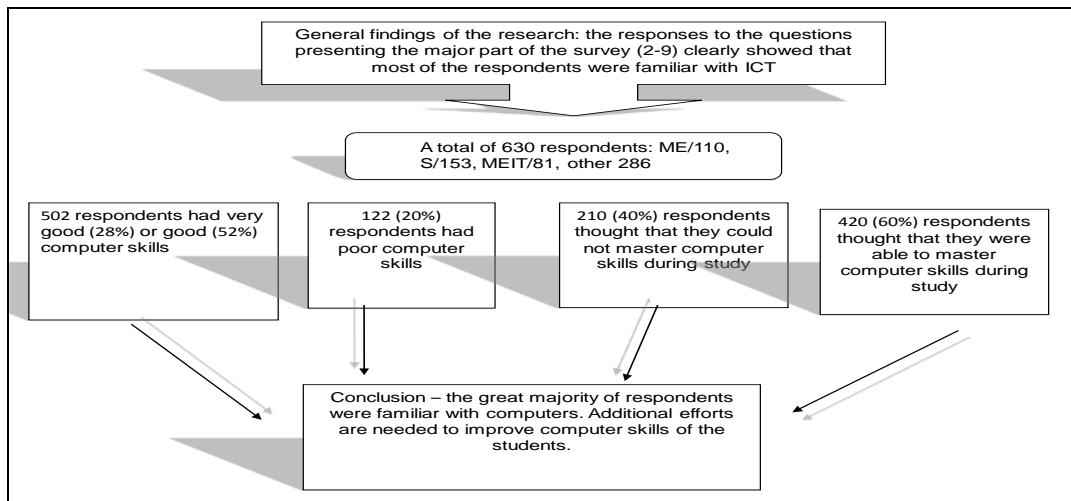


Figure 2. Computer skills.

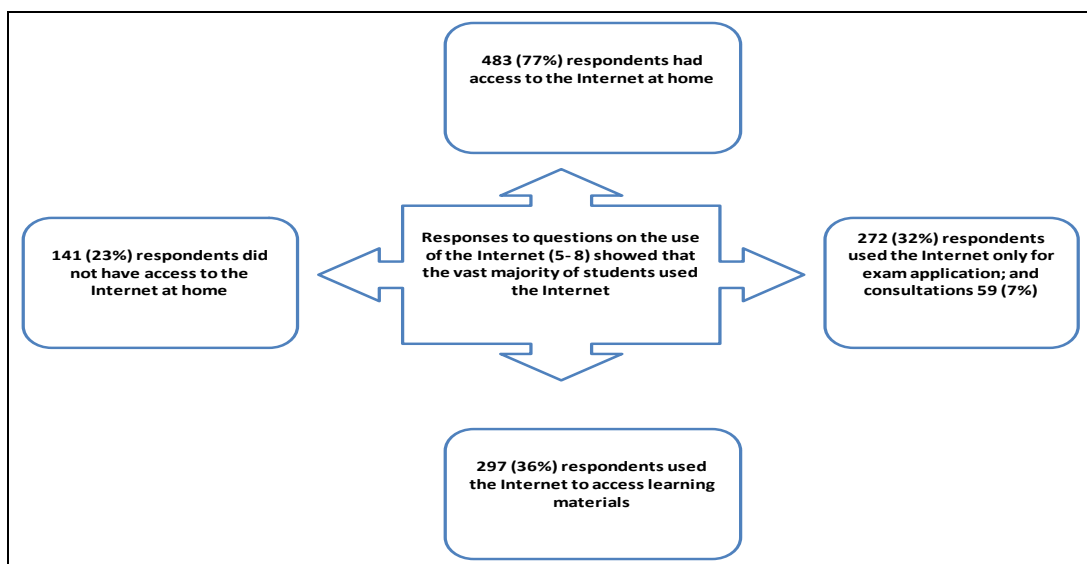


Figure 3. The purpose of using on-line services.

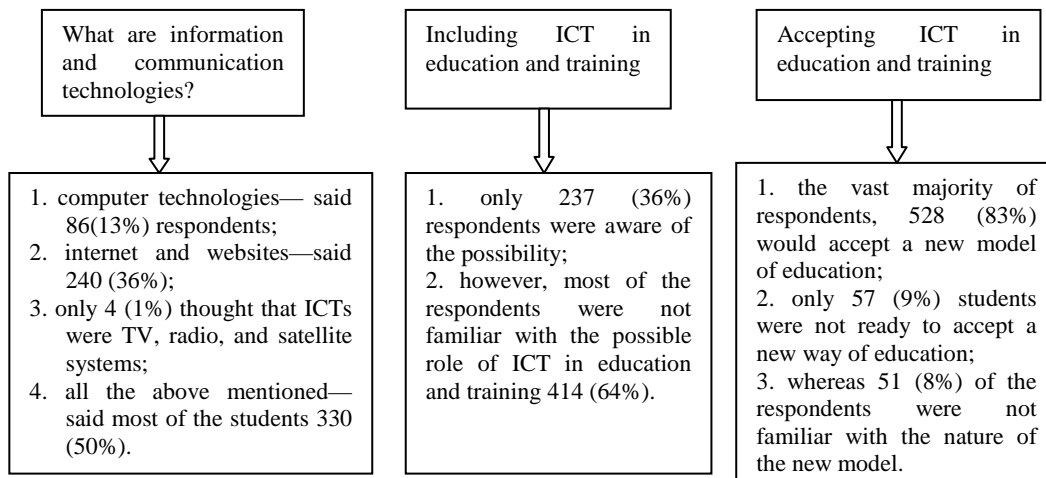


Figure 4. Knowing ICT and accepting a new model of education.

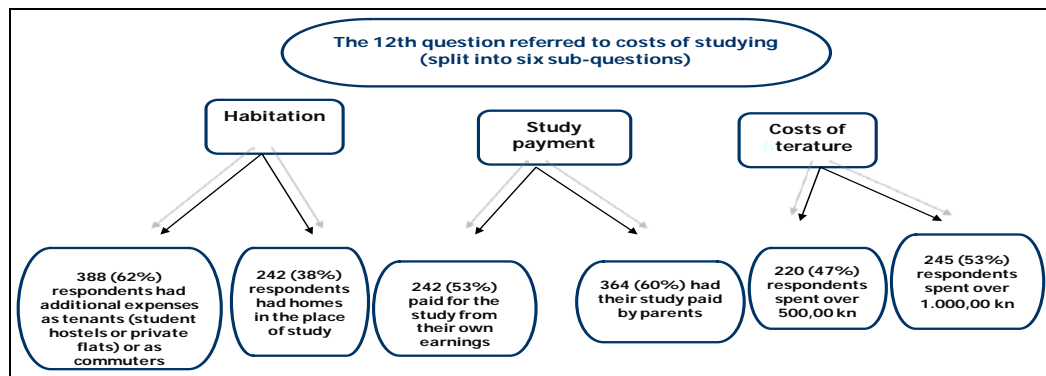


Figure 5. Costs of studying.

Views of Seafarers Educated and Trained at the Faculty of Maritime Studies in Split

The survey of seafarers started with a question referring to their profession. Although they were given four options (see Figure 6), all of them (301) stated they attended two courses: 139 (46%) respondents were marine engineers, whereas 162 respondents 54% belonged to deck department and attended Nautical studies (see Figure 6).

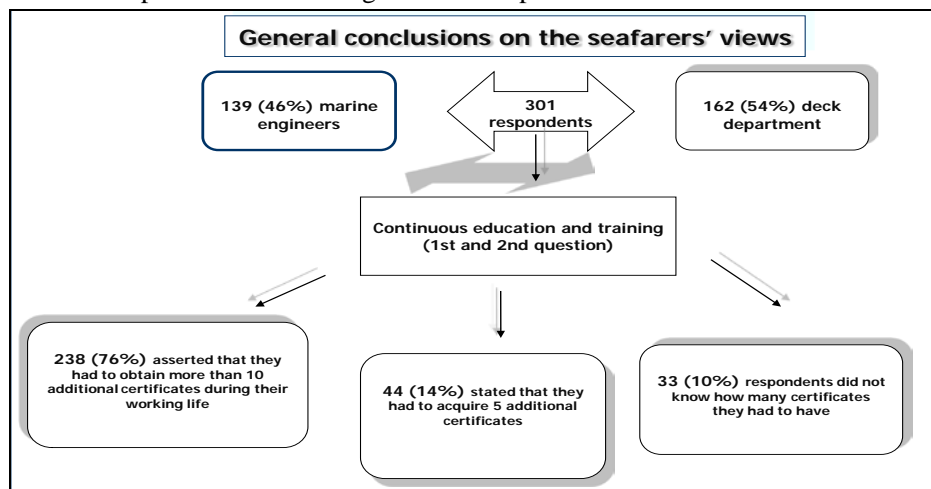


Figure 6. Continuous education and training.

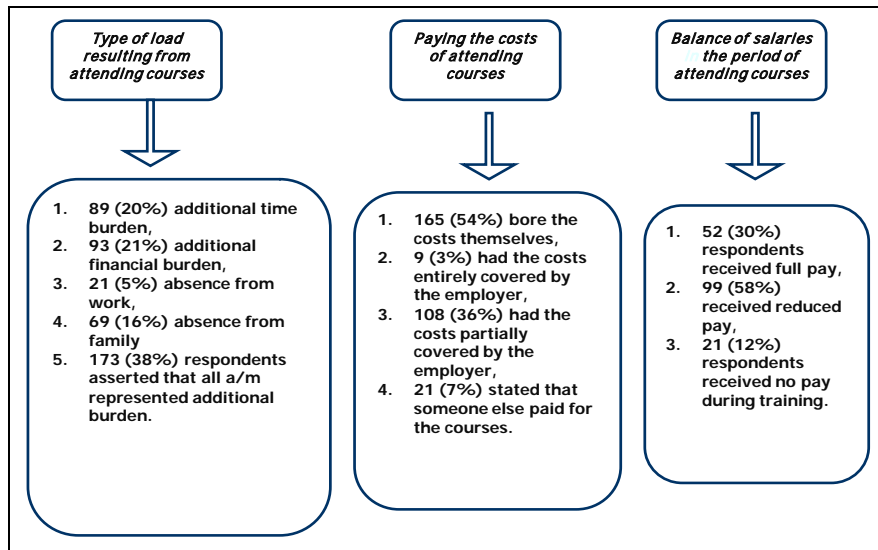


Figure 7. Load of seafarers during training.

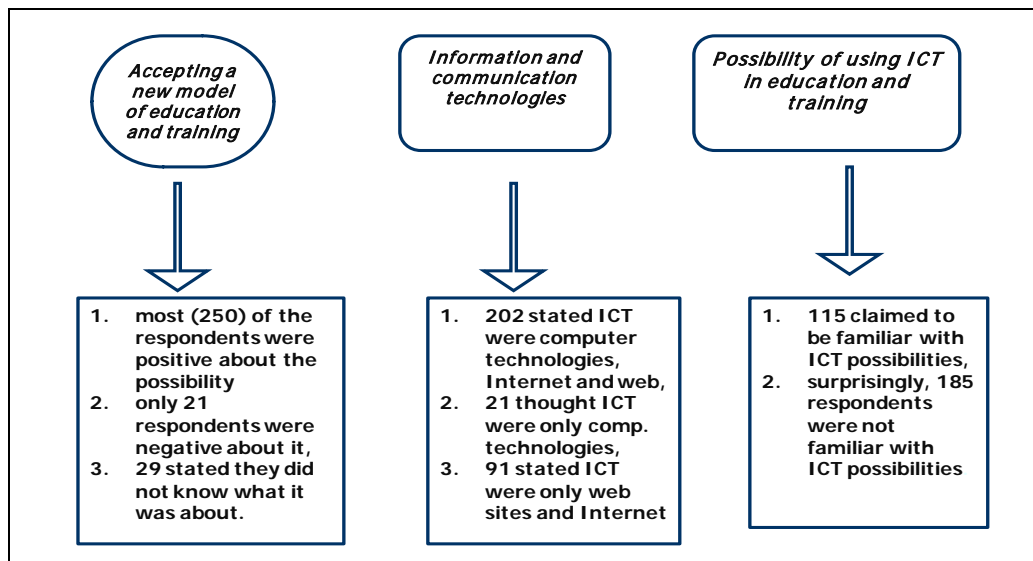


Figure 8. Accepting a new model of education and training.

Discussion

An analysis of the survey performed among the students at the Faculty of Maritime Studies in Split suggests several conclusions. The responses to the first question—referring to the study program the students attended—indicate that an increasing number of students choose the study programs that are not exclusively related to the on-board career, but also offer employment ashore (maritime management, maritime technologies of yachts and marinas, maritime systems and processes and maritime electro-technical and information technologies) (see Figure 1).

The second set of questions that presented the major part of the survey (questions 2-9) (see Figures 2 and 3) revealed that the majority of respondents were familiar with the information and communication technologies, 502 respondents have very good or good computer skills, while 122 have poor computer skills. Only one

respondent claimed to be unable to use the computer. Therefore, it can be concluded that the vast majority of respondents are familiar with computer technologies, additional efforts should be made to train those students who are less familiar with computer technologies so that they can acquire necessary skills in this area. The need for additional efforts in improving students' computer skills is also apparent in the third question (see Figure 2), where 276 respondents believe that they can not learn computer skills during the study, whereas the vast majority of 420 respondents believe that this is possible.

The following set of questions (5-8) (see Figure 3), referring to the use of the internet, reveals that the vast majority of students use the Internet, 483 respondents have the access at home, while 141 do not have that option. It can also be concluded that a large part of respondents use the Internet services at the Faculty and at home for educational reasons. Actually, these educational reasons include mostly access to education materials (297 respondents) and exam application (272 respondents) (see Figure 3).

As for the implementation of information and communication technologies in education and training, the vast majority of the respondents (414) (see Figure 4) did not know or never heard of this possibility, while 237 of them were aware of the possibility. The 11th question (see Figure 4) aimed to find out whether the students would accept ICT (particularly distance learning and e-learning), should the faculty offer them such an option, and it can be concluded that the overwhelming majority of respondents (582) are willing to accept such a model, whereas only 57 are not ready or willing (see Figure 4).

The 12th question (see Figure 5) referred to the costs of study. It was split into six sub-questions and the following conclusions can be made: only a small number of students (242) have homes in the area where the Faculty premises are located. Other students (388) bear additional costs as tenants at student hostels or private flats, or as commuters. Responses to the 12th question—sub-question (see Figure 5) “e”—lead to the conclusion that all students spend considerable funds on literature (220 respondents over 500.00 HRK, 245 respondents over 1,000.00 HRK). The findings referring to the ways of financing the studying are also interesting: in most cases (364) parents cover the costs of studying, while 242 respondents say that they pay for the study themselves (the fact is that students of maritime faculties often interrupt their studies to work on board, or study and sail at the same time, in order to provide funds for the study) (see Figure 5).

A number of conclusions can also be made through the analysis of the responses obtained during the survey conducted among the seafarers (see Figures 6, 7, and 8). The first question was about the study programs they attended. Unlike the results gathered from the students, who attended various programs, all the seafarers studied either marine engineering (139; 46%) or nautical studies (162; 54%). All of them are involved in continuous education and training: Two hundred and thirty eight respondents assert that they have to acquire more than 10 additional certificates in their working life, while 44 state that they have to acquire five additional certificates (see Figure 6).

The second set of questions (see Figure 7) referred to the time and money spent on further education and training. All of the respondents confirmed that the courses presented an additional burden as regards their financial abilities, time, and absence from work or family. The respondents particularly pointed out the problem of financing in the time of training, as many as 165 seafarers bore the costs of training themselves, while the employer participated in these costs in 108 (see Figure 7) cases. Only nine respondents said the employer covered all costs. As for salaries during the training period, only 52 respondents stated that they received full

salary, while 99 received reduced salary, 21 respondents asserted not to be receiving salary during training (see Figure 7).

The third set of questions (see Figure 8) referred to the computer skills and the use of ICT for private purposes and in further education and training. The vast majority (250) of respondents said that they would accept the possibility of training with the support of information and communication technologies, especially the internet (see Figure 8). However, here the seafarers might experience certain difficulties as 122 respondents claimed that their employer would not allow the on-board use of the Internet for further education and training. Only 88 were positive about this issue. It is interesting to learn that almost all seafarers (299) have access to the Internet at home, 108 of them have a laptop featuring wireless access to the Internet when on board a ship/boat, 149 respondents do not have that possibility.

Observing the overall findings from the survey of the seafarers, it can be concluded that there are certain difficulties in the process of their further education and training, nevertheless, there are also possibilities that have not been sufficiently exploited so far.

Concluding Remarks

Despite the problems identified by the respondents with regard to the possible introduction of a new system of education and training (especially referring to the seafarers—difficult on-board access to the internet), the analysis of the obtained responses lead to the conclusion that the vast majority of respondents, both seafarers and students, have positive views on the implementation of a new system.

Conclusions of the research:

- Most of the respondents (seafarers 250/301; students 528/630) have positive views on the new educational system;
- Seafarers and students share the identical view on the possibility of introducing a new educational system (question 11 for students, see Figure 4; question 7 for seafarers, see Figure 7), 778 of them would accept it, while 153 are not ready/willing to accept a new system or are not aware what it is;
- Students and seafarers largely meet the necessary requirements (skills, physical, and technical conditions) for accepting and implementing a new educational system;
- The vast majority of students and seafarers own personal computers and are able to access the Internet at home;
- Faculty of Maritime Studies in Split meets the technical and technological requirements for implementing a new system of education;
- The role of the Faculty management as well as the support of administration and the entire academic community is essential for the implementation of the new system of education.

When analyzing the survey of students and seafarers, it is more than obvious that the respondents are very interested in a new way of education. It is also apparent that students meet—to a great extent—the necessary skills and physical and technical requirements for the introduction and implementation of a new educational system. The overwhelming majority of the respondents have personal computers and access to the internet at home, which is one of the basic prerequisites for active participation in a new educational system. Regarding the Faculty of Maritime Studies in Split, as the main initiator of the implementation of new educational systems

supported by ICT, this institution largely meets the technical and technological requirements for the implementation of a new system.

Comparing the responses gathered from both seafarers (question 6, see Figure 7) and students (question 11, see Figure 4), it can be concluded that the vast majority of the respondents are very enthusiastic about the possibility of introducing a new educational system. Considering the above views, shared by both groups of respondents, it is justifiable to ask whether the Faculty of Maritime Studies in Split is ready to offer such a model. If it is true that the faculty largely meets the technical and technological conditions for implementation of a new system of education, it is also justifiable to ask why it has not been done before. The introduction of any systematic changes is, naturally, in hands of the management of respective higher education institutions, but relies to a great extent on the support of administration and the entire academic community as well.

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