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Mitigating maritime unemployment in Georgia: A Maritime Education and Training perspective

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Abstract: Despite the trend that qualified seafarers are globally in shortage, some maritime education and training (MET) institutions, including the Batumi State Maritime Academy (BSMA) - Georgia, are struggling to find employment for their students. This paper addresses the employment challenges faced by cadets in Georgia and identifies possible solutions from a MET perspective. Secondary data analysis was conducted using the published survey data about BSMA graduates as well as employers. There was a gap identified between MET provided and employers' feedback about BSMA graduates' knowledge and skills. Employers were generally unsatisfied with the graduates of marine navigation, particularly in their ability to draw conclusions; theoretical knowledge; applying knowledge in practice, and ability to work in a team. In reality, the majority of marine navigation graduates (82.6%) found a job outside of their specialization. Nevertheless, another document analysis reports new development for MET in Georgia in terms of infrastructure which help consider future opportunities for quality MET. In conclusion, the paper also looks into the lifelong learning opportunities for Georgian seafarers to strengthen their capacity in human capital development and provides recommendations for MET in Georgia in preparing for sustainable shipping globally.

Keywords: Maritime Education and Training (MET); Georgia; unemployment; higher education curriculum; lifelong learning

1. Introduction

It is globally reported that qualified seafarers are in shortage and the seafarer demand is always higher than the actual seafarer supply (BIMCO and ICS, 2021). Despite this trend, some maritime education and training (MET) institutions, including the Batumi State Maritime Academy (BSMA) - Georgia, are struggling to find employment for their students. According to the BSMA graduate survey in 2019, deck and engine cadets who found a job were 52% and 50% respectively[1]. At the national level, the Maritime Transport Agency of Georgia (2021) reports that among 264 graduated students from three maritime universities in Georgia, only 171 were employed as cadets by the authorized crewing companies, indicating that the unemployment rate among cadets was 53%.

Nevertheless, maritime employment is an important career opportunity for young people in Georgia as its seafarer employment has been increasing in recent years. In 2020, a total of 3,553 Georgian seafarers, including 1,749 officers and 1,804 ratings, were employed (Maritime Transport Agency of Georgia, 2021). On the other hand, the youth unemployment rate (aged 15-24) in Georgia was recorded as 39.7% in 2020, which appeared to be the worst in the region (World Bank, 2021). It is therefore urgent to minimize the unemployment of MET graduates and further increase maritime employment for Georgian youth.

This paper addresses the employment challenges faced by cadets in Georgia and identifies possible solutions from a MET perspective. Secondary data analysis was conducted using the published survey data about BSMA graduates as well as employers. The analysis helped understand the current problems with the BSMA graduates and identify a gap between MET provided and employers' feedback about BSMA graduates'

[1] See the BSMA Quality Service (https://bsma.edu.ge/page/xarisxis-samsaxuri#3)

knowledge and skills. Employers were generally unsatisfied with the graduates of marine navigation, particularly in their ability to draw conclusions; theoretical knowledge; applying knowledge in practice, and ability to work in a team. The BSMA student survey also shows that the majority of marine navigation graduates (82.6%) found a job outside of their specialization. Based on these results, a series of document analyses were conducted to analyze the current BSMA curriculums in terms of possible causes for the identified gaps. In addition to the gap analysis, another document analysis about new development for MET in Georgia was exercised to consider future opportunities for quality MET. Such new development includes the Poti branch of BSMA and a multifunctional pool for practical training. It is assumed that new MET development in Georgia, including lifelong learning opportunities, will facilitate the mitigation of unemployment among MET graduates and increase maritime employment opportunities.

2. Mass stranding of cadets in maritime employment

BSMA offers vocational, bachelor's, and master's degree educational programs. There are three major faculties in BSMA: Faculty of Navigation, Faculty of Engineering, and Faculty of Business and Management. In recent years, applications for maritime navigation and engineering faculties have been high, for example, in 2020, BSMA announced 200 vacant places for Maritime Navigation where 760 applications were received. Similarly, for 120 vacant places for Marine Engineering, 689 applications were registered and for 75 vacant places for Marine Electrical Engineering, 623 applications were received[2]. These statistics demonstrate that maritime educational programs are very popular and attractive among young Georgians. Pallis and Ng (2011) stated that students choose maritime education because of its prestige and skills they acquire, which are considered to be portable and flexible.

Despite this BSMA's success in attracting young people to maritime courses, many of BSMA graduates suffer from high unemployment in the desired maritime positions. According to the BSMA graduate survey in 2019, deck and engine cadets who found a job were 52% and 50% respectively. In 2020, a similar survey, targeted at employers and strategic partners, only 30 % of BSMA graduates were employed by 31 participating companies which consisted of 40% of the total numbers in database and only 19% stated that they had signed a memorandum of cooperation with BSMA. At the national level, the Maritime Transport Agency of Georgia (2021) reports that among 264 graduated students from three maritime universities in Georgia, only 171 were employed as cadets by the authorized crewing companies, indicating that the unemployment rate among cadets was 53%. A general trend in the number of recruitments is decreasing in addition to the impact of COVID-19 pandemic (Fig. 1).

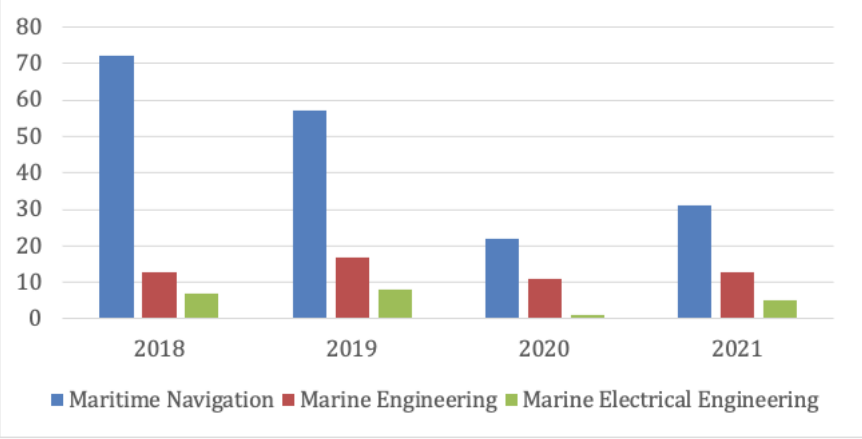

Figure 1. BSMA employment statistics, 2018-2021 *(Note: survey respondents only)*

3. Understanding the employment gap

The paradox that young Georgians are interested in maritime studies but the employment rates are low can be explored from further surveys conducted with employers and BSMA students. In the 2020 employer survey, while they noted various strengths of BSMA graduates (e.g., application of theories in practice, sociability,

[2] Data were retrieved from the National Assessment and Examinations Center (NAEC), Ministry of Education and Science of Georgia and the BSMA online resource (https://bsma.edu.ge/page/sabakalavro-saganmanatleblo-programebi#1).

responsibility), employers also identified the weaknesses of BSMA graduates in the areas of knowledge of foreign languages (e.g., English, and in some cases, basic level of Russian and Turkish) as well as the ability to apply theoretical knowledge in practice. In the previous survey period (2017-2018), the results of the student survey revealed that the majority of marine navigation graduates (82.6%) found a job outside of their specialization. A survey for employers in 2017-2018 also highlighted that they were generally unsatisfied with the graduates of marine navigation, particularly in their ability to draw conclusions; theoretical knowledge; applying knowledge in practice, and ability to work in a team.

In the first semester of 2021-2022 academic years, BSMA published another survey about students' satisfaction research report. The aim of the research was to identify the BSMA students' attitude towards educational process/format, educational programs and exchange programs/international projects. Over the half (53%) of students participated in the study; of which 78.3% were the students specializing from maritime navigation and engineering faculties. The key findings of the study can be summarized in three areas.

First, overall, students were satisfied with the e-learning/distance/hybrid learning format; however, most of them indicated that they preferred auditory learning. They also mentioned that they would like to upgrade the student portal and participate in schedule creating. Second, many students (58.4%) indicated that they were satisfied with educational programs, although they believed that some programs needed to change teaching methods and formats and they must be engaged in the improvement; they also commented that much more time should be devoted to the use of simulators. Third, students expressed their will to change the grading system. And finally, nearly half of the students (45.2%) said that they were given an opportunity to participate in exchange /international programs, but 37.5% had no information about current and on-going projects.

In summary, employers are often dissatisfied with the knowledge and skills of maritime students, however students have also identified the areas that MET institutions should improve in order to achieve better learning experience for students. Based on two perspectives from employers and students, the next section examines how competences are taught in the MET institutions.

4. Review of BSMA curriculum design and delivery

Both the Maritime Navigation and Marine/electrical Engineering educational programs are designed to issue the sea navigators and marine engineers with management, operational, and support levels, who will meet the relevant requirements of the STCW 1978 Convention, as amended. BSMA has designed the curriculums in 4 academic years (8 semesters), hence students can gain 30 ECTS per semester, resulting in 240 ECTS in total in order to earn Bachelor's degree. In this study, the BSMA curriculum design and delivery were reviewed by using document analysis. The reviewed documents were BSMA's curriculum documents (e.g., syllabus, teaching calendar) and other documents specifying the allocation of teachers and other resources.

4.1 Learning outcomes

In the document titled "Formulation and evaluation of program learning outcomes", BSMA states that, evaluating the learning outcomes of an educational program consists of four stages: (1) Formulation of learning outcomes of the educational program; (2) Curriculum analysis, during which it is determined whether the program provides students with sufficient opportunities to achieve the learning outcomes of the program; (3) Evaluate the learning outcomes of the educational program, which includes data collection, analysis, and interpretation by students to determine the achievement of the desired level of learning outcomes; (4)Curriculum analysis, during which it is determined whether the program provides students with sufficient opportunities to achieve the learning outcomes of the program.

To achieve learning outcomes, BSMA uses the map of compliance with program aims and learning outcomes (Table 1):

Table 1. Program aims and learning outcomes

Program aims	Learning outcomes						
	I	II	III	IV	V	VI	VII
Program aim 1							
Program aim 2							
Program aim 3							

After formulating program-learning outcomes, BSMA starts program design and development to achieve learning outcomes. Table 2 is the curriculum map which is a table that presents the learning outcomes of the program as well as the mandatory teaching courses, activities, and research components offered by the educational program:

Table 2. Teaching course and program learning outcomes

Teaching course	Program learning outcomes					
	I	II	III	IV	V	VI
1	Intro		Intro/Strengthening		Deepening/ Strengthening	
2		Deepening		Deepening		Strengthening
3	Intro				Strengthening	

Using this guide, BSMA educational programs are created. In this paper, a sample of Maritime Navigation program is presented in Table 3.

Table 3. Maritime Navigation program and its learning outcomes (NB: emphasis made by Authors)

Aim of the program	Learning outcomes
Aim of the program is to: 1. **Train** sea navigators of management, operational and support level, who meet national (industry specification "Maritime navigation") and international STCW convention (A-II/1, A-II/2, A-II/3) standard requirements. On the basis of appropriate training and recognized seagoing practice navigators **will gradually be able to get an officer position** on an ocean merchant ship; 2. **Train** a practice-oriented worker who will be able to identify navigation threats, solve problems and think critically within acquired competence	After successful completion of the educational program graduate will be able to: 1. **Plan** navigational and cargo operations; 2. **Navigate** in different weather conditions; 3. **Provide** safe navigation; firefighting; 4. **Use** of safety and survival crafts in emergency situations; 5. **Provide** first medical aid; knowledge of survival at sea techniques; 6. **Provide** hydro meteorological observation and read synoptic charts; 7. **Use** navigational information, charts and electronic charts, control ship positioning and movement; 8. **Use** celestial bodies and equipment; 9. **Use** ship radio and electric navigational, radiolocation and navigational automated systems; 10. **React** adequately on Master's orders; 11. **Properly organize** navigational watch and work of crew members; 12. **Use** of informational and communication technologies; 13. **Provide** safety, survival and rescue operations in English language based on international regulations requirements; 14. **Use** all kinds of Radio navigational systems in accordance with Radio Regulations

Based on Table 1, program aims and learning outcomes are aligned and narrowed according to the STCW convention (A-II/1, A-II/2, A-II/3) standard requirements that include all the competencies needed for the industry. In developing learning outcomes, it is advised to use Bloom's taxonomy's key verbs that indicate the complexity of the learning outcomes in the cognitive domain (Kennedy, 2007). Most frequent verbs that are used in given learning outcomes in Table 3 are: "*use*" and "*provide*" at the level of "applying" – which corresponds to its initial definition of the Bloom's taxonomy, that is "solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way" (Sideeg, 2017). On the other hand, "*identify* navigation threats" and "*think critically* within acquired competence" are at a higher, cognitive level that corresponds to "analyzing" and "evaluating" respectively. Considering this fact, learning outcomes must meet this entanglement of the program's aims.

4.2 Teaching schedule and subject distribution

Maritime Navigation covers the competencies and knowledge according to Section A-II/1 and Section A-II/2 of STCW, and this program is mapped out in such a way that students are equipped with fundamental knowledge of technical sciences (e.g. mathematics, physics) at the beginning of the studies (mostly in the two

semesters). Teaching the relevant and profession-specific modules of the program starts from the 3rd semester and continues until the 8th semester; the 5th semester for all academic programs is devoted to the onboard training (30 ECTS). Additionally, the delivery of the English language course, including Maritime English, starts from the 1st semester and finishes in the 6th semester.

Nevertheless, it is noticeable that several subjects (highlighted in Table 4) were detected as they did not correspond to learning outcomes provided by the BSMA's Maritime Navigation learning outcomes (Table 3). In particular, physical training with 4 ECTS is not the competence of gradually promoting officer in charge of the navigational watch.

Table 4. Maritime Navigation program schedule (highlighted by Authors)

BATUMI STATE MARITIME ACADEMY ბათუმის სახელმწიფო საზღვაო აკადემია							
I Semester	1.Intermediate English MF I or 2.Upper Intermediate English MF I 5 ECTS	Physical Training I 2 ECTS	Mathematics MF I 5 ECTS	General Physics I 5 ECTS	Selective Component 3 ECTS	Navigational Routes 5 ECTS	Seamanship 5 ECTS
II Semester	1. Intermediate English or 2. Intermediate+ English MF I 5 ECTS	Physical Training II 2 ECTS	Mathematics MF I I 5 ECTS	General Physics I I 5 ECTS	Industrial Chemistry 4 ECTS		Information Technologies in seamanship 4 ECTS
III Semester	Maritime English MN1.1 5 ECTS	International Regulations for Preventing Collisions at Sea 5 ECTS	Marine Navigation I 5 ECTS	Maritime Safety Rules MN 5 ECTS	Celestial Navigation I 5 ECTS		Types, Constructions and Technical Equipment of ships 5 ECTS
IV Semester	Maritime English MN1.2 5 ECTS	Ship Handling and Maneuvering 5 ECTS	Marine Navigation II 5 ECTS	Marine Communication and Radionavigation Systems 5 ECTS	Celestial Navigation II 5 ECTS		Ship Stability 5 ECTS
V Semester	Onboard Training MN 30 ECTS						
VI Semester	Maritime English MN2 5 ECTS	Navigational gears 5 ECTS	Prevention of Pollution of Marine Environment and anti-pollution procedures 5 ECTS	Ship Power and Electric Systems 5 ECTS	Marine Meteorology 5 ECTS	Maritime Law 5 ECTS	
VII Semester	Quality Assurance and Marine Risks Management Onboard 5 ECTS	International Maritime Organization (IMO) Conventions 5 ECTS	Ship Commercial Management 5 ECTS	ECDIS I 5 ECTS	Radar Systems 5 ECTS	Cargo operations on dry cargo vessels 5 ECTS	
VIII Semester	Professional Knowledge and Competencies MN 5 ECTS	Marine Risks Assessment and Management 5 ECTS	Leaderships and Ethics 5 ECTS	ECDIS II 5 ECTS	Ship Management 5 ECTS	Bridge Resource Management 5 ECTS	

BSMA states that "on the basis of appropriate training and recognized seagoing practice, navigators will gradually be able to get an officer position on an ocean merchant ship". Subjects related to "Ship commercial management", "Quality assurance and Marine risks management", "Leadership and Ethics", and "Maritime Law" ought to be considered "gradually" after taking "appropriate training and recognized seagoing practice" as it is indicated in the program's aim. Furthermore, the subjects on "Ship commercial management" and "Ship management" seem to repeat the same purposes, so narrowing this subject down or uniting, thus using the rest of the ECTSs for higher-cognitive level training would be appropriate to fill the gap that employers complain about, for instance, lack in theoretical knowledge or draw conclusions. This can be done by, for example, allocating more teaching hours to profession-related subjects, such as Marine Navigation, and Ship stability. Such "constructive alignment" is the key for outcome-based education at higher maritime education (Biggs, 2014). The assessment system is in accordance with "Order No. 3 of the Minister of Education and Science of 5 January 2007": a 100-point system in each component of the educational program. Learning outcomes are evaluated for each component of the educational program with a mid-term and final assessment. The syllabi of each course include all the forms, methods, components, and criteria for knowledge verification.

4.3 Resource allocation and new development

The learning activities in the BSMA's maritime courses include lectures, group work, seminars, practical training, laboratory work, and sea-going training. A number of human resources are distributed accordingly (Table 5). The number of academic and support staff involved in the Maritime Navigation program is 71, which correlates the number of maritime navigation students. BSMA is using all available resources (hardware and software), laboratories, and Seafarers Training and Certification Centre simulators and equipment for achieving those programs' learning outcomes.

Table 5. Resource allocation at BSMA

Courses	Professors	Associate Professors	Assistant Professors	Assistants	Invited teachers	Total
Maritime Navigation	6	24	2	5	34	71
Marine Engineering	5	19	1	4	30	59
Marine Electrical Engineering	5	18	1	3	30	57

BSMA strives "itself to the development of MET leaders through academic excellence and community service"[3]. In October 2020, Poti branch of BSMA was opened in Poti that is equipped with the latest simulators and equipment for issuing professional seafarers for market needs. In 2021, 25th of June, the BSMA with the support of the Ministry of Economy and Sustainable Development, the Maritime Transport Agency and the Government of Adjara opened the multifunctional pool that will serve current students and seafarers for mandatory practical training in accordance with the standards developed by the International Maritime Organization[4]. Consequently, we could assume that in terms of infrastructure, the BSMA has the full support and receives the latest updates for the education and training needs.

5. Conclusion

This paper addressed the observable challenges in Georgian MET, which was reported by the BSMA surveys over the years. The main issue is an identified gap between the competence gained by the students and the expectation by employers, resulting in high unemployment rates despite great popularity in MET among young Georgians. Using a document analysis method, relevant curriculum development and delivery were examined from three areas: learning outcomes, teaching schedule and subject distribution, and resource allocation and new development.

Traditionally, seafarers' education and training were based on acquiring practical skills and cognitive skills to perform various and specific tasks on board. In contrast, maritime higher education focus is to develop analytical and critical skills. The modern and global tendency for MET connects academic components with vocational education, to give a student an academic degree. This brings new challenges to curriculum development, legislation in a global industry, and the needs of the shipping industry (Manuel, 2017). MET curriculum must take into account the "voices" of all interested parties: academia, the industry, and relevant authority or regulatory institutions, and use more effective teaching methods (De Agua et al., 2020). In this regard, BSMA is expected to further strengthen their partnerships with the government and shipping companies and promote lifelong learning in MET in order to adapt the changing industry needs.

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