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A REVIEWING AND FUTURISTIC STUDY OF MERCHANT MARINE EDUCATION IN THAILAND'S UNIVERSITIES

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ABSTRACT

Thailand's universities face several challenges producing ship officers including the effects of globalization, changing environment and cadets' attitude. This paper reviews the current ship officer's education offered at the only two Universities in Thailand, conducts a 5-year futuristic study, measures the occupation confidence of current cadets, and proposes a strategic approach for the educational institutions. The research methodology includes direct observation, interviews with, and a questionnaire. Three future scenarios are derived through interviewing 8 faculty lecturers and current and former executives, using the Ethnographic Future Research (EFR). The measurement of a cadet's occupational confidence index utilizes the Net Promoter Score (NPS) technique, with a sample of 200 students from the nautical science and the marine engineering courses. The study found that the offered curricula in these faculties must follow the rules and regulations issued by the International Maritime Organization (IMO), Thailand's Marine Department, and their respective Universities. These fixed requirements yield a higher cost of operations. Furthermore, the difference in the standards, the scarcity of qualified lecturers, and the reduction of prospective students are key challenges. Out of the three envisaged scenarios, the most-probable case is the frequent changes in the standards and regulations, the higher cost of training, and advancing technology impacting the nature of education. The occupation-confidence indices were measured and categorized for each branch of study, institution, and year of students. The results are negative in all sample sub-groups and become more negative among the senior students, which may affect their time spent working on a vessel at sea. The formulation of a strategic plan and subsequent conducting of operations should be consistent with the most-probable future scenario by being flexible adapting to changes in standards and in the educational environment and in preparing cadets for the international merchant fleet.

Keywords: Ship officers; ethnographic future research; net promoter score; International Maritime Organization

1. BACKGROUND AND SIGNIFICANCE OF THE STUDY

In the past, Thailand had only one government educational institution responsible for producing merchant marine officers to support sea freight operators as the Merchant Marine Training Centre (MMTC), under the Marine Department, Ministry of Transport. The demand for merchant marine officers increased significantly due to global-market expansion and, the number of merchant marine officers from MMTC was insufficient for supporting the labour market at that time. Burapha University established the Maritime College in 2000 (Burapha Logistics, n.d.) and has developed into the Transport and Logistics College and now is the Faculty of Logistics. The faculty began a Bachelor of Science program in Nautical Science in order to produce ship officers (Navigation) and this is the first production of ship officers at a university. In 2006 Kasetsart University established Bachelor of Science Program in Nautical Science and modified its existing shipbuilding and marine engineering courses into 3 major subjects which are Naval Architecture, Marine Engineering, and Offshore Engineering (Kasetsart University Sriracha Campus, n.d.). It also established the "Faculty of International Maritime Studies" located in its Sriracha Campus. Therefore, now there are only two Universities in Thailand offering merchant marine officer educational programs to support the labour market for international sea freight operators.

Throughout several years, changes have occurred that affect the education system of Thailand and the production of ship officers in Thailand's universities. Even though they are state universities; they are responsible for budgeting for those programs themselves. In addition, merchant marine officers are a profession which must be accepted internationally with professional certification according to the level of navigators or engineer officers. Therefore, these faculties must follow the rules and regulations issued by the International Maritime Organization (IMO) and Thailand's Marine Department. Those rules and regulations are changed often. At the same time, program management must follow their university's standard. Moreover, Thailand has small merchant marine fleet when compared with the global merchant fleet. Also, changing social and labour structures and other environmental factors have affected the production of future ship officers.

The researcher is interested conducting a study on the current situation to see if there has been any change from the previous study of 7 years ago (Luksanato, 2013). It will look at the impact in the future with Globalization with communication via modern technology and digital systems, and with changes in education systems such as online learning and availability of information. This study will focus on quality as the key factor for the new generation with a spirit of creation and ability to confront new challenges in the future (Jopsanjorn, 2014). Moreover, the occupation confidence and loyalty of current cadets will be a key factor to time spent working in a vessel at sea in the future. This study will review the current situation. Being away from home for long time is one of the major stress factors influencing the decision to work on a vessel (Thomas et al., 2003). Therefore, this important information will help the university to formulate a strategic plan for conducting operations in order to produce enough competent ship officers to meet with labour market in the international maritime industry. Universities should conduct operations consistent with the changes in the context while being flexible to adapt following the changes.

2. OBJECTIVES OF RESEARCH

1. To review the current ship officer's education offered at the only two Universities in Thailand.
2. To propose a 5-year futuristic scenario, to examine the changes and to formulate scenario a strategic plan and appropriate process.
3. To measure the occupation confidence index of current cadets.

3. RESEARCH METHODOLOGY

1. Collecting secondary data from various sources, including research, documents, articles, etc., and record important issues or incidents related to the research from the direct observation.
2. Using open-ended interview questions for the EFR (Ethnographic Future Research) technique which the researcher has applied appropriately to the context, content and scope of the research in order to respond the research objective, as follows:

2.1 Gathering interview information from all 8 experts and eliminating excess data and irrelevant information with the research framework.

2.2 The result is written by consideration of coverage content from interview by using concise and clearly understand language and also preserving the original meaning of the interviewees as much as possible.

3. Using the relevant questionnaire and clear group of the sample which are university students from the nautical science and the marine engineering courses. For measurement of occupational confidence index the Net Promoter Score (NPS) technique was utilized by reviewing the questionnaire format for accuracy in this technique. The open-ended questionnaire is measured by a rating scale, 10-point Likert scale (from 1= not at all likely to 10 = extremely likely).

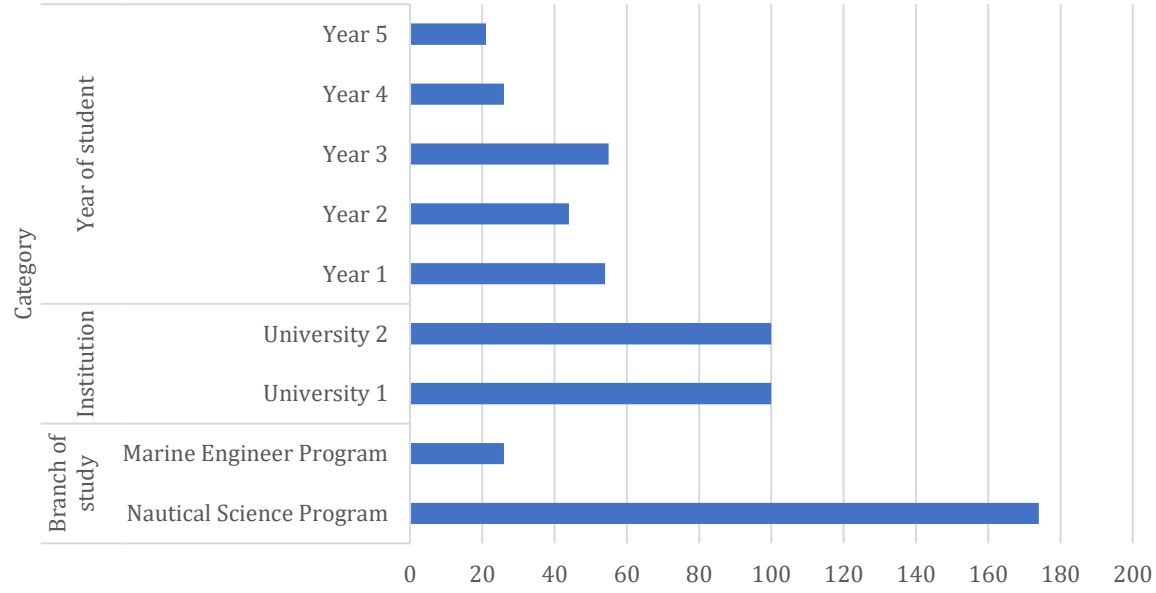
4. Integrating obtained information from this study to respond to the research objectives, with summary and discussion of the results for benefits and value of utilization.

4. THE SCOPE OF THE RESEARCH

The data of this research was collected from education institutions which offer ship officer's education by applying the EFR technique and by sampling from the merchant marine students from both universities.

1. 8 experts who are working or have previously worked related to with the production of seafarers in the universities not less than 10 years were selected. They consist of 1 person from the former executive and founder of the institution that produced ship officers, 2 people of the current executives from two universities, 4 people from instructors in curriculum and trainers from 2 universities, 1 person from the private maritime institution's executive.

2. The sample group for measurement of occupational confidence is current cadets from both universities. The sample size of this research is calculated by using Taro Yamane (1967) formula with 95% confidence level. The number of samples are not less than 179 people from the population of 326 people. It can be divided by 1) program of study: 174 students in nautical science program and 26 students from marine engineer program, 2) institution: 100 merchant marine students of each university and 3) year of student: year 1 = 54 people, year 2 = 44 people, year 3 = 55 people, year 4 = 26 people and year 5 = 21 people. Total was collected 200 samples in each category, as shown in Figure 1.



	Branch of study		Institution		Year of student				
	Nautical Science Program	Marine Engineer Program	University 1	University 2	Year 1	Year 2	Year 3	Year 4	Year 5
No.	174	26	100	100	54	44	55	26	21

Figure 1: Number of Sample Groups

5. THE RESEARCH RESULTS

The results of this research will be presented in the 3 important issues as follows;

5.1 Current Ship Officer's Education

5.1.1 The Operation

Nowadays, the operation process for ship officer's education of both studied universities must follow the rules and regulations issued by 3 organizations (which are no different from the past, the only adjustment being in the regulations of each organization) as follows;

1) The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) by the IMO. The universities must proceed to set the curriculum to meet their requirements such as course training, subjects and hours. It is adjusted to follow the university's operational context such as the adjustment of hours to the credit system. Also, there is a periodic assessment by Thailand's Marine Department, Ministry of Transport.

2) The Marine Department, Ministry of Transport regulations regarding certificate of competency. It is a requirement that the universities must carry out academic and practical training for the students such as short course training and practical training at sea determined by the Marine Department, as an associate member of the International Maritime Organization in order that the merchant marine students will be able to qualify as officer in charge of navigational watch on ships of 500 gross tonnage or more, before being able to work on vessel.

3) The difference of graduation regulations in both universities are as follows: 1) students must complete the course within 5-year course period. Full-time students can graduate no later than 8 regular semesters and no longer than 10 academic years. Typically it involves 4 years studying in the university and 1-year practicing at sea on a cargo ship. 2) 4 years study at the university leading to a Bachelor of Science degree in nautical science. The practical part at sea is voluntary, if the graduate wishes to be qualified for the certificate of competency for working on a cargo ship in the future.

5.1.2 Problems and Obstacles in the Operation

The important factors in the operation are the regulations of the production of ship officers in universities. They must be complied with as determined by the IMO, of which Thailand is a member, as its role is to create a regulatory framework for shipping industry which is universally adopted and implemented. The Marine Department, Ministry of Transport supervises and regulates water transportation and the maritime industry of Thailand. Furthermore, each university regulation is under the supervision of the Ministry of Higher Education, Science, Research and Innovation. Regulations from many organizations are the reason for some obstacles and limitations to operation as follows.

1) Cost of operations

The cost of operations for ship officer's production is a significant issue which may lead to major problems in the future. The same problem was identified in the research studied 7 years ago. To produce the ship officer requires lot of resources such as ship for practical training at sea during years 1-4 of study, and which have a very high cost for each training session. Currently, ships of the Marine Training Center, Marine Department are used for this training. For operations, compensation of instructors including external instructors with experience and expertise in their profession is needed (income of those who are a full-time lecturer and working in the private company extremely varies). There is higher cost of equipment for training such as bridge simulator room etc. From the past to the present, the cost of university's operation is almost managed and operated by the universities themselves without proper support from the government. These costs have a tendency to get higher than in the past.

2) Difference in standards

The different formulation of standards and regulations between universities and government agencies that regulate the professional standards from the Marine Department and IMO impact the selection of lecturers in the maritime field in the university. For professional qualification the highest diploma required is a Master Certificate but, in universities, lecturers are selected based on by academic qualifications. This causes former Masters or captains, who have knowledge and experience in their profession, uncertainty in terms of income and working life because wage rates will be determined based on education background rather than vocational certificate. Moreover, education level and academic works have an effect on job security status of university lecturers; the problem has not yet been resolved and is further more likely to continue to have an impact.

3) Qualified lecturers and students

It is difficult to choose the person who has knowledge and experience to become faculty staff or lecturer due to the different wage rates between lecturers and professionals on a vessel at sea. However, there are some people who would like to return to be lecturers after working on a vessel at sea for such a period of

time. They have to adjust to follow the system and standards of the university and their experience cannot be accumulated for career growth. From the learner's aspect, they are the key person who will work in the maritime industry in the navigation section and engine section. It has lower competition rates and admission scores than in the past and therefore, selection of talented students will be more difficult. The changing social environments such as reduction of birth rate, single family with only one child will impact student numbers. The ship officer career requires patience and sacrifice to be able to work on a vessel at sea and to stay away their family for long period. The ease of entering into the university than before because of the reduction in competition rates and admission scores may affect the quality of Thailand's ship officers in the future.

5.2 Future Scenarios, Strategic Plan and subsequent Conduct of appropriate Operation in University to produce the Ship Officers in the Future (2020-2025)

From interviews using purposive technique of 8 people: executives, former executives and lecturers related to producing ship officers, the results of the study are summarized in 3 key futuristic scenarios.

5.2.1 Optimistic Realistic Scenario

1) Providing opportunities for a greater variety and flexibility of educational models than today, such as credit accumulation patterns of the unit, and learning models that rely on information technology as a driving tool.

2) Providing a wide accessibility to global labour because of changes in the global society.

3) Wider acceptance in the group of global maritime transportation members: The quality of a Thai ship officers will be higher following standards and regulations of the International Maritime Organization (IMO) which will have a positive affect entering the maritime global labour market.

5.2.2 Pessimistic-Realistic Scenario

1) Wage rate conditions of lecturers in universities disadvantages recruitment of qualified lecturers. If the problem is not solved, it will become one of significant obstacles.

2) The standards and the regulations issued by IMO (International level) and Marine Department (National level) are often changed. If the plan is not implemented well, the management will be the problem.

3) The cost of operation of producing the ship officers will increase since training courses and education must follow the regulations and standards which continuously change.

4) The cost of the university's operations will be higher in order to meet the requirements of IMO and Marine Department and also the graduation standard of the university.

5) The reduction of the number of qualified students become a key challenges due to the reducing competition rate of admission and social changes impacting their education and career attitudes.

5.2.3 Most-Probable Scenario

1) The educational institutions must adapt following the changes of the standards and requirements of IMO and the Marine Department.

2) The operation cost to produce the ship officers will increase.

3) The cadet must work in the international merchant fleet because of a bigger demand than the national fleet. The Thailand merchant fleet is small.

4) Advance technology will impact the nature of education.

5.2.4 The Strategic Plan and the Operations

The production of ship officers in the university is still faced with several problems, some of which are the same problems which have been unable to be resolved from 7 years ago. The fact that both universities are under government supervision, have more responsibility for budgets by themselves, with operations following several rules and regulations from many organizations in term of professional aspects and university aspects leads to the higher cost of the production of the ship officers and insufficient budget from the government. In addition, the declining birth rate affects the number of the high school students who are entering the university. Therefore, the strategically approach for the university in the future should be cautious operation according to the most-probable scenario in order to catch up with global change by considering together with Optimistic Realistic Scenario and Pessimistic-Realistic Scenario. It should adjust the new paradigm such as operation with clear goals and indicators, decentralization, continuous improvement and the development and working as a team. Institutions should set a 5 year strategic plan for setting the direction of department. It should have an annual action plan to pass the strategic plan to the operation sector in order to implement the plan. On the other hand, it should be aware of the situation analysis in order to manage with the most-probable scenario.

5.3 Net Promotes Score (NPS) per merchant marine student's occupation

Occupational confidence index or Net Promotes Score (NPS) is a marketing tool applied for the study (Reichheld, 2006). The answers of the sample group are divided into 3 groups: promoter, passive and detractor.

The question being asked "How likely is it that you would recommend working onboard ship (ship officers) to friends or colleagues?". From a scale of 1-10, the occupation-confidence index is measured and categorized for each program of study, institution, and year of students, as shown in the following tables.

Table 1: Net Promoter Score (NPS) Categorized for Program of Study

Score	Nautical Science Program (Navigation)		Marine Engineer Program	
	No. of responding	Percentage	No. of responding	Percentage
1	6	51.7%	2	42.3%
2	4		0	
3	9		0	
4	10		1	
5	30		2	
6	31		6	
7	37	39.1%	8	34.6%
8	31		1	
9	7	9.2%	3	23.1%
10	9		3	
Total	174	100.0%	26	100.0%
Note*	NPS=Promoter(%)-Detractor (%) = -43%		NPS=Promoter(%)-Detractor (%) = -19%	

Table 2: Net Promoter Score (NPS) Categorized for Institution

Score	University 1		University 2	
	No. of responding	Percentage	No. of responding	Percentage
1	3	49.0%	5	52.0%
2	2		2	
3	4		5	
4	4		7	
5	17		15	
6	19		18	
7	23	35.0%	22	42.0%
8	12		20	
9	8	16.0%	2	6.0%
10	8		4	
Total	100	100.0%	100	100.0%
Note*	NPS=Promoter(%)-Detractor (%) = -33%		NPS=Promoter(%)-Detractor (%) = -46%	

Table 3: Net Promoter Score (NPS) Categorized for Year of Students

Score	Year 1		Year 2		Year 3		Year 4		Year 5	
	No. of responding	**%**	**No. of responding**	**%**	**No. of responding**	**%**	**No. of responding**	**%**	**No. of responding**	**%**
1	2	33.3%	2	43.2%	1	61.8%	0	61.5%	3	66.7%
2	1		2		0		1		0	
3	1		2		2		3		1	
4	2		1		6		0		2	
5	3		7		11		7		4	
6	9		5		14		5		4	
7	17	50.0%	7	34.1%	13	34.6%	5	34.6%	3	33.3%
8	10		8		6		4		4	
9	5	16.7%	4	22.7%	1	3.6%	0	3.9%	0	0.0%
10	4		6		1		1		0	
Total	54	100.0%	44	100.0%	55	100.0%	26	100.0%	21	100.0%
Note*	NPS=Promoter (%) -Detractor (%) = -16%		NPS=Promoter (%) -Detractor (%) = -20%		NPS=Promoter (%) -Detractor (%) = -58%		NPS=Promoter (%) -Detractor (%) = -58%		NPS=Promoter (%) -Detractor (%) = -67%	

5.4 The Analysis of the Net Promoter Score (NPS)

5.4.1 Categorized by Branch of Study

When categorized for branch of study of Nautical Science/Marine Science (Navigator), it is found that occupation-confidence index has accounted for -43 percent as seen in the Table 1, and the marine engineering branch has -19 percent as in the Table 1. When considering both branches of study, it is found that the occupation confidence index is negative in both branches, with the nautical science branch being more negative than the marine science branch.

5.4.2 Categorized by Institution

The results show that students in university 1 have occupation-confidence index at -33 percent as seen in the Table 2, while students in university 2 have -46 percent as seen in the Table 3. When considering both universities university 2 has a more negative score than university 1.

5.4.3 Categorized by Year of Students

The results show -16 percent for first-year students, -20 percent for second-year student, -58 percent for the third- and fourth-year students, -67 percent for the fifth-year students, as seen in Figure 2.

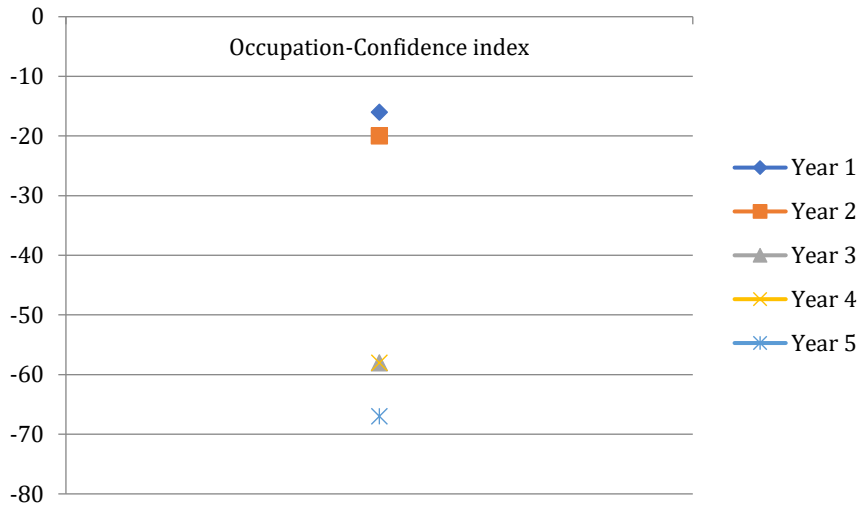


Figure 2: Comparison of the Occupation Confidence Index of the Students

When considering the confidence level of each year of students, the results are negative in all sample sub-groups and become more negative among the senior students. Senior students have generally more knowledge and experiences than junior students and the research results show that senior students are continuously decreasing in their occupation confidence.

6. CONCLUSION AND DISCUSSION

This study found that the offered curricula in the only 2 universities must follow the rules and regulations issued by the IMO, and Thailand's Marine Department in order to comply with international profession standards for working on the cargo ship, and also the graduation regulations of each university. Many problems found in the past have not been resolved and have become more serious such as the cost of operations and, the frequent change in regulations in order to raise the standards of both professional and academic aspects. These two aspects are not comparable or equivalent in many ways. The management in universities is more difficult because of the need for self-sufficiency even though they are under the state university impacting to the current operation of the universities.

This study proposes the most-probable scenario in 5 years in order to aid the formulation of a strategic plan and subsequent operations. Universities should be flexible to adapt to be consistent with the changes in the standard and regulations issued by the IMO, Thailand's Marine Department, the higher cost of operations, preparing graduates for the international merchant fleet, and advance technology impacting education patterns in the future. How will universities prepare to manage those issues and include consideration of the Optimistic Realistic Scenario and the Pessimistic-Realistic Scenario? Operations in the university will use more

IT in the future, with flexibility and the design of the education model to catch up with the changing global society. At the same time, the management system in the future must make strategic plans to match with the most-probable scenario, in order to create qualified graduated cadets to meet with the labour market requirements. They should have important skills such as critical thinking and be able to analyse all aspects under the phenomenon of the technology development era (Cicek et al., 2019).

The occupation-confidence index results are negative in all cases, especially when categorized by year of student and the results become more negative among the senior students. It can be presented that they are not quite appreciated with the career which may affect their time spent working on a vessel at sea in the future. When working life is too less, the shortage of ship officers will occur and this will cause loss of valuable human resources in the international maritime industry. Educational institutions should encourage all students once they enter university regarding knowledge, understanding, positive attitude to the occupation, and useful information; for example, tax benefits, legal welfare care, reasonable and worthy compensation.

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