

Tertiary Level Maritime Education in Sri Lanka: Needs and importance of Simulator based components

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Abstract- An increasing demand for seafarers is a corollary of the growth in the world merchant fleet. The Maritime industry has evolved from a traditional skill based, labor-intensive trade to one demanding sophisticated tertiary education. This study firstly investigates the academic needs and lacks of Sri Lankan Maritime professionals and then moves to ascertain Shipping Company qualification expectations focusing on tertiary level Maritime Education. The methodology for the first component had a population of 164 Sri Lankan merchant Seafarers with a Sri Lankan CDC/ COC. An online survey was conducted for a period of 3 months. The analyzed data recognize that 76.2% of the population of Sri Lankan merchant Maritime professionals are in possession of Diploma level qualification related to Maritime Sciences. 90.2% of the population do not have a degree in a related field and recognize a need in for a BSc degree in Maritime Sciences. The methodology for the second component had a population of 10 Shipping Companies and the instrument was a Google questionnaire. The findings indicate 50% of the respondents Strongly Agreed/ Agreed that a BSc is conducive towards job placements and highlight that many Sri Lankans lost their first promotion opportunity to a less experienced graduate from another seafaring country. Both populations placed high importance on Simulator components. Thus, through systematic and synchronic comparison of the findings of the two components, this study stresses the necessity of BSc degrees in Maritime Sciences for Sri Lankan seafarers and aims to draft the mandatory policy paper.

Index Terms- Experienced seafarers, Shipping Companies, Tertiary Level Maritime Education, Simulator studies

I. INTRODUCTION

The Review of Maritime Transport (2020: 11) states that at the beginning of 2020, 'the total world fleet amounted to 98,140 commercial ships of 100 gross tons and above, equivalent to a capacity of 2.06 billion dwt. In 2019, the global commercial shipping fleet grew by 4.1 per cent, representing the highest growth rate since 2014'. The Review further identifies 'a strengthened case for digitalization and dematerialization' and 'adopting technological solutions and keeping abreast of the most recent advances in the field will become a requisite and no longer an option (p. 14). Conforming to the above requisite efficient, effective and innovative solutions, especially for upgrading Marine Education and Training (MET) is mandatory. Lau and Ng (2015) state that contemporary maritime education has transformed from a practical, hands-on approach to tertiary education emphasizing on business and analytical skills, as characterized by the increasing number of tertiary institutions offering undergraduate and postgraduate maritime programs. With the growth of the world fleet, recruiting qualified, competent and properly trained seafarers has become ever more essential to shipping company operations.

Agreement comes from Mangan et al. (2001) to reinforce the need for maritime programs to adopt a wider strategic view, as opposed to a narrow, operational view reaching tertiary level. A maritime graduate with comprehensive theoretical knowledge and practical competencies who would be able to serve in the shore-based industry as well as onboard vessels after completing the degree programme. Devoid of training onboard many maritime scholars emphasize the growing need for increasing simulator-based instruction time within academic maritime degrees. The importance of marine simulators is also stressed by Suppiah (2007) who states that the use of marine simulators combined with traditional instruction appears also to be an effective and comprehensive method of facilitating learning. It is important that conscious attempts are made to bridge the gap between theoretical instruction and practical application he further states that shipping companies should be encouraged to cooperate and contribute to the scholarship of students by giving them an opportunity to undergo proper training either onboard or through the use of marine simulators. The steps taken are more likely to ensure that highly competent seafarers are employed onboard.

Dawicki (2020) used descriptive phenomenology to understand how graduates of an applied nautical science program perceived their learning and skill development in two simulator-based ship handling courses in addition to perception levels of work-readiness. The results of this study demonstrate the important role the simulators play in a curriculum in developing a broad level of technical ship handling skills across a range of vessel types and situations. According to Bailey and Belfield (2019) the rigid distinction between academic and vocational education is a false dichotomy, at least as it relates to professional maritime work in the twenty-first century that requires life-long learning. Manuel (2017) states that there is no real academic freedom in dropping an anchor on a very large crude carrier (VLCC) or safely navigating the traffic separation scheme in the English Channel. Successfully carrying out these types of practical activities is dependent on the successful acquisition of a specific set of “toolbox skills” and competencies. Reviewing literature on the practicality of simulator based instruction in academic courses Pan and Hildre (2018) claim that simulators can be used to bridge gap between the academic outcomes and industry needs of expertise and competence. The satisfying of this gap can be gained through creating a high weightage simulated environment within the degree course. This environment is created not only through theoretical subject matter, but also through extensive skills training on *simulators* throughout the course. According to Kelly et al. (2014) and Rochester et al.(2012) the teaching of this challenging applied degree simulation can link academic learning with professional activities, thus many academic programmes use it as an alternative for industry placement. Furthermore Cunningham (2015) and Jamil and Bhuiyan (2021) state that maritime simulation is a technology-enabled virtual reality environment. Thus, the pedagogical characteristics of maritime simulation are complex because maritime programmes combine cognitive and behavioural features of training. Currently pedagogical aspects of maritime simulation are an emerging field in higher education literature.

To justify the need for degree programme this study now reviews literature on BSc Nautical Science degrees offered by universities in other countries followed by the Sri Lankan state of affairs. Firstly, this study investigates the maritime degrees offered in India. The curricula of the 3-year undergraduate professional degrees contain the basic academic and practical exposure to operate marine vehicles. The syllabus covers 6 semesters and the course work include: Marine Engineering & Control Systems, Navigation, Cargo work & Maritime Communication, Naval Arch - Ship Construction, Ship Operation Technology, Voyage Plan & Collision Prevention, Ship Visits Boat Work, Maritime Law from the maritime sector and Mathematics, Physics, Environmental Science, Engineering Chemistry, Electronics as peripheral subjects. The final year leads to a Project. After sea service of one year and a viva-based examination, the undergraduates are awarded a second mate’s certificate of competency and their designation is as a Navigation officer. The graduates receive the first mate’s foreign going Certificate Of Competency (COC) after completing 18 months of sea service.

Established in 2014 Ocean University of Sri Lanka, at present, provides BSc. Degrees with a duration of 4 years in Coastal and Marine Resources Management, Oceanography Marine Engineering etc. As a special purpose government university, it provides both Undergraduate and Vocational level courses. But from the applicants for the BSc. Degrees only students with the highest Z-Score at G.C.E. Advanced Level will be selected. Additionally, there is a need for a tertiary level qualification amongst experienced seafarers. Thus, there is a requirement for the provision of a degree for students and experienced seafarers who are keen on entering the Maritime field. CINEC Campus (Pvt.) Ltd., as the best contender, needs to address the demand for degree qualifications amongst Advanced Level qualified students and more importantly experienced seafarers. Prior to the formulation of BSc. Degrees in maritime Sciences this study collects data from experienced seafarers and shipping companies on maritime tertiary education requirements in Sri Lanka.

II. METHODOLOGY

The methodology sought to investigate the following Research Questions (RQs) which carry high relevance to Maritime Education and Training (MET) practices in the Sri Lankan context.

1. What are the Degree qualification expectations of seafarers in comparison with shipping companies for maritime education in Sri Lanka?
2. What weightage and importance are placed on simulator training modules in such tertiary level Degree?

The methodology for the first RQ had a population of 164 Sri Lankan merchant Seafarers who had obtained a Sri Lankan CDC/ COC. The instrument was a questionnaire. An online survey was conducted for a period of 3 months. The methodology for the second RQ had a population of 10 Shipping Companies: Ceyline Shipping, Pacific International Lines (PIL), CMA CGM & ANL (Singapore) (Pvt) Ltd., Pacific Carriers Limited (Singapore), Marinec Services (Pvt) Ltd. and ABC Shipping (Pvt) Ltd. Systematic sampling procedure was selected due to the prevailing COVID 19 environment. A Google Questionnaire with 10 questions collected data.

III. RESULTS AND ANALYSIS

Selected descriptive figures of results are tabled below emphasize that a high percentage of the seafarers and majority of the Maritime Companies strongly agree/agree that a BSc degree or above in Maritime Sciences are advantageous to Sri Lankan seafarers.

a) Seafarers

i. Respondent profile analysis:

Responding to question 05: ‘Do you have a degree (BSc, MSc, PhD, etc.) related to the maritime field?’ 90.2% of the population claimed that they do not have a degree in a related field. The analyzed data for question 05 recognizes that 76.2% of the population of Sri Lankan merchant Maritime professionals claim to be in possession of Diploma level qualification related to in Maritime Sciences.

ii. Respondent Needs analysis

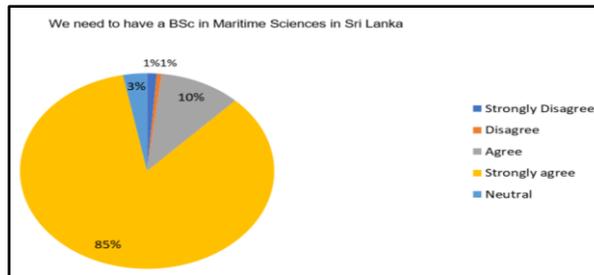


Figure 1: Question 07 - Need for a BSc in Maritime Sciences

The descriptive statistics in Figure 1 above denote that 85% of the respondents state that there is a need in Sri Lankan Maritime professionals for a BSc degree in Maritime Sciences.

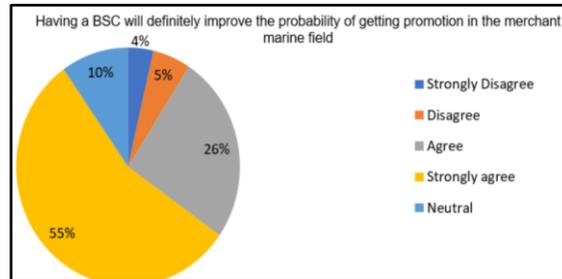


Figure 2: Question 10 - BSC and getting promotions

81% of the respondents, as shown in Figure 2 above state that having a BSC will definitely improve the probability of getting a promotion in the merchant marine field.

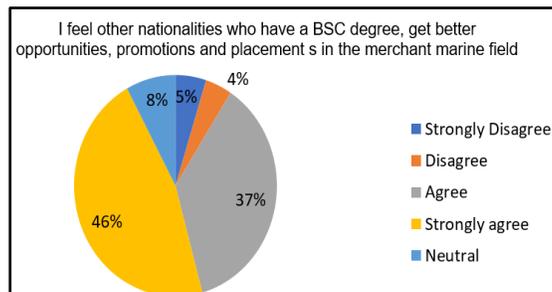


Figure 3: Question 15 - Comparison with other nationalities with a BSc degree,

Findings further indicate that the majority of the respondents need BSc degree in Maritime Sciences to improve their professional confidence and for better opportunities in placements and promotions in the merchant marine field (Question 16). The majority state that they feel marginalized as many Seafarers of other nationalities who are juniors, equal or higher rankers have degree level qualifications in Maritime Sciences (Question 18). Approximately all respondents state that if a degree program is implemented (Question 21), they would do it in the earliest possible opportunity (Question 22), and facilitation should be provided to institutes which can provide BSc degree in Maritime Sciences strictly complying with international standards (Question 23).

a) Maritime Shipping Companies

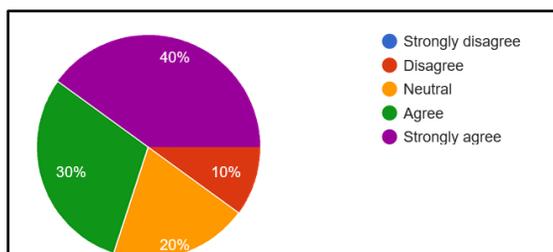


Figure 4: Q - We have experience in good Sri Lankans losing their first promotion opportunity to less experienced graduates from another seafaring country

As indicated by the above illustration 70% of the responding companies Strongly Agree/ Agree that promotional opportunities of experienced seafarers are affected by the lack of a maritime degree.

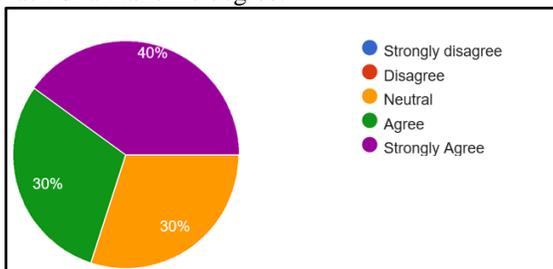


Figure 5: Q - Our company feels that Sri Lanka needs a BSC in Maritime Sciences.

The findings indicate 50% of the respondents Strongly Agreed/ Agreed that seafarers with BSc or above will help them to aggressively perform in finding job placements; good Sri Lankans lost their first promotion opportunity to a less experienced graduate from another seafaring country. Addressing the research question of this study the Degree qualification expectations of seafarers in comparison with shipping companies for maritime education in Sri Lanka indicate a correlation. Synthesizing the findings of the two populations it could be stated that both populations have a high percentage of agreement in the criteria tabulated below.

Table 1: Synthesis of the major findings

QUESTION CRITERIA	Seafarers	Shipping Companies
	Strongly agree/agree	
1. Need for a BSc in Maritime Sciences in Sri Lanka	95%	70%
2. Better employment opportunities with BSC	92%	70%
3. Inability getting promotions without BSC	81%	70%
4. BSC in Maritime Sciences programs must include simulator training	69%	90%

Additionally, the responses to question criteria 04 in the above table stresses the need for tertiary level simulator training Seafarers and the recognition of such training in the Shipping Companies.

IV. CONCLUSION

Most of the respondents possessed a COC, a certificate of authority granted under regulations of the Merchant Shipping Act to a seafarer, qualifying him to serve in the appropriate capacity specified in these regulations. The Classes of the COCs of the respondents ranged from Master to the Rating Certificate. Almost all of them claim a need for a degree in the maritime field. To continuously improve the quality of the MET system, qualified seafarers are needed to accomplish the requirements of modern shipping.

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