MARITIME EDUCATION IN INDIA – A STUDY ON PRODUCTIVITY ENHANCEMENT

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ABSTRACT

The central theme of this paper is to study the feasibility of enhancing the productivity of maritime education and training in India. Productivity enhancement comes from technological advancements, supply chain and logistics management, and increased skill levels within the workforce. This study therefore analyses the strategies to upgrade and enhance the relevance of skills training in maritime education. Skills development is central to improving productivity. In turn, productivity is an important source of improved living standards and growth. Other critical factors include macroeconomic policies to maximizing onboard training opportunities by procuring training ships, enabling an environment for sustainable shipping, fundamental investments that would support physical infrastructure contemporaneous with shipboard work environment.

Effective skills development systems connect education to technical training, technical training to industry requirements which in turn to workplace and lifelong learning. This study also examines the challenges faced by Indian maritime administration at different levels of maritime education, training and development and the possible solutions to surmount the challenges by means of enhancing maritime capacity building and employability. Further, research and development has always remained as an insignificant component in the maritime education and training in India. Despite, R & D being an indispensible factor for productivity enhancement, it has not received the much needed attention from the maritime training academics which are primarily driven by the need to impart the minimum training required to handle the routine, emergency and critical shipboard operations as per the STCW 78 convention (as amended).

The need for advancing the maritime education from basic skill based to research based is yet to be perceived in a comprehensive manner as the focus is only on short term perspective. On that score, the role played by a maritime
The university is imperative to create a change in maritime education from the skill based domain to research based domain. To that end, a maritime university in India is challenged by parallel norms, stipulation and demand from accrediting, approving and awarding authorities. Thus, this study intends to haul out the existing and potential impediments in the path and progress of enhancing the productivity of maritime education and training in India.

**Key words**: Maritime Education, Productivity, Maritime Research, Sustainability, Director General (DG) of Shipping.

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1. **INTRODUCTION**

India has been a seafaring nation for centuries. India’s Maritime history goes back to Indus valley civilization, taken an active trade existed with Mesopotamia and Egypt. The Eastern Coast then known as Kalinga, used to trade heavily with East Asian Countries. Evidence of active seaborne trade from western coast to Middle East also exists. The new era started with East India Company’s trading between India and Europe. These developments have necessitated presence of large number and variety of skills amongst seafarers, importing skills required formal education system and this led to growth of Maritime Education system globally.

It is widely recognised that the future of India in global shipping will largely depend on its strength of providing seafaring-human-resources of highest standards. India has maintained till date a coveted place in the international shipping as one of the respected suppliers of not only competent seafarers, but also, valued professionals and strategic ship managers to international maritime sector. While this has been the outcome of the decades-old maritime education, training and examination system in India, it now needs to be recognised that in the increasingly competitive manpower supplying scenario in International Shipping, excellence in maritime education and training is a necessity.

India's first training Institute was stated by Bombay Steam Navigation Company in 1910 at Worli, Maritime training Institute in South East Asia, which was named as Training ship Rehman in 1972. The first government initiative came in 1972 with Marine ship named Training Ship Dufferin, followed by Training Ship Chanakya as JS Rajendra in Mumbai.

Almost two decades after maritime training in India was opened up for private participation, there are around 147 maritime institutes in the country offering pre-sea and post-sea training in varying streams. Though, all of them are functioning under the centralised control and monitoring regime of the Directorate General of Shipping, it is a well-known fact that there exists a wide variance in the quality of training imparted in these institutes. There are two Universities of Maritime Education (one Government and one Private) and 147 other institutions of Maritime Education offering Under-Graduate, Post-Graduate, Ph.D and Diploma Programmes in India.

The highest body of Shipping regulation in India, Director General of Shipping (DGS) is responsible for the operational development of the Marine Industry in India and hence the Maritime Education sector. India being a signatory to International Maritime Organisation (IMO) implements all the guidelines through DG Shipping.
Traditionally, the monitoring mechanisms of the Directorate largely depended on the physical inspection of the institutes by the inspection teams from the respective Academic Councils (ACs), predominantly comprising of the technical officers of the Mercantile Marine Departments (MMDs). This was considered to be an ideal option, not only because they formed part of the enforcement machinery of the government, but also in recognition of their domain expertise, arising out of their specialised maritime background, familiarity with the updated maritime convention requirements and most importantly their hands-on association with the examination and certification systems.

2. LITERATURE REVIEW

Before the Standard for Training Certification and Watch keeping (STCW) guidelines in 1995, the Government bodies were carrying out most of the Education and Training with IMO STCW ‘95 guidelines DG Shipping liberalized the Policy and invited the private players to take up the responsibility.

According to IMO (Ziarati, 2006) 80% of accidents at sea are caused by human error. It is reported that mistakes are usually made not because of faulty, deficient or inadequate regulations, but because the regulations and standards, that do exist, have been ignored. The IMO accident analysis reports (cited in Ziarati, 2007) clearly indicate the causes of many of the accidents at sea are due to deficiencies in education and training of seafarers or disregard for current standards and regulations as well as poor delivery of existing standards. A well-educated and trained workforce is necessary for a strong and successful water transportation industry.

The IMO Secretary General once said “As human element at sea is critical in ensuring safe, secure, clean and efficient operations, it is only feasible to secure, and to preserve, properly qualified human resources for the maritime industries through effective education and training – based on scientific and academic rigor; the development of a clear linkage between practical skills and management techniques; and unerring focus on quality.” (Angelica M Babylon, 2011).

In today’s challenging world, all professionals need to keep themselves updated. This requires all respective individuals to undertake additional academic and/or vocational studies, not only for those in Undergraduate programmes but also for those in Postgraduate and Doctorate programmes. Supplementary academic programs provide improvement in Nautical Sciences, as well as in other maritime disciplines that are closely related to the Nautical Science such as Port Administration, Port Management, Shipping Agency, Maritime Security, Freight-forwarding, Insurance, etc. (Capt.Ergun Demirel, 2009)

Each graduate of the maritime institutions should be well educated and trained as an Officer of Watch (OOW) hence well-versed with the operational and management responsibilities on-board an oceangoing vessel. At the same time that s/he must be prepared to fulfil the officer’s role ashore. A well developed MET programme must include theoretical and practical education and training in a well-balanced curriculum and must ensure there are well-designed and internationally recognized programmes of education and training leading to higher qualifications and certifications for career progression as well as for job diversification. There is therefore a need for clear education and training pathways recognized internationally with clear progression routes onto degree and higher qualifications in the related subjects. (TUDEV, 2010)

One of the most important factors determining the educational process in maritime academies is the influence of the IMO legislative activity. Its revised STCW
Convention represents a very significant step forward, necessitating an improvement in curricula and encouraging the introduction of new didactic tools, among others, simulators. The education of an officer is an extremely expensive process due to the extensive range of theoretical and practical knowledge that must be acquired in order to practice the profession. A number of diverse reasons, including a sought after reduction in the associated costs of education, have seen both the introduction of various kinds of simulators into the training cycle of officers, and changes to the basic curriculum at Maritime Academies. Such significant changes are justified by more than cost reduction alone; other factors which have demanded an evolution in the educational process include the particularly rapid ongoing development in technical innovations which are immediately implemented on ships, combined with limits to the duration of a student's education, as well as the need to comply with the requirements of STCW’95. (T. Albayrak, 2007)

2.1. Methodology of the Study
The population of the study was considered as (a) the cadets (students) who are undergoing the seafaring courses viz., nautical science, marine engineering & other on-board related courses in India, (b) the institutions offering the seafaring courses. Two types of Questionnaires were prepared; one for the cadets and one for the institutions. The sample size considered for the study was 187 for the cadets and 17 for the institutions such as maritime universities, affiliated maritime colleges & maritime institutions. The questionnaires designed for the evaluation of the challenges and issues in the maritime education in India through structured questionnaires in order to elicit the information from the cadets (students) who have selected to do the course related to the deck-side or the engine-side and also from the maritime institutions which were running the on-board courses. The survey elicited the demographic and psychographic details structured under different headings.

2.2. Objectives of the Study
The objectives of the study are as follows:

1. To investigate the importance of maritime education & training in India.
2. To identify the challenges faced in the maritime education & training in India
3. To study the importance of productivity enhancement of maritime education in India
4. To understand the perception of young learners about seafaring career in India

2.3. Data Analysis and Interpretations
The study attempts to identify the importance and challenges in the maritime education & training. 54% of the respondents have taken engine-side courses such as marine engineering. 43.7% & 41.4% of the respondents are in the age group of 18 & 19 respectively and 56% of the students did not have any prior knowledge on seafarer’s work or shipping companies before entering their maritime institution. Obviously 95% of the students did not have any experience with the ocean or ship navigation before entering into the institution. It is evident from the study that all the sample respondents of the study happen to be male cadets and this shows that the on-board maritime education in India is still dominated by male cadets only. In order to have equal participation among male and female cadets, the on-board maritime courses have to be appropriately promoted to have more female cadets, in-order to have a healthy growth in the maritime sector. The traditional promotional methods of the maritime educational courses happen to be pamphlets, Information provided in the institutions website,
references made by parents & friends and the media. 35% of the respondents selected the present institute based on the information provided in the pamphlets/Institutions website. It is evident that 54% of the respondents had taken their own decision to join the present institution to do the course. 94.3% of the respondents had joined the course with the knowledge that they will be working on-board the ships and 46% of the respondents had taken the decision to take-up the sea career while they were in the third grade of high school itself. The success of maritime education depends completely on the satisfaction of the students who are undergoing such courses. 67% of the respondents are satisfied with the maritime education & training offered by the present Institution and the remaining 33% of the dissatisfied respondents had specified that they were dissatisfied because of the lack of proper training and also the lack of insufficient placement assistance provided to them.

2.4. Measure of Challenges in Maritime Education & Training

The issues in the maritime education & training has been measured based on psychographic study of the cadets who are undergoing the on-board courses. The psychographic study is done to elicit issues related to maritime education in India from cadets point of view. A set of 27 factors has been administered to the cadets. In order to test the reliability and validity of the data collected, the Cronbach’s alpha measure has been used. According to the Cronbach’s alpha test, the value of alpha in this study for the psychographic factors would be 0.727, which is considered to be acceptable.

Factor Analysis has been used to identify a small number of psychographic factors that may be used to represent relationships among sets of interrelated factors. In factor analysis, correlation matrix has been calculated and the factors were extracted. It would be desirable to proceed further into factor analysis if KMO value is greater than 0.5 and also the significant value of Bartlett test is less than 0.05. As per Table-1, the KMO and Bartlett tests are favourable for the factor analysis. The factors are extracted and loaded by using Principal Component Analysis. The Scree plot specifies the plotting of eigen values and the psychographic factors which have greater than one eigen value would be considered as the extracted factors. The scree plot shows that there are 10 extracted factors. The extracted factors are then rotated by using Varimax Rotation Method with Kaiser Normalization.

Table 1 KMO and Bartlett's Test

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .814 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1.046E3 |
| | Sig. | .000 |

It can be inferred from the factor analysis that the respondents have given more importance for certain psychographic factors than other factors. The respondents have selected the sea career mainly because of the Attractive Remuneration, Attractive lifestyle, Global exposure, Frequent visits to foreign countries, Long vacation and continuous employment. It is evident from the analysis of variance of the selected psychographic factors that the cadets who are undergoing maritime courses have a sort of strong opinion towards the sea career as well as their perception towards the potentiality of future job prospects. The Analysis of Variance of the psychographic factors has yielded an F-critical value of 36.086 and the respective p-value is 0.000, which is less than 0.05 (at 5% level of significance).
2.5. Interpretation of the Questionnaire Analysis:

The greatest challenge that the Indian maritime institutions have to face is the adoption of DGS curriculum & DGS guidelines. This gives far less flexibility to have global curriculum to be offered to the cadets at large. The curriculum designed by the DGS for the maritime jobs may have less emphasis on the multi-disciplinary aspect. The major implication of this would be the decrease in the productivity enhancement of the maritime education in India. If the cadets could not fetch a sailing job or if they become medically unseaworthy then the cadets career will be affected because of the fact that they cannot work in any other organisation. The curriculum which has to be offered to cadets must definitely earn a sort of living to the cadets other than the on-board jobs. The faculty resources would be considered as another important productivity enhancement factor with regard to maritime education in India. The faculty who normally teaches the curriculum of DGS should be imbied with appropriate pedagogy techniques. Most of the faculty resources are the seafarers without much training in teaching methodologies. The faculties must be trained to teach the fresh cadets in the appropriate manner. The Learning of Foreign languages must be made mandatory in the DGS curriculum so as to make the cadets to acquire global outlook. The Information Technology side of learning must also be made compulsory to the cadets to cope-up with the recent developments in the ship construction, ship navigation and other related areas. Skill development among the cadets must be imbibed to the cadets through an appropriate curriculum so that the cadets will be truly self sufficient. Research and Development of new methods of ship construction, port development & ship navigation must be included in the curriculum of their study. More emphasis must be given to the research oriented study among the cadets which is definitely lacking in Indian Maritime Education. Suitable policies have to be formulated by the Indian Government to train the cadets in Training Ships in order to acquire enhanced and productive training on board the ships instead of merely training the cadets through simulators. To sustain in this competitive world, the Indian maritime institutions must go-in for networking of companies. This essentially points out to the Institution Industry Integration (III). When the Indian
Maritime institutions are networked with the global shipping companies then getting placement for the cadets would be really simple. An another important aspect would be to maintain quality of operation and in order to maintain the quality of maritime education & training, ‘Comprehensive Inspection Programme (CIP)’ must be made compulsory to all the Indian maritime institutions. The CIP dispenses with the mandatory requirement for the ISO certification of the Quality System and the Grading by rating agencies. The CIP focuses on Infrastructure set-up and maintenance, Faculty & Human Resource Development, Student Development Programmes, Recruitment & Placement Records and Overall Performance & long-term prospects.

3. CONCLUSION

Maritime transport is the corner stone of international trade and a key factor driving globalization and competitiveness. The changing maritime conditions are accentuating formal training to a greater extent than in the previous years. The impact of technology has been really significant during the yester years and will continue to be so when training mariners. As the maritime industry competes with other industries, maritime education and training will need to address how best these students learn & sustain in the maritime field. This is because of the reason that the mariners’ conditions are difficult at sea than the employees who work on the shore. The productivity of Indian Maritime Education and Training can further be improved if the cadets are provided with real training on board the training ships in addition to simulator training. The unique requirement of the maritime industry favors the multi-disciplinary learning with hands on experience at the maritime institutions will definitely enhance the productive maritime education and training in India.

REFERENCES