



MENTAL WELLBEING OF MARITIME EDUCATORS AND SKILL GAP FOR TRAINING NEEDS ANALYSIS

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Abstract. Maritime educators play a crucial role in preparing future seafarers, but behind their dedication lies a growing struggle with mental health. Long contact hours, constant regulatory demands, and the pressure to deliver high-quality training often led to stress, burnout, and a disrupted work-life balance. At the same time, the fast-paced evolution of maritime technologies has created a skill gap, making it harder for educators to keep up with the latest industry standards. This study explores these twin challenges, Mental well-being and Professional competency, faced by maritime educators. The aim is to understand how occupational stress affects their performance and to identify key gaps in their training capabilities through a structured Training Needs Analysis (TNA). Surveys, interviews, and interactive workshops focusing on mental health support and targeted upskilling are conducted. The outcomes were promising, with participants reporting lower stress levels, greater engagement, and improved alignment of teaching practices with industry requirements. Ultimately, this dual approach supporting mental wellness while building professional capacity can create a more resilient, motivated, and future-ready maritime teaching community.

Keywords: Maritime Educators; Mental Well-being; Professional Competency; Training Need Analysis; Skill Gap.

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1. INTRODUCTION

Approximately 90% of international trade is executed via maritime transport, with seafarers fulfilling the vital responsibility of transporting the world's goods. The growing demand for efficient and rapid movement of commodities, alongside technological progress, has introduced new hazards to the health and safety of seafarers (Jensen et al., 2006). Consequently, governmental authorities and maritime firms need to acknowledge seafarers, who undertake one of the most arduous professions globally, as essential workers and grant them the recognition they merit. The existence of seafarers at sea is laden with challenges stemming from the physical and psychological demands of working onboard. The maritime environment, occupational stress, and social isolation negatively impact the health of seafarers (ISWAN, 2020). Seafarers reside on vessels that function as both their residences and places of employment, spending months away from their families and engaging in limited social and physical activities. All these arduous conditions affect the psychological well-being, social and emotional health, physical health, and spiritual health of seafarers. Recently, the International Maritime Organisation (IMO) designated sailors as vital workers, prompting a shift in focus towards improving the physical and psychological well-being of seafarers in the marine industry.

The maritime business has posed significant challenges since antiquity. The health, job satisfaction, work motivations, navigational safety, personal happiness, and both physical and psychological wellness of seafarers have considerable implications for their safety and those of others Nautilus Federation, (2021) & Yuen et al., (2020). Prominent global charities and insurance firms in the marine industry articulate apprehensions about the mental health and welfare of seafarers explained by Sampson & Ellis (2021). According to maritime specialists, Oldenburg et al. (2010) highlighted in their study that the maritime profession constitutes a stressful occupational category due to the inherent dangers involved. They emphasised perilous situations, toxic substances, psychological strain, and lifestyle hazards at sea as significant threats to seafarers' health. Recent issues regarding the mental and physical health of seafarers have been broadly recognised. Nonetheless, there appears to be ambiguity over the magnitude of the issue within the worldwide cargo shipping industry, accompanied by divergent perspectives on multiple strategies intended to mitigate mental health challenges onboard that may be advantageous (Sampson & Ellis, 2021). A separate study indicated that the maritime industry induces considerable burnout across all education levels, income brackets,

and marital statuses (Uğurlu et al., 2021). Serious health concerns among seafarers result in economic losses for maritime organisations and may also exacerbate psychological problems, increasing the likelihood of onboard fatalities and suicides among seafarers (McVeigh et al. 2019).

This is because regulating agencies such as the Directorate General of Shipping (DGS) guarantee that exponents are internationally recognised, thus India is a major sun of maritime superiority. India is also becoming acknowledged as a powerhouse of the Indian Ocean region, since it has become a key icon of the maritime dominance considerations because of its strategic geostrategic positioning, its growing naval power and its long maritime heritage. With a full length coastline of greater than 7,500 kilometres and surrounded by vital sea lines of communication (SLOCs), India enjoys a dominating position in the Indo-Pacific maritime geography (Pant & Joshi, 2017). Indian Navy has been an active participant through various activities like SAGAR (Security and Growth for All in the Region) and various exercises like Malabar and Milan, successfully maintaining security in the region and humanitarian assistance (Ministry of External Affairs, 2020). In addition, Indian investments in the port facilities, including the Sagarmala initiative, as well as the controlled presence in the territory of the Andaman and Nicobar Islands, contribute to its power projection and logistical proficiency throughout the Indian Ocean (Krishnan, 2021). As the tension grows against freedom of navigation and maritime disputes, the adequacy of diplomatic and security strategies by India makes it a maritime powerhouse in South Asia and beyond. With the increase in demand for skilled professionals, maritime educators remain the pillars of the maritime fraternity in India to mould the future generation to have a successful career in shipping or maritime management (Kumar & Sharma, 2020).

2. RELATED WORKS

The marine industry has changed a lot recently due to the need to adopt sustainability in light of global environmental issues. The central discussion on how the world can transform maritime activities to be environmentally friendly focuses on implementing green shipping techniques and establishing sustainable port and shipping management, as explained by Kaliszewski et al. (2020) and G. Xiao et al. (2024). A very important industry, closely related to the central theme involved in world trade, is the maritime industry, which, by introducing sustainable technology, is now taking centre stage in ensuring its contribution to international trade does not impact the environment adversely. However, as the industry transitions

to sustainability, a core issue arises regarding the capability of the workforce, especially those who will become leaders in the maritime sector, to meet the demands of this new direction.

The question that then arises is, how do maritime educator's training plans grow leaders with the needed aptitudes to lead the green shipping revolution? The present piece aims to explore this pressing topic based on the observations and experiences of the people working in the sphere of maritime education and the shipping industry as professionals or educators, and as a graduate. The study reminds us that maritime educators are becoming a more prominent issue and that they should be integrated into maritime professional education and training. Sustainability in maritime activity involves various forms, including the reduction of emissions, the development of fuel efficiency, optimising port activities, and the development of sensible shipping policies. The introduction of these sustainability themes to maritime educator's training programs has not been an act of uniformity or standardisation. Although the industry recognised technical innovations to achieve sustainability, there is still a severe lack of leadership abilities in the existing workforce, without which the shift to greener maritime activities is hardly possible (Fang et al. 2019). This disparity highlights a critical need for maritime training education systems to develop, ensuring the growth of future marine leadership that will enable the promotion and support of this transition's specifics. The deployment of maritime sustainability efforts relies on maritime professions, including the workforce of deck officers, naval engineers, port managers, and experts in the shipping industry, thereby prompting the increasing demand for a radical transformation in the way the education and training systems in the maritime field are organised explained by Christodoulou-Varotsi & Pentsov (2008), House & Saeed (2016), Young (1995).

This study has used various scales as research instruments to evaluate the physical and psychological performance of seafarers, as indicated in the literature study. The study employed some of the valid and reliable psychometric tools that have been used before to measure the physical and psychological performance of seafarers. It has been commonly employed in research to assess the quality of life of the respondents (Je, 2000). Da Silva et al. (2014), in their study, used the International Physical Activity Questionnaire and quality of life scale to determine the health condition. The study was conducted by Chen et al. (2007), who were interested in exploring quality of life and the prevalence of Post-Traumatic Stress Disorder (PTSD) as well as major depression among firemen in Kaohsiung, Taiwan. What they found out

was poor quality of life, and the main causes of PTSD and depression are the factors of mental state, psychosocial stressors, or perceived physical health. A study by Li et al. (2018) investigates the living conditions of the Chinese miners. The study revealed a 42.65% prevalence of occupational stress among copper-nickel miners. Consideration of different genders, ages, levels of education, and units of operation among miners revealed a significant correlation with occupational stress. According to the results of the given study, work-related stress is more prevalent in men than in women.

The competence and well-being of the maritime industry workers, in their turn, severely affect the sustainability of this sector, including seafarers and maritime educators. As shipping around the world turns green with green technologies and digital systems to follow up on the sustainability agenda, never has the need for continuous specialised training been ever more important (IMO, 2021). Seafarers also need to be upskilled in the field of environmental compliance, modern navigation using digital tools, and approaches to safety. This means that the teaching staff in maritime education must be provided with revamped curricula and instructional methods, but most of them are subjected to intensified work, unclear roles and a lack of support on the institutional level, which leads to a mental health burden (Hetherington, Flin, & Mearns, 2006). Having to develop seafarers, preparing them to deal with very sophisticated problems, and feeling overwhelmed by their occupational distress may cause educators to burn out, compromising the level of delivery as well as the preparation of seafarers (Oldenburg & Jensen, 2019). A sustainable maritime education thus requires not only better training infrastructures but also active promotion of mental health among the educators to guarantee the sustainability and success of the industry.

The current research focuses on how the maritime educational process connects with industry demands, specifically regarding the training of leadership qualities necessary for transitioning to green shipping. This paper discusses the mental health of maritime educators and how the education programs can be improved to raise leaders who possess the technical skills and leadership skills required to practise and make sustainable practices the new standard within the maritime sector. The primary focus of his study is the mental well-being and training need perception of maritime educators, as well as experienced lecturers and recent graduates, about the inclusion of the principles of sustainability into vocational training programs and how the developed insights about it could be used to shape leaders. Specific objectives of

this study work are to examine the leadership competencies required to achieve maritime sustainability, assess the degree to which marine vocational programs are prepared to deliver this required competency, and propose.

3. RESEARCH GAP

The following gaps are identified from literature review. As per the query of the second research gap, which is identified from the references [20-23]. The purpose of this study, this paper has been written with the aim of discussing what exists in terms of gaps in maritime education and training with a particular focus on the absence of integration of emerging technologies, such as Artificial Intelligence (AI), automation, and data analytics into the curricula taught at institutions. It will examine why those technologies have been adopted slowly, what is the consequence of this to the capability of the seafarers and the preparedness of the industry, and what can be done to update the maritime training programs to current global trends of digital transformations. This study hopes to contribute to the building of a future ready maritime workforce by recognising institutional, infrastructural, and policy challenges.

- The gaps in the research on the maritime education system regarding the need to adapt the new technological advances, as well as new training approaches.
- Most of the institutions have not adopted the new curriculum and do not employ the use of Artificial Intelligence, automation, and data analytics in Maritime training.

- Also, the studies on enhancing the transition process between seafarers and educators are minimal, and the mentorship and industry-specific knowledge socio-transfer processes are.
- There is also the issue of insufficient cooperation between academia and the industry that further suppresses innovation in maritime education.
- These gaps need to be dealt with through new policies, investment in research, and building stronger industry-academic relationships as a way to make sure that maritime teachers are prepared to educate future professionals.

4. CONCEPTUAL MODEL

The following conceptual model is designed to empower mental well-being and training needs analysis for maritime educators. This model also helps identify the deficit. It can evaluate the impact of mental well-being and training needs analysis for maritime educators. The conceptual model comprises two major components, i) Physical Health Condition and ii) Mental Health Condition. The primary variables for evaluating the effective implementation of major components are i) General Health (GH), ii) Physical Functioning (PF), iii) Flexibility and Mobility, iv) Vitality (VT), Emotional Balance, v) Social Connectivity, and vi) Positive Self-Awareness. This conceptual model seeks to evaluate the impact of all factors that directly affect the effective implementation of mental well-being and training need analysis. The influence of all factors can be assessed both alone and collectively, validating the study's hypotheses.

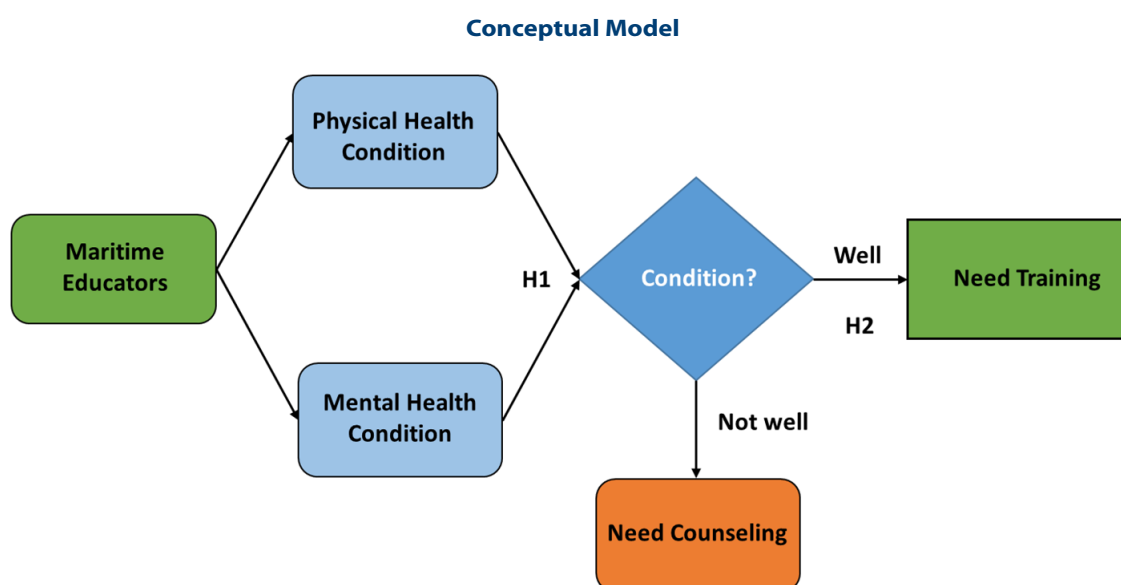


Figure 1. Conceptual Framework

5. METHODOLOGY

This section provides a concise overview of the various phases of research encompassed in this investigation. The study aimed to investigate the diverse underlying causes and their impact on the progression of maritime educators, analysing existing literature and our conceptual model. Primary data were collected by structured questionnaires, observations, focus group discussions, and interview schedules to evaluate and substantiate the hypotheses. A five-point Likert scale was utilised to assess the influence of the study. The questionnaire was organised and segmented into sub-concepts and colloquial idioms. A random sample technique was utilised to choose the marine educators for the study. A total of 146 samples were gathered for this study.

Statistical methods are employed to validate the hypothesis. The research employed methodologies for data management, sophisticated analytics, and multivariate analysis to assess data dependability and construct validity. The observed variable for each construct has been formulated utilising the scale derived from surveys. The comprehensive reliability and validity were assessed utilising "Cronbach's Alpha." The relationships among the constructs were examined and validated by the Standard Regression Coefficient Test for all hypotheses.

5.1. Objective:

- To explore the variable of the mental well-being of Maritime Educators.
- To identify the significant impact of the mental well-being of Maritime Educators
- To demonstrate the training needs analysis for the Maritime Educators.

5.2. Hypothesis:

H1o: There is no significant impact on the mental well-being and physical health condition of Maritime Educators.

H2o: There is no significant training required for maritime educators to ensure their competency.

5.3. Limitation of the Research

This study on the mental wellbeing of maritime educators and skill gap for training needs analysis has several limitations that must be acknowledged. Firstly, the sample size may not be fully representative of the broader population of maritime educators across different institutions and regions, limiting the generalizability of the findings. Secondly, data were primarily collected through self-reported surveys, which may

introduce response bias due to social desirability or subjective perceptions. Thirdly, the cross-sectional nature of the study restricts the ability to establish causal relationships between mental wellbeing and training skill gaps. Moreover, the rapidly evolving nature of the maritime sector and technological advancements may mean that the identified training needs could change over time, requiring ongoing reassessment. Lastly, the study focused mainly on psychological and skill-based variables, and did not extensively explore institutional, policy, or environmental factors that might also influence mental health and professional development in the maritime education sector.

6. DATA ANALYSIS AND FINDINGS

Demographic analysis is the study of characteristics of a population based on statistical information. The variables that it analyses include marital status, qualification and experience. Such analysis assists in developing a keen interpretation of the population trend and makes informed policies as well as customizes products or services to suit particular populations.

Demographic Analysis

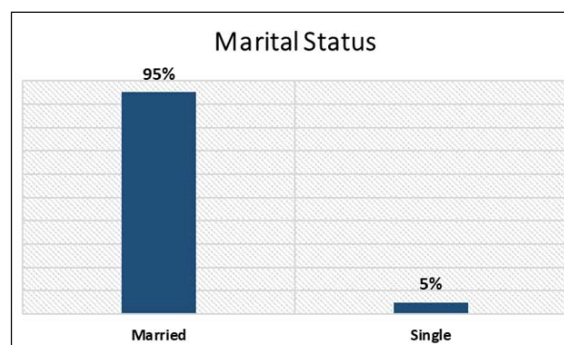


Figure 2. Marital status of Maritime Educator

The above Figure 2 shows the marital status of our samples, 95% are married and 5% are single.

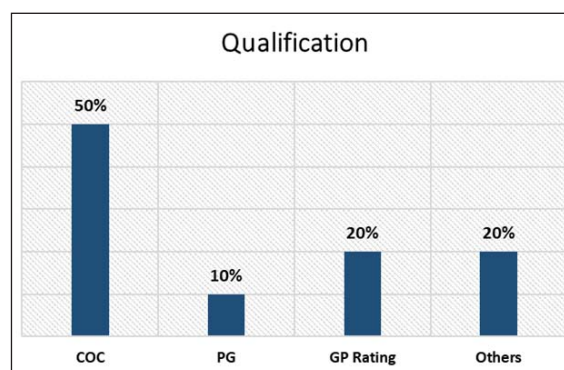


Figure 3. Qualification of Maritime Educator

The above Figure 3 shows the qualifications of our samples, COC is 50%, PG is 10%, GP Rating is 20%, and others also 20%.

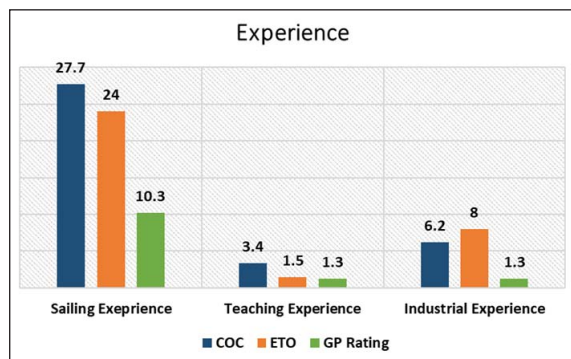


Figure 4. Experience of Maritime Educator

The above Figure 4 shows the experiences of our samples, the average sailing COC is 27.7 years, ETO is 24 years, and GP rating is 10.3 years. The average teaching experience of COC is 3.4 years, ETO is 1.5 years, and GP rating is 1.3 years. The average industrial experience of COC is 6.2 years, ETO is 8 years, and GP Rating is 1.3 years.

The KMO and Bartlett's tests for sphericity were conducted before the analysis. The principal component analysis was effective, since the KMO test yielded a result of 0.894, approaching 0.9, indicating no significant variance in the correlation among the variables.

Table 1. Data Reliability and Validity Test

Case Processing Summary			
		N	%
Cases	Valid	146	100.0
	Excluded ^a	0	.0
	Total	146	100.0

^a Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.872	6

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.879
Bartlett's Test of Sphericity	Approx. Chi-Square	24.081
	df	21
	Sig.	.000

Table 1 reveals that the Case Processing Summary documented a total of 146 data points, with Cronbach's Alpha at 0.872 (about 90%) and Sampling

Adequacy (KMO) at 0.879 (around 90%). The veracity and reliability of the obtained data are essential for subsequent analysis.

Demonstrated Hypothesis

Hypothesis (H1)

Table 2. ANOVA Test of Hypothesis 1

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.097	4	3.024	1.493	.008
Within Groups	285.656	141	2.026		
Total	297.753	145			

The above ANOVA Table 2 indicates that for Hypothesis H1, the "F" value is 1.493, signifying a positive result, and the "P" value is 0.008, which is below the 0.05 significance level. Therefore, we can validate our hypothesis. Thus, the null hypothesis "H1o: There is no significant impact on the mental well-being and physical health condition of Maritime Educators" is rejected, while the alternative hypothesis "H1a: There is a significant impact on the mental well-being and physical health condition of maritime educators" is accepted. That means it is important that maritime teachers, through their knowledge, training and influence, will produce the seafarers of tomorrow whose well-being can directly be connected with their bodies and minds. So, these are necessary in both aspects.

Hypothesis (H2)

Table 3. ANOVA Test of Hypothesis 2

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.379	4	2.345	1.153	.004
Within Groups	286.792	141	2.034		
Total	296.171	145			

The above ANOVA Table 3 indicates that for Hypothesis H2, the "F" value is 1.153, signifying a positive result, and the "P" value is 0.004, which is below the 0.05 significance level. Therefore, we can validate our hypothesis. Thus, the null hypothesis "H1o: There is no significant training required for maritime educators to ensure their competency" is rejected, while the alternative hypothesis "H1a: There

is a significant training required for maritime educators to ensure their competency" is accepted. That means the educators in the maritime field should be specially trained so that they come prepared to deliver the necessary skills to future seafarers who will be facing the current challenges of the industry. The shipping sector is also changing to digital transformation and automation. To deliver pertinent training to the learners, educators should keep themselves informed about new technologies.

7. CONCLUSION

This study primarily focused on the mental health and physical health of maritime educators. Both physical and mental health are essential to maritime teachers since they directly relate to their effectiveness in training future maritime personnel. Maritime education is a tough business, and the instructor must be tough and strong in both mind and body to tackle the requirements of teaching in the high-stakes environment. Maritime teachers should be able to deal with stress and keep energy and motivation without overwhelming students who might face the challenges of the sea and its demands. Sound mental health assists them to give straightforward directions, feed off a healthy learning experience and be open to changing industry requirements. Maritime skills are usually taught through practical-based development training, simulations and practices. Teachers should be physically fit and full of endurance in order to demonstrate skills, daily safety and interaction with all students. Maritime teachers have to be trained to impart education and train future mariners. They usually get trained in STCW Certification. The International Convention on Standards of Training, Certification, and Watchkeeping of Seafarers (STCW) proposes worldwide norms of maritime education, etc.

Maritime education in India needs to be bridged with a multi-dimensional approach. The first one is improving the curriculum by incorporating modern technologies like AI, automation, and predictive analytics. Second, there needs to be more fruitful collaborations between learning institutions and the maritime market, which should translate to practical education and the sharing of knowledge by old hands. Third, the better-organised ways of coordinating seafarers to become educators will enhance guidance and skill transfer. Also, the government can contribute to the innovation of maritime training in terms of financing research and establishing policies. By taking care of these aspects, it is possible to make the maritime education system more flexible and future-proof.

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