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Foundational Concepts and Application Challenges of the GMP-BoK in light of Seafaring Officers' Perspectives

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المستخلص:

تثير درجة التطور الحالية والمستقبلية لصناعة النقل البحري العالمي العديد من المخاوف بشأن مستوى الكفاءات البحرية الحالي والذي قد لا يلبي إحتياجات الصناعة وتوقعاتها. إستجابة لتلك المخاوف، قام الإتحاد الدولي للجامعات البحرية الدولية (IAMU) بمبادرة جادة لإنشاء برنامج البحار العالمي المحترف (GMP) بهدف سد الفجوة بين ما تطلبه الصناعة وما تقدمه الإتفاقية الدولية لمعايير التدريب وإصدار الشهادات وأعمال النوبة (STCW) في صورتها الحالية. بناءا على ذلك، تواجه مؤسسات التعليم والتدريب البحري تحديا صعبا يتمثل في وضع مسار مناسب يكفل التحول الناجح نحو إستيعاب مفاهيم البرنامج داخل نظام التعليم والتدريب البحري الخاص بها. إنطلاقا من دعم مؤسسات التعليم البحري في التطبيق، يهدف الباحثون في هذه الدراسة مناقشة المفاهيم الأساسية للبرنامج وتحديات التطبيق ذات الصلة، مع التركيز على إبراز وجهات النظر لضباط البحرية التجارية كدارسين محتملين. تم توظيف أسلوب البحث الوصفي التحليلي في الدراسة وتم جمع البيانات من خلال مراجعة الأدبيات ذات الصلة وتحليل نتائج الأستبيان لعدد ٤٠٨ مشارك من ضباط البحرية التجارية. خلصت الدراسة إلى ضرورة إعتبار التعلم المرن نهجا حيويا في خطة مؤسسات التعليم والتدريب البحري لتحقيق أهداف التعلم المرجوة من برنامج GMP و تلبية إحتياجات الدارسين.

Abstract:

The recent and foreseeable developments in the maritime industry raise concerns regarding the current level of maritime competencies depicting that it falls well short of the industry's expectations. As a response, the International Association of Maritime Universities (IAMU) has undertaken a serious initiative to establish the Global Maritime Professional-Body of Knowledge (GMP-BoK) to bridge the gap between what is needed and what is produced by the STCW convention. As a result, MET institutions are confronted with the challenging task of establishing an appropriate pathway that would ensure successful adaptation to accommodate the GMP program into their MET system. Driven by the aim of supporting maritime institutions in facilitating the program's implementation, the researchers of this study intended to clarify the foundational concepts of the program and identify relevant application challenges with a particular emphasis on investigating the seafaring officers' perspectives. A descriptive-analytical method of research was employed in the study, and data was collected by reviewing related literature and analyzing the results of an online questionnaire for 408 maritime seafaring officers from the Middle East and African countries. The study's findings illustrated a necessity for MET institutions to consider flexible learning as a vital approach in their plan to acquire the desired GMP learning objectives while meeting the demands of learners.

Key Words: MET, GMP-BoK, Seafaring Officers, Maritime Industry challenges.

1. Introduction

The continuous development of competent, skilled, and motivated seafarers, across ranks and nationalities is considered an essential driver for the sustainability of the world economy due to their significant contribution to the global supply chain. As per the UN report on the review of maritime transport 2021 (UNCTAD, 2021), seafarers demonstrated a great devotion and professionalism in sustaining the global supply chain and the world trade by facilitating the delivery of food, medicine, fuel, and many other vital supplies. The Maritime Safety Committee of the International Maritime Organization (IMO), during its meeting session MSC (104), October 2021, agreed that seafarers should be recognized as “Key Workers” due to their indispensable role in both the safe operation of the international maritime fleet and the sustainability of the global economy (LR, 2021). To keep supply chains active and global maritime transport operated safely and effectively, Maritime Education and Training (MET) must produce fit-for-purpose skilled seafarers who can cope with the technologies utilized in all aspects of the industry. According to the World Maritime University (WMU) and the International Transport Worker's Federation (ITF) joint report "Transport 2040", highly automated vessels will reduce the demand for traditional seagoing jobs by 22% by the year 2040, while the need for higher value-added, onshore-based jobs, such as remote working operators, maintenance crews, and mobility as service producers, will increase (WMU, 2019).

This necessitates the continuous development of innovative skills and competencies for maritime professionals on ships and ashore. As the international regulator of the maritime industry, the IMO has made many changes to its Standards

of Training, Certification, and Watchkeeping (STCW) Convention and Code, including the 2010 Manila amendments, to keep it updated with recent and foreseeable developments in the industry. According to Ergun Demirel (2020), MET has been modified multiple times to accommodate new capabilities and develop seafaring officers capable of using cutting-edge technology.

Despite this endeavor, the present level of maritime skills is a source of concern since various studies doubt the convention's ability to keep up with the changes in such a rapidly evolving industry. For example, in its annual review report 2020, the International Chamber of Shipping (ICS) wonders if the current IMO STCW regime remains adequate for purpose in the third decade of the twenty-first century, given that many maritime officers who have already achieved STCW certification are still required by shipping companies to undergo additional training and evaluations before being hired. Consequently, the ICS questions whether the convention can meet the future needs of the maritime industry (ICS, 2020).

Given these concerns, the industry's diverse stakeholders demand a MET system that is aligned with the ongoing and future technological changes in order to contribute to the industry's capital productivity where ships, ports, and logistics hubs have become more sophisticated and digitally interacting in real-time. On the other hand, when seafaring officers consider their options for switching to shore-based careers, it's clear that getting an onshore job is challenging and differs across IMO member states due to the flaws in their MET systems since curriculums are built individually in each country and controlled under local jurisdictions rather than the needs of the global maritime industries. This is agreed by the

research project “Mapping of Career Paths in the Maritime Industries” conducted by the Southampton Solent University and supported by the European Commission (EU, 2020). The report findings reveal that the current seafarers’ education and training systems focus mainly on operational and technical competencies with significant shortcomings in soft, administrative, and management skills, including commercial and business management, which is unfit for shore-based jobs.

The objective of the MET system is to respond and adapt in order to deliver the skills and competencies required for a future-ready, competent, motivated, and sufficiently skilled maritime workforce both at sea and ashore. To attain this goal, MET institutions need to keep revising and modifying their MET system to align it with the drastically changing maritime industry needs while also enhancing career opportunities for seafaring officers’ employability post-seagoing career period.

Driven by such need for a reskilling revolution to bridge the gap between what is needed and what is being produced, the IAMU is contributing to a paradigm shift in MET by establishing the (GMP-BoK) initiative, which incorporates a set of educational outcomes beyond the minimum requirements of the STCW Convention. Such an initiative has been undertaken in collaboration with the Nippon Foundation and is designed to ensure that comprehensive academic programs satisfying the industry and other stakeholders are incorporated into the STCW track (IAMU, 2019)

As a result, MET Institutions are encountering the challenging task of comprehending the program prospects and effectively customizing their MET systems to accommodate the GMP program to meet the needs and expectations of all stakeholders, including learners. For this purpose, the objective of this study is to clarify

the prospects of the GMP program and distinguish its foundational concepts and possible implementation challenges with a particular emphasis on the seafarers’ perspectives to determine critical factors influencing their ability to join the GMP program as a lifelong learning path.

Since this study seeks to obtain the perceptions and aspirations of the seafaring officers regarding how the program can be presented, the authors utilized a descriptive-analytical approach with an online survey as a key method for this research. Data gathering was done through literature, and the results of the online questionnaire were collected and analyzed using "Google Forms."

The contribution of this study is that it can form the basis for considerations on how to ease the implementation of the GMP at MET institutions in the Middle East and Africa.

2. The GMP-BoK Foundational Concepts for Future Paradigm of MET

As explained in the IAMU’s report, GMP is intended to meet the envisaged needs of the maritime industry and evolve the educational and career context while catering to the professional development aspirations of individual seafarers. The information has been gathered through a comprehensive survey designed and administered to the membership of IAMU and other stakeholders in the maritime industry (IAMU, 2019).

Lifelong learning is an organizing principle for education policy toward sustainable development goals. In its agenda for Global Sustainable Development Goals "Education 2030", the United Nations Educational, Scientific, and Cultural Organization (UNESCO) indicates that in an increasingly interconnected

and interdependent world, technological advances are bringing new levels of complexity that require transforming the role of formal education from knowledge delivery to the development of critical thinking (UNESCO, 2018).

Recognizing the future transformation of the maritime industry, the GMP-BoK aims to prepare seafaring officers for further education, work, and life by creating a model that enables them to develop a broad range of advanced skills to effectively integrate and participate in the evolving maritime industry and other linked industries. The major goal in this matter is to produce world-class maritime professionals who are adequately prepared to deal with future developments while also exhibiting the appropriate ethical and behavioral norms. As a general approach, the GMP adopts an “outcome-based education,” which, according to Spady, W.G. (1994), is an educational system that designs and organizes curriculum, instruction, and assessment to ensure that students can perform a specific task at the end of their learning experiences.

2.1. The GMP BoK Learning Domains

As per IAMU (2019), the specified learning outcomes in the BoK are associated with learning outcome taxonomies in three educational domains of learning; the Cognitive domain (knowledge), the affective domain (attitudes), and the psychomotor domain (skills), covering various levels of achievements related to different GMP tiers as illustrated in Figure (1). This categorization is explained by the “Taxonomy of Learning Domains,” which was first developed by a group of researchers led by Benjamin Bloom between 1956 and 1972, then was revised in 2001.

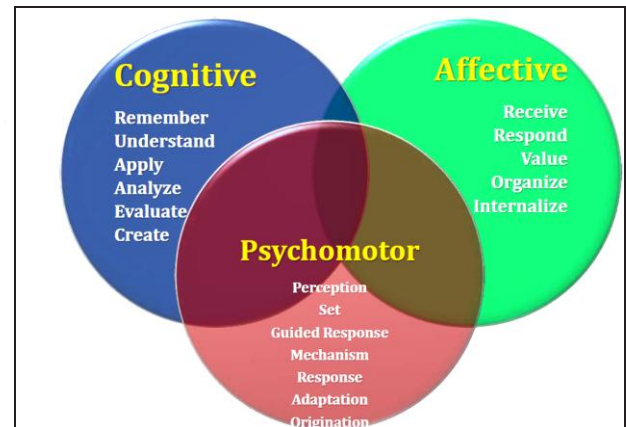


Figure 1: The GMP-BoK Learning Domains
Source: IAMU, (2019)

According to the GMP BOK criteria, the learning outcomes are categorized into four levels addressed as “Tiers,” where each Tier indicates both the competency level and the academic degree attained by learners and stands as a prerequisite to the next tier, as follows:

- Tier A: COC Operational level + BSc.
- Tier B: COC Management level + BSc.
- Tier C: COC Management level + MSc.
- Tier D: COC Management level + PhD.

2.2. The GMP-BoK Focus Areas

The GMP-Bok presents twenty-eight Focus Areas (FA), categorized into four sets of skills as follows:

- 2.2.1. The Foundational knowledge and skills include (6) FAs concerning fundamental art and scientific subjects relevant to a long-term maritime career.
- 2.2.2. The Academic skills; include (4) FAs concerned with research and discovery skills, critical quantitative and qualitative thinking, and academic integrity.
- 2.2.3. The Professional -Technical skills are presented through (7) FAs concerned with technical competencies required to

Carry out professional competencies and tasks.

2.2.4 The Professional - Soft skills; include (11) FAs concerning the skills needed to complement technical skills, mainly where those skills will be expressed in a social context such as in teams. They are primarily knowledge, skills, and attitudes required for optimum socio-technical, human-human, and human organizational interactions.

All are presented in a series of tables and guidelines on how the IAMU-member universities may use the tables. Figure (2) demonstrates the implementation framework with the proposed sequence to navigate the tables of the GMP-BoK. The process, as illustrated, begins with selecting the concerned "Tier" and its related focus areas (FAs), then selecting the corresponding level of achievement (LOA) under each domain, and finally locating the intended learning outcomes (ILOs) for each principle or practice.

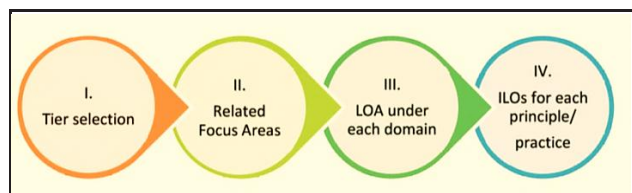


Figure 2: GMP-BoK Implementation Framework
Source: Source: IAMU, (2019)

2.3 Process of Mapping Maritime Safety Programs on the GMP Framework

Maritime safety courses are considered short courses that aim to acquire a specific set of ILOs in compliance with the STCW requirements. Maritime institutions have widely utilized the IMO guiding model courses to determine the ILOs of each course. These model courses and the GMP-BoK adopt outcome-based learning approaches. Such similarity in the methodology facilitates the mapping of maritime safety

programs on the GMP Framework.

However, the proposed sequence of the GMP application framework, as demonstrated in Figure (2), appears to be reversible. The first step should be conducting a gap analysis to assess the extent of each model course's scope to determine possible shortcomings. In this case, starting with locating the ILOs of each level of achievement instead of beginning with the tier selection might be more applicable to attaining the level of achievement as determined by the framework. This is in line with the findings of Graham (2021). He reveals that the BoK's levels of achievement can only be ascertained by drilling down a proposed hierarchical model, where the specific learning outcomes determined by the individual course are on top.

When considering the gap analysis between the course learning outcomes (CLOs) and the GMP ILOs, the following three alternative outcomes might be obtained:

2.3.1. The CLOs cover the GMP ILOs of the corresponding level of achievement.

Many of the skills required for both Tier A and Tier B are covered in the STCW Convention; For example, the Personal Safety and Social Responsibility course incorporates several BoK's skills such as "Human Resource Management," "Technical Awareness," "Leadership," and "Problem-Solving." In this case, simple adjustments to the current model course could be carried out to achieve the desired level of achievement.

2.3.2. The CLOs do not cover the GMP ILOs, but the skill is within the scope of the course., For example, the "Teamwork" skill can be integrated into courses that implicitly include the concept within its contents, such as the Firefighting, Sea Survival, and Survival Crafts courses in proportion to their general context and

educational range.

2.3.3. The CLOs don't cover the GMP ILO, and the skill is not aligned with the course scope, In this case, specific tailor-made course curricula can be developed to demonstrate such skills. It can be designed as an extension to the maritime basics studies or during the qualification periods to obtain and renew COC certificates. This is because the period of any safety course does not exceed five days. Such limited time may not allow for the adequate acquisition of some skills such as "Critical Thinking" and "Creativity," which are considered time-spaced learning and require a longer time frame to be implanted in the learner's mindset.

3. Challenges of Implementation from Learners' Perspectives.

At this stage, the technical prospects of the GMP-BoK appear to be efficient and straightforward for designing the new curriculum, wherein this case, the requirements of the STCW, the GMP, and the industry can be easily met. However, maritime institutions face critical challenges that might influence the functionality of the transition phase, such as reshaping the overall organization behavior and overcoming the resistance to change, preparing the infrastructure/financial capacity, aligning to the national requirements/legislation, and certainly boosting the lecturers' abilities and skills to provide the desired motivating learning environment.

In this regard, the needs and expectations of learners appear to be crucial when delineating the optimum path that assures their satisfaction and motivation. Therefore, the online

questionnaire's purpose was to understand their desires and needs based on their culture and their perception of the labor market needs within their geographical regions.

Recognizing the learner's perspective of the application challenges can give MET institutions another dimension to the whole picture and hopefully contribute to choosing a practical path toward accommodating the GMP. Furthermore, it was also meant to visualize the importance of the topic to the participants and ultimately extend the GMP-Bok awareness among seafaring officers.

3.1 Methodology

An online survey through "Google Forms" generated substantial data from a sample of seafaring officers from 11 countries, including Egypt, Nigeria, Syria, Jordan, Lebanon, Libya, Palestine, Sudan, Comoros, UAE, and Kuwait. This limited the study's results to the Middle East and African regions. Frequency count and percentage were used to report and analyze the numerical data, while thematic analysis was employed in organizing and writing the data from questions. The results presented are based on data collected from seafaring officers who have responded to the survey and a review of relevant literature and studies.

Firstly, the researchers explained the purpose of the study to a convenient sample of deck and engine officers during their enrolment in STCW safety training courses held by the Maritime Safety Institute of the Arab Academy for Science Technology and Maritime Transport (AASTMT) in the period from 5th January to 3rd April 2022. Participants ranged in age from 20 to 60 years and included both males and females with previous operational and management experience at sea.

The population size was 632 officers, where a

total of (408) or 64.9%, responded to the survey. This can be viewed as a significantly high response rate, as indicated by Dessel (2013), who uncovers that a 20% response rate from the total population size is considered a reasonable rate, while a response rate of 30% can be indicated as a very good ratio in online-based surveys.

Only those respondents who expressed their willingness to participate in the study were invited to receive an explanation regarding the objective and scope of the GMP program before being asked to fill in a questionnaire exploring their perspectives.

The questionnaire consisted of two sections; the first contained respondents' profile information such as age, rank, academic degree, and demographic data, while the second included twelve questions. The first two questions were designed to reveal participants' intention to pursue a higher academic qualification in the following years, as well as their desire to transition to a shore-based job. The questions ranging from 5 to 12 aimed to visualize their perspectives on the challenges that could decrease their chances of joining the program, as well as the possible solutions to overcome them.

4. Results and Discussion

4.1. Respondents' Profile Information

When examining the respondents' ages, as shown in Table (1), it can be observed that (34.8%) were between the ages of 21 and 30 years, while (50%) were between the ages of 31 and 40 years. This illustrates the younger maritime officers' strong desire to explore future possibilities for advancement and opportunities for continued development.

Table 1: Profile Information

Age	Frequency (n=408)	Percentage
21 to 30	142	34.8%
31 to 40	204	50%
41 to 50	48	11.8%
51 to 60	14	3.4%

Another crucial data collected was the respondents' academic qualifications, which indicated a high ratio of bachelor's degree holders, with (70.4 %) of respondents having achieved a bachelor's degree while attending the AASTMT's College of Maritime Transport and Technology.

4.2. The Respondent's Perspectives

4.2.1. The Intentions for Further Education

As shown in Table (2), the first question results demonstrate a significantly high percentage (77.9 %) of seafaring officers aiming for long-term targets and willing to achieve further academic qualifications compared to only (4.2 %) not willing, and (17.9 %) who are still uncertain.

Table 2: Intention to pursue a higher academic qualification.

	Frequency (n=408)	Percentage
Have the intention	318	77.9%
Uncertain	73	17.9%
Not willing	17	4.2%

Furthermore, the results in Table (3) demonstrate that the majority of respondents (80.9%) were interested in joining the GMP program, while (3.2%) disapproved and (15.9%) were undecided.

Table 3: Intention to join the GMP program

	Frequency (n=408)	Percentage
Interested	330	80.9%
Uncertain	65	15.9%
Not willing	13	3.2%

4.2.2 The Desire for a Career Shift

The results of question 3, as shown in Table (4), demonstrate a high rate of respondents (72%) who consider shifting carriers to shore-based jobs, while (25%) rejected the idea and (3%) were uncertain. These results support the GMP objective to prepare seafaring officers for a career transition to shore-based jobs and justify their willingness to join the program.

Table 4: Intention to shift to a shore-based career

	Frequency (n=408)	Percentage
Have the intention	294	72%
Uncertain	12	3%
Not willing	102	2.5%

The results of question 4 revealed the respondents' preferred alternatives to a career at sea, pointing to a variety of shore-based jobs, both in-office and port facilities, such as company management-related positions, Maritime Education, Port Authority, Marine and Technical Surveys, Pilotage, and Harbor services.

It's worth mentioning that a wide variety of maritime-related shore-based sectors were not included in their answers, such as marine insurance, ship agents, maritime law, consultancy, ship and cargo booking, Ship Brokers, and Charterers. Despite the diversity in

their perspectives resulting from their diverse maritime and national cultures, seafaring officers from the studied regions lack a clear vision of their potential job opportunities ashore, necessitating the role of the MET system in mapping and clarifying multiple career paths for their students.

4.2.3. The GMP-BoK Application Challenges

The results of question 5 revealed three major challenges influencing their decision to join the program. As demonstrated in Table (5), "Cost" is at the top of the challenges list, with (41.9%) of respondents referring to the program fees as well as transportation and accommodation expenses. Other respondents (38%) cited "Time" as the main obstacle, whereas (20%) referred to "Geographical Location" as the most challenging difficulty.

Table 5: Challenges influencing the decision to join the GMP program

	Frequency (n=408)	Percentage
Cost	171	41.9%
Time	155	38%
Location	82	20.1%

These findings appear to be consistent with the answers to question 6, in which (43%) of respondents stated that the cost reduction might be a pivotal motivator to join the GMP program. Others (35%) referred to time flexibility, while (22%) cited location flexibility.

4.2.4. The course delivery, educational material, and assessment methods

The responses to questions 7, 8, and 9 are essential considerations for MET institutions when determining the optimal mode of education for interacting with the GMP studies. Table (6) illustrates that "Distance Learning" is the favored

modality for the majority of responders (67.9%). On the other hand, Physical attendance, and the hybrid method, were preferred by (21.1%) and (11%) of respondents, respectively.

Table 6: Respondents' Preferred Mode for Learning

	Frequency (n=408)	Percentage
Distance learning	277	67.9%
Physical attendance	86	21.1%
Hybrid method	45	11.0%

Furthermore, the respondents indicated diverse types of supporting learning materials to be utilized, including view graphs (35%), videos (23%), Books (22%), and simulation (20%). For the assessment purposes, a relatively large ratio of participants (33%) referred to online workshops as a preferable assessment method, whereas others indicated written tests (28%), assignment tasks (24%), and oral exams (15%).

4.2.5. Time Frame and Duration of GMP Studies

In response to questions 10 and 11, most respondents (65%) suggested including tailor-made short courses to deliver the GMP learning outcomes. Furthermore, (78%) of participants indicated that such short courses could be offered during and between their qualifying periods for obtaining their COCs.

4.2.6. Comments

In the findings of question 12, where participants were asked to submit any comments, concerns, and recommendations, several respondents acknowledged their appreciation for being valued by giving importance to their views regarding the program's conception and implementation. Several comments mentioned

the difficulty of being self-sponsored, especially with the low wages problem in some African and Middle East countries.

5. The Future Paradigm of MET

The respondents' suggested approach for delivering the GMP program through distance learning appears to be an appropriate choice to tackle the three cited major challenges; cost, time, and geographic location, since accessibility, affordability, and flexibility are some of the primary advantages of e-learning

E-learning is easily accessible and can reach even the most remote regions; also, it is a substantially less expensive mode of education as it doesn't require transportation or accommodation. It also provides learners with a great deal of time flexibility to schedule online classes at their convenience when they are ashore or have internet access onboard their vessels.

This type of learning environment can ensure the GMP-BOK achievement while enhancing students' learning potential by allowing them to learn whenever and wherever they desire, resulting in a process that leads to lifelong learning.

According to Oral & Ergun (2017), e-learning has grown more popular in the maritime education and training field. Several MET institutions offer a wide range of e-learning programs for maritime education, including postgraduate studies. In this setting, MET institutions must also consider staff developing plans for practical training of lecturers to improve their online teaching and relevant technical skills to deliver more effective classes (Chung et al., 2020).

Prospero de Vera III, the chair of the Commission on Higher Education (CHED), anticipated that flexible learning would be the

norm of education over the next few years, with no return to education based solely on face-to-face teaching (Magsambol, 2021).

In line with the global trend toward online education, the IMO Technical Cooperation Division is converting certain current IMO training materials into e-Learning courses to support in-person technical cooperation activities and strengthen the IMO Member States' capacity-building (IMO, 2022).

These findings stipulate the necessity for MET Institutions to demonstrate their ability to deal with the current global paradigm shift toward online education by combining e-learning technologies with advanced Educators' technical capacities to facilitate the implementation of the GMP program in their MET system.

Conclusion

The maritime industry is being transformed by digitalization and automation. Ships, ports, and maritime operations are increasingly becoming more data-driven, which necessitates a need for new competencies at all levels, that can adequately manage such a digitally-enabled industry. Therefore, the MET institution's mission is to evolve its MET systems to build a conducive and motivational learning environment for producing the seafaring officers' needed competencies. In this manner, the IAMU-established GMP-BoK provides an adequate solution for accomplishing this purpose. The primary skill-set relates to a global mindset aware of changing trends with the ability to adapt and evolve via a lifelong learning process. The success in facilitating the implementation of the GMP program will be determined by MET Institutions' efforts to adjust the path of their MET systems to stay on track for generating future industry-ready seafaring officers. The study demonstrated the foundational concepts and provided clear guidance and potential

prospects for implementing the GMP-BoK in the future paradigm of MET. The key findings of the online questionnaire showed that most of the studied sample of seafaring officers were found interested in achieving the GMP program. Such a willingness to pursue further education through academic qualifications is indicative of the new generations of maritime officers' mindsets and their readiness to fit into the future MET paradigm. Bearing in mind that the implications of cost, time, and location are vital factors that affect their decision whether or not to join the program. Based on these findings, Maritime Institutions need to boost their teaching and learning modalities, wherein this concept, establishing an e-learning approach would significantly contribute to achieving the desired GMP learning objectives while satisfying the learners' needs.

Recommendations

- 1- The study recommends establishing technical cooperation among IAMU members to develop flexible and effective learning modalities for the GMP-BoK delivery.
- 2- The study also recommends establishing a practical plan for boosting the maritime lecturer's technical skills to effectively employ the e-learning mode of education.

Area for Further research

Further research is suggested to investigate possible shortcomings in the adequacy of e-learning for delivering the GMP-BoK

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