



Original article

## Maritime Professional Education and Training Development in ASEAN Region: Today and Tomorrow<sup>☆</sup>

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### Abstract

The ASEAN charter is a treaty established by ten member countries in the Southeast Asia founded on December 2008. Prior to the establishment of the Association of Southeast Asian Nations (ASEAN) charter, the Maritime Professional Education and Training Development Program was facing a challenge of disruptions relative to maritime events. Due to the disruptions of maritime events, challenges such as gap in international relations, lack of database integration in the field of maritime education and training, lack of knowledge transfer and no effective and proper framework of future development particularly in the areas of maritime education and training among the ASEAN countries existing. The goal of this paper is to motivate professionals and the relations society to collaborate in the Maritime Professional Education and Training Development: Today and Tomorrow, to be able to fill the gaps presented to this paper. In order to ensure this study can be completed in the right ways and times, the Critical Path Method (CPM) is used. As a finding of this study, all professional maritime members are expected to strengthening the international professional relations in maritime education and training system among the ASEAN region.

*Keywords: Maritime Professional; Critical Path Method; ASEAN; Maritime Education and Training; Maritime Affair*

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## 1. Introduction

The Association of Southeast Asian Nations (ASEAN) is a regional intergovernmental organisation comprising ten Southeast Asian countries which promotes the economic and intergovernmental cooperation (Pan-Asianism) that facilitates economic, political, security, military, educational and socio-cultural integration amongst its members and other Asian countries and beyond. The ASEAN is comprised by ten emerging countries from the Far East Asia namely: (i) Brunei, (ii) Laos, (iii) Cambodia, (iv) Malaysia, (v) Singapore, (vi) Myanmar, (vii) Indonesia, (viii) Philippines, (ix) Thailand, (x) Vietnam (ASEAN Focus, 2016, p.1).

PAN-Asianism, as presently called the ASEAN Charter is continuing its operation under a new legal framework with new clusters established to be able to increase its community building activities (ASEAN Charter, 2018). As a declaration by the ASEAN, there are two aims of its establishment. The first aim is to aid each other in the form of training and research facilities focusing the areas in education, professional, technical and administration. The second aim is to promote active collaboration and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields (ASEAN Charter, 2018).

However, when relates to the maritime sector development, there is still no continuous events to empower the relation of maritime professionals in which could contributes to the sustainability of maritime sector in ASEAN countries. It creates a gap of an international relations, no integrated database of maritime education and training system among the ASEAN countries, lack of knowledge transfer between countries, as well as no proper plan or framework for future development of the maritime education and training program in the ASEAN region. This would give long-term impacts on the unsustainability of maritime sector in ASEAN countries.

This study intends to encourage the involvement of ASEAN professionals in empowering higher education to share the same goals and concerns about the problems and issues via a continuous empowerment programme. A critical path method (CPM) is used to frame out the effective programme management to project numerous activities interacted in a complex manner.

## 2. Literature Review

ASEAN was established on 8th August 1967 in

Bangkok, Thailand. The establishment of ASEAN is for the outward looking, living in peace, stability and prosperity, bonded together in partnership in dynamic development and in a community of caring societies between ASEAN countries (ASEAN, 2012). Besides, it is also to encompasses the physical elements (e.g transport, ICT, and energy), institutional (e.g. trade, investment and service liberalization) and people-to-people linkages (e.g education, culture and tourism) that are a fundamental supportive means to achieve the economic, political security and social cultural pillars of an integrated ASEAN community (ASEAN Secretariat, 2016a, p.13).

The Master Plan on ASEAN Connectivity (MPAC) was adopted at the 17th ASEAN Summit on 28 October 2010 in Ha Noi, Viet Nam. The vision for the MPAC 2010-2025 is to achieve a seamlessly and comprehensively connected and integrated ASEAN that will promote competitiveness, inclusiveness, and a greater sense of community (ASEAN Secretariat, 2016a, p.158). According to MPAC 2025, the strategic area of people mobility planned by the ASEAN Charter provides an opportunity to strengthen skills mobility in the region and, where appropriate, by establishing high-quality qualification frameworks in critical vocational occupations (ASEAN Secretariat, 2016b, p.10). Such initiative should be useful in empowering ASEAN education sector especially in term of research and development, training skills, synchronization of curricular and syllabus also the collaboration between ASEAN universities and experts to conduct any research related.

The need of vocational skills, expertise, and competence workers and researchers are critical to support the future growth of ASEAN Member States. In addition, to meet the future demand for vocational skills, competence students and workers especially in the maritime sector in this region will required specific detailed understanding of supply-demand evolution, ensuring robust training programmes and implementing skill and where appropriate, qualification frameworks on a voluntary basis to support movement of skilled labour (ASEAN Secretariat, 2016b, p.63).

Mazhari (2018, p.15) has discussed in detailed about the Globalisation, Competent Labour and MET: The Changing Context of the Maritime Industry, Workplace, and Skills. Also he has clearly clarified the different between ‘skill gap’ and ‘skills shortage’ as the UK Commission for Employment and Skills states that ‘skills shortage’ refers to the situation

where there are not sufficient appropriately trained and qualified people to be employed to fill the vacancies. However, the ‘skills gap’ exists when “members of the existing workforce in an organisation are seen to have lower skills than are necessary to meet current business needs (Mazhari, 2018, p.4).

Following the prevailing global shortage of officers, various national and international initiatives encompassing recruitment, research programs and fast tracking of maritime education and training are being undertaken (Mabuti, 2013, p.8). The shortage of seafarers in Asia is not the main issue but the quality and standard of these seafarers training. Mabuti (2013, p.8) added that the level of competence in the European maritime industry is declining both at sea and at shore”. Further Mabuti, (2013, p.8) emphasized that in the same breadth, IMO developed the Standards of Training, Certification and Watchkeeping Convention 78, including the requirements of maritime education and training of seafarers. Mabuti (2013, p.8) on her literature review wrote that the Manila amendments of 2010 augment the competencies required of seafarers, in light of emerging technologies, multicultural and multinational crews hence the necessity of competency in soft skills like leadership and teamwork. Considered that education and training in the human capital side is vital not only for global competitiveness but also to minimize the risks at sea caused by human errors.

However, in port sector, there are several issues on workers’ unskilled competency have been addressed that leads to accident at port area (Figure 1). Human factors is considered as root causes in 80–90% of maritime incidents. Dangerous human factors such as fatigue, carelessness, stress, health, situation awareness, mistakes, inadequate training, and safety culture are the major contribution to the accidents happened within the port facilities (Ugurlu et al., 2015, p.757). Furthermore, port policies, port facilities, increased vessel traffic, loading/ unloading of cargo, and international policies are outing stresses on the personnel in charge during operation (Strauch, 2015, p.3117).

Thus, this scenario of worker unskilled competency has created potential risk to the entire maritime and port industry. A study conducted by Health and Safety Authority (2016, p.33) has determined the hazard and risk to persons who working in ports (Table 1).

By accident type	2008PY	2009PY	2010PY	2011PY	2012PY	2013PY	2014PY	2015PY	2016PY	Total	%
Crew	41	28	29	15	26	18	22	14	18	211	10%
Cargo damage	29	27	30	25	21	17	30	51	56	286	13%
Damage reports regarding harbour and fishery facilities	203	157	163	137	131	129	127	117	127	1,291	59%
Others	1	1	2	2	0	1	3	2	1	13	1%
Other people except crew	11	12	13	7	7	4	8	10	2	74	3%
Collision	14	22	10	12	11	9	8	9	9	104	5%
Oil spill	2	5	3	5	1	2	4	3	3	28	1%
Groundings, sinkings and fire	27	19	20	21	13	25	9	21	16	171	8%
Others	55	59	48	47	32	41	32	45	31	390	18%
Other - Subtotal	328	271	270	224	210	205	211	227	232	2,178	100%
Total	3,609	3,428	3,225	2,799	2,436	2,319	2,176	2,134	2,098	24,224	
Number of entered vessels at the beginning of the policy year											
Accident rate (Number of accidents divided by Number of entered vessels)	9.1	7.9	8.4	8.0	8.6	8.8	9.7	10.6	11.1	9.0	

Figure 1: Accidents in harbours  
Source: Japan P&I Club (2018), p.3

Table 1: Hazards and risk to persons working in port

HAZARDS	Risks to Persons Working in Ports			Low Risk	Medium Risk	High Risk
	Ship Visitors	Ship Services	Port Services	General Port Workers	Cargo Handler Shoreside	Cargo Handler Shipside
Slips, Trips	Yellow	Red	Red	Red	Red	Red
Fall of Person From Height	Yellow	Red	Red	Red	Red	Red
Fall of Material From Height	Yellow	Red	Red	Red	Red	Red
Workplace Transport	Yellow	Red	Red	Red	Red	Red
Working over Water	Yellow	Red	Red	Red	Red	Red
Work at Height	Yellow	Red	Red	Red	Red	Red
Lifting Operations	Yellow	Red	Red	Red	Red	Red
Ship/Shore Access	Yellow	Red	Red	Red	Red	Red
Manual Handling	Yellow	Red	Red	Red	Red	Red
Work in Ships' Holds	Yellow	Red	Red	Red	Red	Red
Hazardous Cargoes	Yellow	Red	Red	Red	Red	Red
Hazardous Atmosphere	Yellow	Red	Red	Red	Red	Red
Confined Spaces	Yellow	Red	Red	Red	Red	Red
Mooring Operations	Yellow	Red	Red	Red	Red	Red
Cargo Handling Equipment	Yellow	Red	Red	Red	Red	Red
Housekeeping	Yellow	Red	Red	Red	Red	Red
Vibration	Yellow	Red	Red	Red	Red	Red
Dust	Yellow	Red	Red	Red	Red	Red
Noise	Yellow	Red	Red	Red	Red	Red
Lighting	Yellow	Red	Red	Red	Red	Red
Weather, Wind and Tide	Yellow	Red	Red	Red	Red	Red
Release of a Dangerous Substance	Yellow	Red	Red	Red	Red	Red

Source: Health and Safety Authority (2016), p.33

To overcome this issue, in ASEAN there are several NGOs involved in shipping skills, and NGOs such as the ASEAN Ro-Ro Shipping Network and Short Sea Shipping are exemplary as such organizations are committed to contributing to shipping skills training, skills certificates, and shipping training.

However, with supporting from only few NGOs, these skills shortage and skills gap issue among maritime and port workers are still unsolved. Through ASEAN, few events or programmes related maritime been conducted in the past, for instance Maritime Cooperation in ASEAN that consists of 1) ASEAN Foreign Ministers Meeting (AMM), 2) ASEAN Senior Official Meeting (ASEAN SOM), 3) ASEAN Transport Ministers Meeting (ATM) 4) Senior Transport Official Meeting (STOM) and 5) Maritime Transport Working Group (MTWG) (ASEAN Secretariat's Information Paper, 2018, p.7). Furthermore, there is no standard guideline related to Maritime Education and Training can be used for ASEAN members' countries. The initiative only been addressed by each member country for the uses of internally. Overall, it creates the gap and shortage on skills among maritime and port workers.

In addition, it creates a gap of an international relations, no integrated database of maritime education and training system among the ASEAN countries, lack of knowledge transfer between countries, as well as no proper plan or framework for future development of the maritime education and training program in the ASEAN region. In addition, it is also affected student mobility data across ASEAN member states that created a number of gaps such as country coverage, lack of timely data and lack of granularity (ASEAN Secretariat, 2016b, p.65). Due to this problem, it may lead to less of maritime capitals and skill development for new generation of professionals (students, scholars, experts, etc.) that have strong potential to be future leader/mentor/expert in the maritime field.

However, the current and future maritime development in the ASEAN region is not only depending to one party, but it is directly involved all ten countries to actively participate in any activity (meetings, workshops, memorandums, conferences, etc.) that related to the maritime issue.

Hence, this paper will propose a Maritime Professional Education and Training Development Program among ASEAN Region to enhance and enrich the international professional, and social relations which enable the ASEAN countries to share the same goals and awareness about the recent

maritime problems and issues through this program. In parallel with this strengthening of collaborative relations, significant development is being made in the way professional education and training programmes are delivered. It helps the necessity of spreading and sharing of recent maritime information and trends that could create awareness amidst maritime people and professionals who are in need of the discussed information data and promotes to tackle maritime issues especially in the ASEAN region.

### 3. Methodology

In this study, a critical path method is used for answering the research goal. This research has been divided into two phases which are (1) to identify and appoint five young maritime leaders from 10 different ASEAN Countries to be the official members of MPETA 2018/2019: ASEAN Region and (2) to construct seven maritime education and training modules. Overall, this project is expected to achieved four main activities as per discussed in Section 4.

#### Critical Path Method (CPM)

The critical path method (CPM) is a project management technique for process planning that defines critical and non-critical tasks with the goal of preventing time-frame problems and process bottlenecks. The CPM is ideally suited to project of numerous activities interacted in a complex manner (Razdan et al., 2017, p.1).

The Critical Path Method or Critical Path Analysis, is a mathematically based algorithm for scheduling a set of project activities. It is an important tool for effective project management. Commonly used with all forms of projects, including construction, software development, research projects, product development, engineering, and plant maintenance, among others. Any project with interdependent activities can apply this method of scheduling (Razdan et al., 2017, p.3). The essential technique for using CPM is to construct a model of the project that includes the following (Haritha Mahalakshmi et al., 2017, p.466):

- a. A list of all activities required to complete the project (typically categorized within a work breakdown structure),
- b. The time (duration) that each activity will take to complete,
- c. The dependencies between the activities and,
- d. Logical end points such as milestones or deliverable items.

Using these values, CPM calculates the longest path

of planned activities to logical end points or to the end of the project, and the earliest and latest that each activity can start and finish without making the project longer. This process determines which activities are "critical" (i.e., on the longest path) and which have "total float" (i.e., can be delayed without making the project longer). In project management, a critical path is the sequence of project relations activities which add up to the longest overall duration, regardless if that longest duration has float or not. This determines the shortest time possible to complete the project (Haritha Mahalakshmi et al., 2017, p.467).

Critical activity for which there is not sufficient time between its earliest and latest start or between its earliest and latest finish time must begin and end on time. Activities not lying on the critical path, have a slack (float) time within which task realization time can be increased without any consequences for the project completion. At this stage a set of preliminary resources (humans, machines etc.) required for individual task implementation is also estimated. In case of lack of resources availability, the schedule must be updated then new critical path may emerge, and structural changes may be made if project requirement change (Nafkha and Wiliński, 2016, P.81). There are two methods by which the Critical Path can be identified. They are 1) forward pass and 2) backward pass (Stelth and Le Roy, 2009, p.19).

For the forward pass, CPM calculates the earliest time within which a project can be completed. The date each activity is scheduled to begin which is known as the "early start". The date that each activity is scheduled to end is called "early finish". In this method of critical path determination, the earliest possible date for starting of the project is identified and then the activities are lined up to identify the completion date.

Meanwhile, for the backward pass, the CPM is conducted by selecting the date when the organization wishes to complete the project, or the last activity identifies CP. Time requirements are based on working backward from the final date desired for the last activity to the initial first activity. The dates identified in this method of CPM are called late start dates (for the starting of the first activity) and the late finish dates (for the last activity in the project) (Stelth and Le Roy, 2009, P.19).

Important for the CPM using either the forward pass or the backward pass is that the total time needed for completion of the project does not change but the dates when the project can be started might differ

based on the approach used in the two methods. The selection of either the forward or the backward pass depends on the final desired results and the available documents and accurate data needed to determine the time for every activity on the network diagram (Stelth and Le Roy, 2009, p.21). The identified activities, operations and functions should be placed in a logical sequence for their implementation. Activities may be run sequentially, or simultaneously, i.e. in parallel at the same time. The examples of activities sequence and relationship between them constitute a starting point for creating a network diagram are shown in Table 2, and Figures 2 and 3.

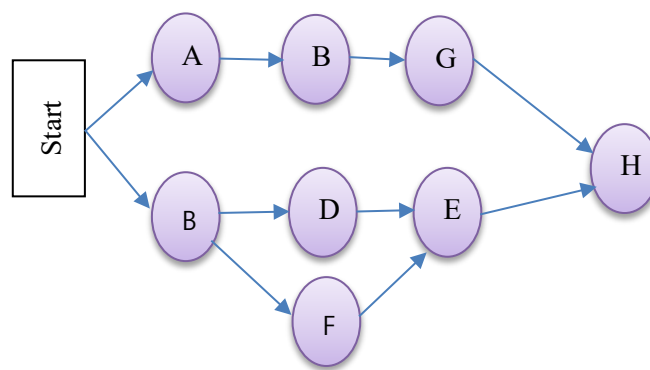


Figure 2: The example of activities sequence

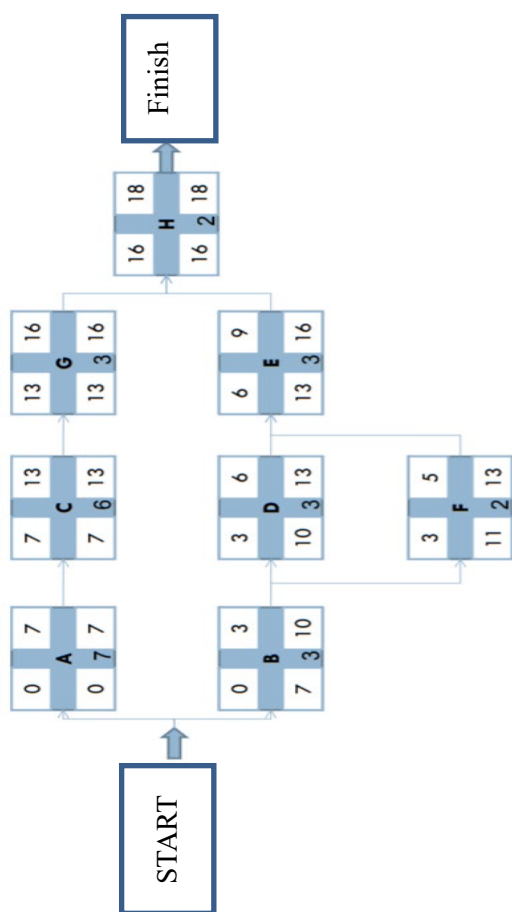
Table 2: The example of the activities

Activity ID	Duration	Dependency
A	7	-
B	3	-
C	6	A
D	3	B
E	3	D, F
F	2	B
G	3	C
H	2	E, G

Seven modules are proposed in Maritime Education and Training Development Program for ASEAN Region.

- i. Maritime human capitals and skills development program
- ii. Integrated relations of maritime experts among the ASEAN region
- iii. Propose a maritime cross-border education and training system among the ASEAN region
- iv. Integrated linkages between both maritime institution and industrial practices among the ASEAN region

- v. Development of database maritime education and training system among the ASEAN region
- vi. Strategic maritime professional development in ASEAN region
- vii. Plan and design future education and training development programs that will be able to continue in enhancing the unity among the ASEAN region.



**Figure 3: The example of a Critical Path Method network diagram**

**4. Finding**

Maritime Professional Education and Training Association (MPETA): ASEAN Region is the propose association that will be involved by all ten ASEAN Countries that covered all the [1] [Maritime institutions including universities, colleges, vocational institutions etc., [2] Industrial Experts (logistics, port, shipping, warehouse, logistics etc.) and [3] Non-Profit agencies that related to maritime field. Along this project, it will be monitored and evaluated by the programme secretariat and maritime experts to ensure this project can complete in the

right time as planned. The monitoring and evaluating process will be using the Critical Path Method (CPM). The duration of the project will take about 24 months (2 years) and will located in 6 different countries such as Malaysia, Philippines, Cambodia, Laos, Thailand and Myanmar. This project consists four (4) main activities:

- i. Identify and select the potential young leader in the maritime field among ASEAN Region.
- ii. Develop of seven maritime education and training modules.
- iii. Expert/Mentor comments and idea sharing.
- iv. Publication of the module book of “Maritime Education and Training: ASEAN Region”.

MPETA consist of two phases: [1] to identify and appoint 5 young maritime leaders from 10 different ASEAN Countries to be the official members of MPETA 2018/2019: ASEAN Region and [2] to construct seven (7) seven maritime education and training modules. These two phases flow are evaluated through Critical Path Method (CPM) as following:

**Phase 1:** Main purpose to identify and to appoint 5 young maritime leaders from 10 different ASEAN Countries as the official members for this MPETA: ASEAN Region Project.

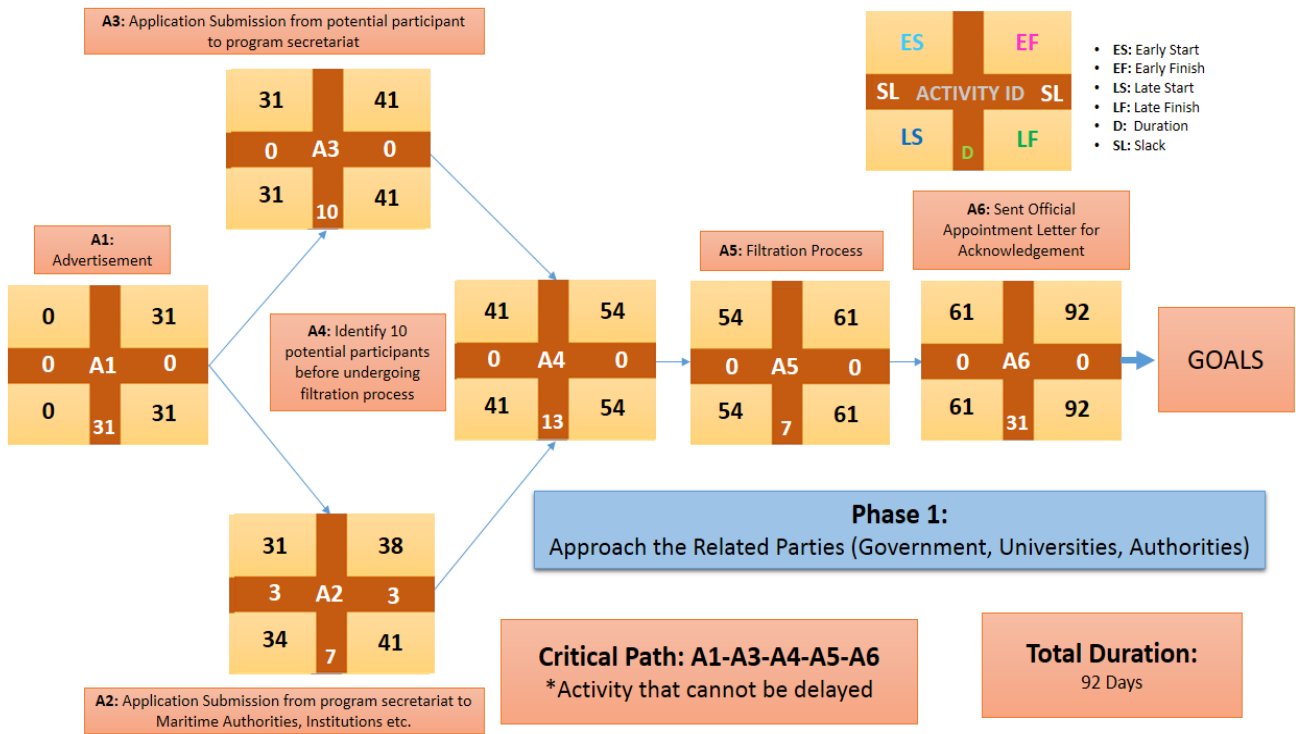
Figure 4 shows the descriptions of all activities involved in phase 1. The starting point for this phase is to tell every potential parties (universities, experts, non- Profit agencies) about MPETA. It continues with the application submission including the official form, details applicant and other related documents. From all ten countries, ten (10) potential participants will be identified and they will undergo filtration process (interview, test session, presentation etc.) because the main purpose for phase 1 is to choose five (5) official participant that will be the prime movers for MPETA.

Table 3 shows that the interdependencies of any activities in phase 1. Through the critical path analysis, the results show that only activity 4 that have dependencies activities which are activity 2 and activity 3. The means of dependencies here is the activity that have the dependencies activity which it is cannot be started or to be done as long the activity before it still not done completely. Here in phase 1, activity 4 cannot be started as long activity 2 and 3 are not completed due to dependencies of activity 4 to activity 2 and 3.

**Table: List of Activities for Phase 1**

Activity 1	Advertisement of the Maritime Professional Affairs Developments Programme: ASEAN Countries
Activity 2	Application Submission from programme secretariat to the Maritime Authorities, Institutions etc.
Activity 3	Application Submission from potential participants to the programme secretariat
Activity 4	Identify 10 potential participants from 10 different ASEAN countries before going filtration process to take only 5 participants
Activity 5	Filtration Process: According to their expertise, experiences, and etc.
Activity 6	Sent Appointment/Official Letter to the participant that have been choose as an official participants.
Goals	5 Participants are appointed as the official member for this project from 10 different ASEAN countries

**Figure 4: List of Activities in Phase 1**



**Figure 5: Critical Path Analysis Model for Phase 1**

The main purpose of Critical Path Analysis method is to construct a model for any projects by providing a proper schedule in order to ensure the project complete in right time as planned. This model consists of a few information that really need by the project coordinator in order to ensure all activities are completed according to schedule. This information is described in Table 4.

In addition, it is essential for the project coordinator to review thoroughly such information to be able to adjust the consequences in terms of time, emergencies, misunderstanding, etc. if such occurred. Furthermore, it is necessary that project committee and participants carefully stress out critical activities to prevent disruptions of activities and delay delivery of the entire projects.

**Table 3: Interdependencies Activities in Phase 1**

Activity ID	Duration (Days)	Dependency
A1	31	-
A2	7	-
A3	10	-
A4	13	A2,A3
A5	7	-
A6	31	-

**Table 4: Elements in Critical Path Analysis Model**

INFORMATION	DESCRIPTIONS
Early Start (ES)	The earliest time (day) that activity can be started
Early Finish (EF)	The earliest time (day) that the activity can be completed
Late Start (LS)	The latest time for an activity need to be started
Late Finish (LF)	The latest time for an activity need to be completed
Duration (D)	Total amount of time (days) that required the activity must be done.
Slack/Float (SL)	Amount of time that a task can be delayed without cause a delay to project completion

Figure 5 shows the actual model of all six (6) activities in phase 1, from the starting point until it achieves its goals through the critical path method analysis. Based on this analysis the critical activities are identified and it is from Activity 1 – Activity 3 – Activity 4 – Activity 5 – Activity 6. As a result, by this analysis all these activities cannot be delayed, or it will affect the timeline of the whole projects. Meanwhile, for activity 2 it has three (3) days for the activity can be delayed (emergencies, adjustment etc.) without affect the whole projects. This output of this figure allows the secretariats to monitor all the activities in this phase to ensure that this phase can be completed at the right times without any delays to continue with the next phase. The total duration for phase 1 is 92 days. Any delay only can be faced only in activity 2 that have 3 days reserve time for project coordinator to make any adjustment for this project before it can continue to phase 2.

**Phase 2: To construct the seven Maritime Education and Training Modules**

The second phase of this project is aimed to construct seven different Maritime Professional Modules that will be the official documents related to all information regarding to the Maritime Affairs between all ten ASEAN Member states. After discussing with the experts (industrial and academia),

all seven modules are listed as follows:

- **Module 1:** Maritime Human Resource and Skill Development Program
- **Module 2:** Integrated Relations of Maritime Experts Among The ASEAN Region
- **Module 3:** Propose a Maritime Cross-Border Education and Training System Among The ASEAN Region
- **Module 4:** Integrated Linkages Between Both Maritime Institution and Industrial Practices Among The ASEAN Region
- **Module 5:** Development of Database Maritime Education and Training System Among The ASEAN Region
- **Module 6:** Strategic Maritime Professional Development in ASEAN Region
- **Module 7:** Plan and Design Future Education and Training Development Programs That Will Be Able to Continue in Enhancing the Unity Among the ASEAN Region

One of the core aims of these modules is to improve the mobility of people from the ASEAN countries in terms of research, experts’ opinion, maritime industry, maritime issues and training. It can also serve as main guidance throughout the ASEAN region particularly to people from the industry, researchers, experts, and students in order to help the government to sustain and improve the maritime industry.

As stated in Figure 6, through this phase it will consist twelve (12) main activities starting with the introduction of MPETA to all official participants and committee until the publication of all these modules. This phase is involving a few meeting, presentation, verifications, and experts’ discussion in order to ensure all critical issues, elements in these modules are in line and suitable with the real maritime industry among ASEAN region.

Through this analysis it found that this phase has four (4) dependencies activities which are Activity 4, Activity 6, Activity 8 and Activity 10. The interdependencies of all these activities are shown in Table 5.

The result shown that all twelve (12) activities are classified as the critical path that must be completed without any delays. On the other hand, it has been shown that this phase did not have time to exist resulting into a delayering of activities and these are classified as the critical path activities in which should not be delayed at all. The delay of any



activities on this phase will result into a disruption of the entire project. The result from the critical path activities will be used by the secretariat to focus and

considered as a critical phase. It is used to ensure that the flow of each stage of activities are on the right track based on the schedule.

Activity 1	Pre- Advertisement of the Maritime Professional Affairs Developments Programme: ASEAN Countries
Activity 2	1 <sup>st</sup> Meeting in Philippines: Brief about MPETA 2018/2019 and Introduction to construct Module 1 and Module 2.
Activity 3	Construct Module 1 and 2 based on each task given by the team leader.
Activity 4	2 <sup>nd</sup> Meeting in Cambodia: Discuss the output of Module 1 and 2. Sharing session by the experts. Introduction for Module 3 and 4.
Activity 5	Construct Module 3 and 4 based on each task given by the team leader.
Activity 6	3 <sup>rd</sup> Meeting in Laos: Discuss the output of Module 3 and 4. Sharing session by the experts. Introduction for Module 5 and 6.
Activity 7	Construct Module 5 and 6 based on each task given by the team leader.
Activity 8	4 <sup>th</sup> Meeting in Myanmar: Discuss the output of Module 5 and 6. Sharing session by the experts. Introduction for Module 7.
Activity 9	Construct Module 5 and 6 based on each task given by the team leader..
Activity 10	5 <sup>th</sup> Meeting in Thailand: Discuss the output of Module 5 and 6. Sharing session by the experts.
Activity 11	Compile all 7 modules and Ready for Publication
Activity 12	6 <sup>th</sup> Meeting in Malaysia: Closing Ceremony as official MPETA launch the 7 modules as the first integrated maritime education link in ASEAN Region

Figure 6: List of Activities in Phase 2

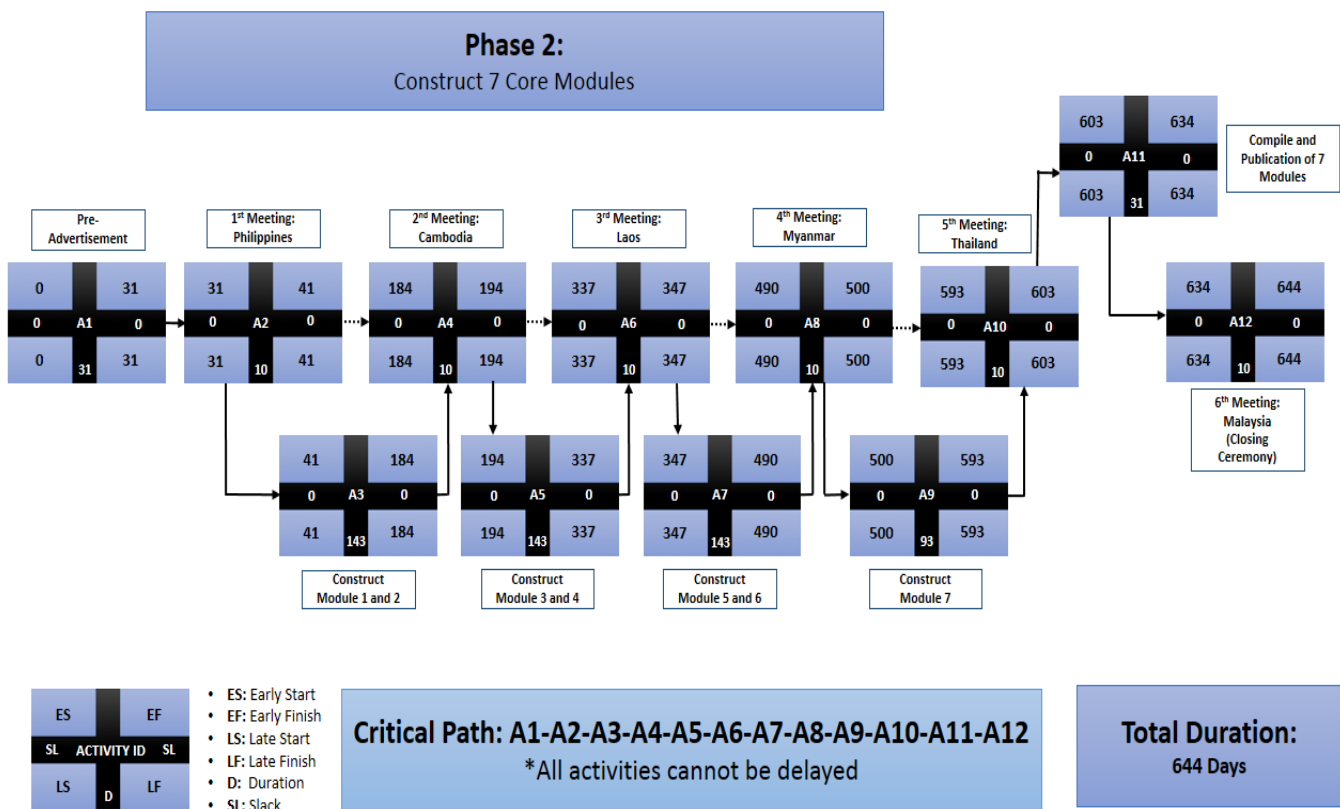


Figure 7: Critical Path Analysis Model for Phase 2

**Table 5: Interdependencies Activities in Phase 2**

Activity ID	Duration (Days)	Dependency
A1	31	-
A2	10	-
A3	143	-
A4	10	A2,A3
A5	143	-
A6	10	A4,A5
A7	143	-
A8	10	A6,A7
A9	93	-
A10	10	A8,A9
A11	31	-
A12	10	-

Figure 7 shows the critical path analysis model for phase 2. As described, all twelve activities did not have any time for delayed or it will drag the timeline longer to complete for this project. The total duration for this phase is 644 days and this phase will be held six meetings in 6 different places in order to construct all these seven Maritime Professional Modules that will be published as an official document for ASEAN. It also is expected to be a new standard for the maritime professional guideline in both education and training systems among the ASEAN countries. Perhaps, it can also be a starting point for future interchange education and training programs as well as any international collaboration among the ASEAN region.

## 5. Conclusion

After ten years of development, ASEAN Charter had developed seven Maritime Education and Training modules in one continuous event as an outcome. One of the project outcomes includes 50 young leaderships from ten ASEAN counties that have common goals and concerns for the enhancement and enrichment of maritime professional education and training within the region. There are twelve maritime experts that are coming from the industry and academia to share their expertise by giving their keynote talk to 50 selected young professional leaders. The seven Maritime Education and Training modules will be compiled into books and published. Thus, to ensure the continuity of this project and to sustain the international relations among 50 selected young leaders, the development of the Maritime Professional Education and Training Association (MPETA) within the ASEAN region is significant at the end of the project.

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