

# Analysis Working Environment Among of Malaysian Seafarer's

Mohd Redza Bin Mahmud

**ABSTRACT:** *Malaysian shipping industry is facing a crewing crisis the seriousness of which does not seem to have registered as a priority by the industry given the fact that the current deficit of about 10,000 could leap-fold to unprecedented levels in the next couple of years. The global shipping industry must come to grips quickly with the realities and the concerns on the emerging shortages and the demand for well-trained and experienced seafarers as the biggest challenge facing the shipping industry itself. The worldwide population of seafarers serving on internationally trading merchant ships today is estimated to be in the order of 400,000 officers and 825,000 ratings. As far as ratings are concerned they are, in the majority recruited from developing countries especially Malaysia. A staggering 20,000 new crew at an average of 15 crews per ship will be needed to meet the demand annually and the number needed could be potentially more if attrition from those currently employees are also taken into account. The issue is not only the concern over the projected shortage of seafarers. There is need also to ensure that the seafarers are not burdened by the spate of new rules and regulations that are impacting on ship operations and management and how the human factor is accounted for and dealt with in these regulations. The seriousness could be clearly reflected when the number of ships currently on order worldwide totalling about 8,000 vessels with deliveries averaging 2,000 annually over the next three years and relate it to the demand for crew for each of these ships. Given the current rate of growth of the shipping industry, there is no easy solution or a quick-fix to the crewing crisis that could overwhelm the industry.*

**Keywords :** *Seafarers Life, Shipping Industry, Impact to Local and Global, Vessel Management, Safety of Life at Sea, Transport Planning, Study on Seafarer Working Onboard*

## I. INTRODUCTION

Malaysia is a major exporter-nation accounting for 2.5 per cent of the global share of the world merchandise trade. Ranked 18th exporter-nation and 20th importer nation in the world according to WTO International Trade Statistics 2005, Malaysia's total external trade increased to RM967.80 billion in 2005 from RM880.82 billion in 2004. In the first five months of 2006, total external trade reached RM420.94 billion. The size of the trade, in volume terms, according to the Ninth Malaysia Plan (2006-2010), totalled 369.4 million tonnes in 2005. A large volume of the cargo handled by the local ports was made up of non-containerised cargo bulk cargoes and related commodities. It is a known fact that more than 90% of goods travel by sea compared to other means such as by air or over land. Ships are getting bigger and faster by the moment and ports are getting larger to cater for these ships.

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However, even though the number of ships is increasing, there exists a large chasm with regards to the supply of seafarers. It was a known fact in the early days for seafarers to be able to set foot ashore and to enjoy the cultures of the ports his ship has berthed at. Those days, ports were normally located besides the town the ships call at. However, due to improved land infrastructure and transportation and to prevent local citizens from being subjected to dangerous exposure of hazards of a ship may be carrying even security threaten to ship crews; ports are now built further away from town and cities. Based for the maritime labour operational challenges which faced by most Malaysian shipping company is timely rejoining upon completion of time off does not monitored and well maintained by Manning Department. It would be lack of constructive assignment planning for sea staff and manning department not match in the edge. Zero tolerance as short notice decline and refusal on vessel type which cause many seafarers are in cross assignment either Conventional vessel such Container ship, tankers, bulkers, even for Oil & Gas vessel type, namely Workboat and AHTS ( Anchor Handling and Tug Support vessel) being critical. As far local body authority such Marine Department and Immigration are the bodies that will approved and certified for those seafarers competency, official signing on and off also TWP (Temporary Work Permit) does take so long times before issuance as pro and cons subjected to their systems, regulations and legislation. Another headline those Malaysian shipping company is aware before employment of local or foreign maritime labour is in variety way. The concern and experience in bad background due to mishandling of shore leave. Such reported positive in Drug & Alcohol test during pre-joining screening before line-up to join the vessels. Another case also has when some of seafarers lack of respects to senior officers. Maritime labour shortages have becoming global issues in the shipping industry. Unattractive career and low retention in the profession has made the industry becoming more challenging.

## II. METHODOLOGY & SCOPE OF STUDY

This research discusses how to measure the value of shortages and cost to managing an operational problem in seafarer's career enhancement. The shortage of the qualified seafarers and the inexperienced seafarers entering the industry has caused the manning risk in the ship management sector. The shortage of qualified seafarers is caused by the seafarers for the traditional maritime countries become expensive and they feel that the profession becomes less attractive. The closing down of the maritime institutions in the traditional maritime countries is another factor to shortage.

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With regard for above mentioned, these thesis has highlight several points as a result to achieve the statement dedicated for the shortages in seafaring industry. On early milestones when ALAM (Malaysian Maritime Academy) has set their target as the only one local maritime training institute. When time goes well, many participants would like to anticipate and promote the long term planning to accommodate their future vessels with competent, qualified and fulfil the requirement especially for Officers and Engineers. This is including to ratings which will support the operation of specified vessels managed. The problems are described basis as per below: 1.

In order for Malaysia to establish itself into a maritime nation by the year 2020, there is a lacking to having capable seafarers who are fully conversant with the maritime aspects to pave the way. This would not only include the seafarers serving onboard the ships but also the other associated industries such as the shipping companies, agents, port operators, pilot services, flag administrators, legal fraternity, etc. 2. In many countries the higher maritime education still continue and keep on develop into the foreseeable future demand. Malaysia has start-up gradually develop this level of education as the small portion into contribution of the seafarers with a lot of limitation. Some decent companies have begun to get foreign crews as their well skills even much better than local. This thesis projected to bring back overview of the shipping companies to get localization to serving onboard. Features the qualities as more money concern shall be involved.

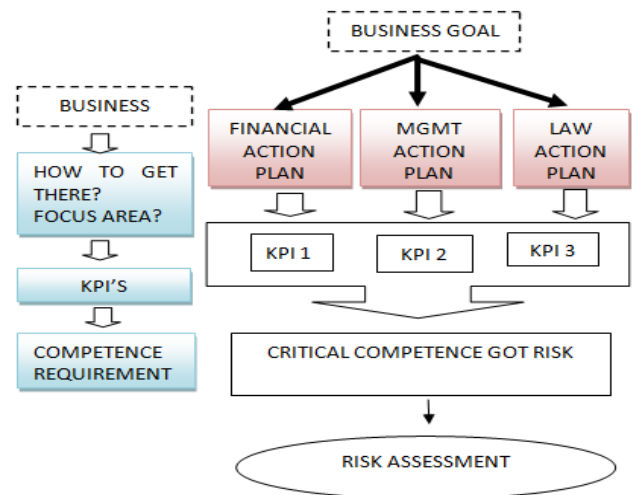
3. Addressing the seafaring issues, the best approach should be proper planned by ship owners and to create "seaworthiness" implements a new formula ascertaining the number of seafarers required in different kind of ships. Creating this new formula would approximately assist the respective person in certifying ships and eventually render the management with safe manning certificate, which would comply with requirements needed for effective implementations of Codes and regulations for a safe and secured ship. To determine the seafarers' requirement, the ship voyage profile and operating conditions were to be specified.

4. Making sure a vessel is fit for purpose is primarily the responsibility of the ship-owner and operator. Traditionally, the outside world has relied on the checks made by the Flag Administration to ensure owners and operators are meeting their obligation. Such growth has exacerbated the scarcity of human resources, both in terms of seafarers and among those who provide shore-based support in gradually.

5. Predicted future new building deliveries are higher than ever before – by the end of 2004, the order book had reached a massive 4,037 vessels total of 220.1m dwt. Ships are easily built, but building a high quality crew takes a great deal more time and effort. It takes trainee officers and engineers three to five years to qualify for the junior ranks and up to eight years to reach a senior level. The question that faces us all is what to do about the dwindling pool of qualified seafarers. Unfortunately there is no simple quick fix to this problem. The shipping industry needs to take a planned and co-ordinate approach to this if it wants to provide its customers with the high quality service to which they have become accustomed.

6. A big turn off too many seafarers is the increasing criminalization of the profession. In the event of even an accidental pollution the authorities are all too often quick to

arrest the ships' senior officers. An ongoing training programmed which takes place both whilst at sea and ashore should be at the heart of every ship manager and owner's training philosophy.



Safety: We shall have zero accidents  
Customer: Shall have zero complaints from major charterers?

What plans for competence building/crewing will help us achieve these goals?  
E.g.: Which focus on coaching top officers, and crew endurance management and operational risk management?

30% less lost time incidents than industry average  
Percentage of crew undergone training in operational risk management

What company specific competence requirements are critical to achieve our business goals? (To create success and avoid failure)

Safety: We shall have zero accidents  
Customer: Shall have zero complaints from major charterers?

Fig. 1 : The diagram of the synopsis of Seafarers Competency selection for pre-joining.

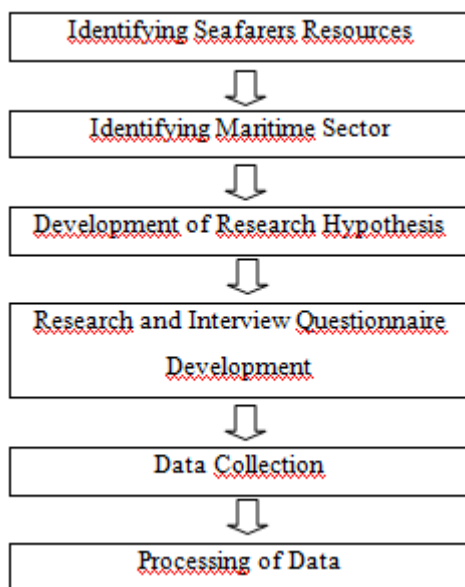


Fig. 2 : The flow chart of research methodology

As a part of the management and operation of the company, certain preventive and consequence-reducing measures are proposed for implementation. In this chapter we will outline how such measures or controls can be assessed with due consideration of uncertainty factors. As already discussed, accident data are subject to different forms of uncertainty: measurement problems, limited data, external effects, and unknown mechanisms in processes and accident development. Many of the examples given are related to occupational safety and manpower training. The frequency of work accidents is given in terms of accident frequency rate, which is a measure related to a standardized exposure (S):

$$AFR = \frac{DI (S)}{SEA. AH}$$

Where:

- DI = number of injuries or work accidents per year
- SEA = number of employees (seafarers)
- AH = average annual hours work per employee = 40. 50 = 2000 (hours/year)
- S = 200,000 worker-hours/year

It should be mentioned that other scaling factors are also used, such as 100,000 and 1 million work-hours. It should also be kept in mind that the term lost time incidence (LTI) rate is used instead of accident frequency rate.

An important aspect of any safety programme is to continuously assess attitudes and competence among the crew or employees. There are different sources that may be used for such an assessment:

1. Examination scores
2. Inspection and evaluation of work behaviour
3. Questionnaire study
4. Assessment of personnel by their supervisors

In order to cross-check this kind of information, one may perform correlations on the data from such studies. Let us take the following situation: a company has invested in a safety awareness and training programme and has later done an evaluation of the competence of the workforce. This leaves us with two sets of data:

1. Training program examination score (Officer).
2. Safety rating by supervisor (Rating).

The assessment data on the competence for the crew of a vessel are shown in Table 1. Both sets were based on a ranking scale from 1 (low) to 10 (high). It can be seen that the mean Score is 7.5, which is somewhat higher than the mean Rating value of 7.1.

Table 1 : Assessment of Safety Program

Crew Member	Rating (x)	Officer (y)
1	4	5
2	9	8
3	7	9
4	9	8
5	3	4
6	7	8
7	8	8
8	5	7
9	10	8
10	6	5
11	8	9
12	8	7
13	6	7
14	9	10
15	8	10
Mean	7.1	7.5
St. Dev.	2	1.8

### A. DEVELOPMENT OF RESEARCH HYPOTHESIS

The hypothesis are to use to generate the accuracy of the shortages and to measure how far the reason to be independent subject to the variety of challenges in Malaysia trademark pattern specialized in seafaring industry. The researcher introduce the importance of a well-articulated, research-worthy problem statement as the centrepiece for any viable research. The aim of this work is to help novice researcher understand the value of problem-based of shortages on what basis by providing a practical guide on the seafaring development as well articulated and by using hypothesis of a research-worthy as the focal point the foundation. Simply reason of the estimation of Malaysian seafarers' shortages level is unknown when there is no continuous study to finding why certain Malaysian shipping company has interest to recruit foreign. Similarly for Senior post and crew rating, most of 70% Senior post are foreign meanwhile about 95% crews are locals. Therefore, the hypothesis is nearly too much a best prediction and comprehensive related to the objectives of the study. This research endeavours the best of using Statistical Package for Social Science (SPSS). The research problem serves at the starting point for the research and is a unifying thread that runs throughout all the elements of the research endeavour (Leedy & Omrod, 2005).





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Kerlinger and Lee (2000) noted that “without some sort of gradually truth of data analysis, the scientist can rarely go further and expect the work to be fruitful”.

By using SPSS, this software will provide instantly outcome. It's much help to reduce errors in automatic calculation. Innova also has been used to verify the value of data. To decide the hypothesis by using this method are genuine, the value of ( $\alpha$ ) must be marked at 0.75 to 1.0 (Chua, 2006). Preferable the shortages issue will be deleting if the value of ( $\alpha$ ) is below than 0.6. Only 1 question is allowed to be skipping at one time. This step will be continuously until the required value is achieved.

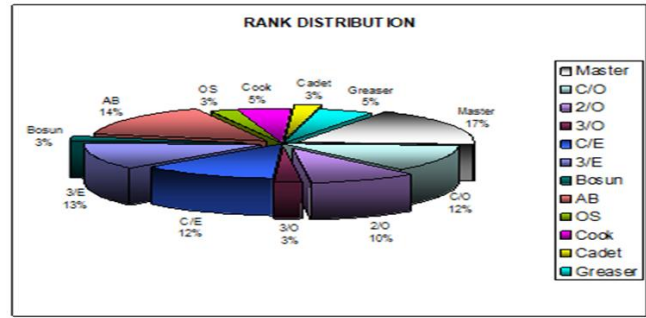
Once researcher has received the actual data, demographic analysis will be show to review the data background of correspondents. It highlights and explained for each data by follow the percentage result. By using these methods, it will assist researcher to assess strong answer in between two considerations is to being monotonous. Monotonous is the specific and true of either consideration that value will decrease or increase. Only the strong consideration value can be adapted to show the statement strengthens. Both of this value is used for this chapter to gain extra strength value. The value are consists of  $\rho$  and  $\tau$  and this value must be significant. The stronger value is closer to -1 to +1.

After all value is sourcing based on SPSS, mean score will be determined based on Likert's scale. A set of mean value are to rectify the level of targeting for all consideration of nature of works and location either it has determined in low, medium or high. Table 3.2 showing the average mean of value.

### III. MAIN RESULTS

These samples are taken from their background serve with Foreign Going companies, Near Coastal trade and others specified in offshore experience. All respondents has serve in variety trade of maritime sectors which more than 6 months and the most long serve onboard is 20 years sailing time at seas. This Chapter has described in details based on survey which sourcing from questionnaires. Researcher target clearly required to clarify the root cause of maritime labour shortages. A responsible government and NGO body has played their apart to promote maritime sector as primary in-come of GDP through import and export business. The nature of shipping business which trading near coastal and foreign going has growth each year and this will resulting the efficiency of shipping companies to increase their capacities from the sizes, vessels managed also extended to the maritime labours. From this Chapter, the results compiled and analyzed according to the research question benchmark. Target data is created as follow:

- i. Demographics of Malaysian seafarers.
- ii. Demographics of Malaysia maritime involvement.
- iii. Demographics details based on location of work.
- iv. Potential issues of shortages in general view :
  - a) Analysis on Data Statistic: Part A - Nature of Work
  - b) Analysis on Data Statistic: Part B - Location of Work
  - c) Analysis on Data Statistic: Part B – Technology Onboard Ship
- v. The effects and perception on the latest technology adaption in shortages issue



**Fig. 3 : Rank proportion**

	Total	Officers					Total
		Mas ter	Chief Office r	Seco nd Offi cer	Third Offic er	Cad et	
A	18						
ge	-2	0	0	1	0	1	2
s	5						
	26						
	-3	0	2	1	1	0	4
	5						
	36						
	-4	2	2	2	0	0	6
	5						
	46						
	-5	5	1	0	0	0	6
	5						
<b>Total</b>		<b>7</b>	<b>5</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>18</b>

**Fig. 4 : Ages Among of Deck Officers**

According to the above, most of Senior Officers rank such Master and Chief Officer has dominate the total respondents, whereby the Junior Officers such Second Officer, having majority in young age. It was indicate that, the more seniority officers onboard, the more experience and capability to lead as Senior Officers. Without mutual an experience and capability, it's difficult to manage the vessels operation which based on the type of operations i.e. Offshore Support Vessels, tankers, bulkers, containers, port harbours and etc.

This research has set 4 type of maritime sectors which involved by all respondents. The basic background to appointing for this research is, Foreign Going trading vessels which highlight and specialised in VLCC – Very Large Crude Carrier with 37.5% or 3 respondents, ULCC – Ultra Large Crude Carrier with 12.5% or 1 respondent also LNG – Liquefied Natural Gas Carrier with 50% or 4 respondents.

This research also has included Port segments which contribute 10% respondents for 4 respondents which playing role to assist small trader especially in Port Kelang and Port of Pasir Gudang terminals.



NC – Near Coastal trading vessels described in general cargoes and feeder container carriers which carrying medium capacities especially from the big port such as, Port Kelang, Pasir Gudang and Kuantan to small port e.g ; Kuching, Kota Kinabalu , Sibul etc.  
Others – OSV’s has shown with the largest proportion 47.5% or 19 respondents into this maritime sector which one of the fastest growth industry, Offshore Support vessels (OSV’s)

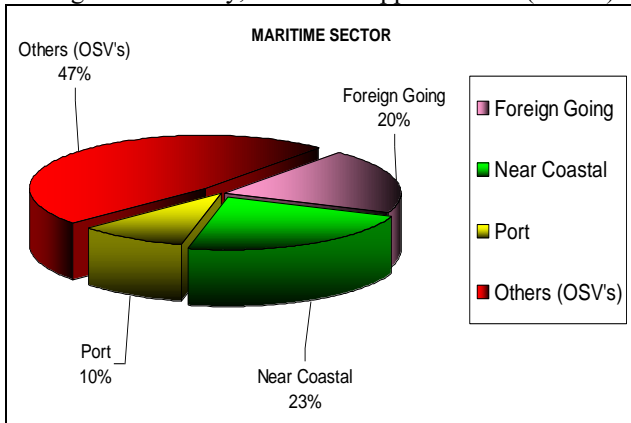


Fig. 5 : Maritime Sector Proportion

Table II : Mean and Standard Deviation for Maritime Sector Proportion

Report				
Type of Ships		Deck Officers	Engineers	Engine and Deck crews
Foreign Going	Mean	1.6667	3.0000	3.5000
	Std. Deviation	.57735	.00000	2.12132
Short-sea/Coastal	Mean	3.1667	2.0000	2.0000
	Std. Deviation	1.32916	1.41421	.
Port	Mean		2.0000	3.0000
	Std. Deviation		1.41421	1.41421
Others - Near Coastal	Mean	1.5556	1.0000	2.7143
	Std. Deviation	.72648	.00000	1.38013
Total	Mean	2.1111	2.0000	2.8333
	Std. Deviation	1.18266	1.05409	1.33712

The multi task job onboard has contribute a lot of crisis, issues and seafarer’s itself would not too long lasting serving in maritime sector. Unpredictable working hours, tight schedule of charterer’s requirements and work in long hours are currently faced by all level of ranks onboard.

To measure the level of confidence in shortages, this research will clarify through 3 types of Questionnaires, naming Part A – Nature of Work, Part B – Location of Work, and Part C – Technology On-board Ship.

End of Analysis on Data Statistic on all Parts, summary will be created to find out which elements that contribute in highest potency of shortages.

Table III : Crosstab between Deck officers and Nature – Danger to personal health / safety at location of work

Deck Officers * Nature - Danger to Personal Health / Safety * Location of Work Crosstabulation							
Count			Nature - Danger to Personal Health / Safety				
Location of Work			Almost Never	Sometime	Almost Always	Always	Total
Bridge	Deck Officers	Master	0	1	5	1	7
		Chief Officer	1	1	3	0	5
		Second Officer	0	1	3	0	4
		Third Officer	0	0	1	0	1
	Total	1	3	12	1	17	
Deck	Deck Officers	Cadet			1		1
		Total			1		1

From Table 3 above, we can observe that location of work has make seafarers (deck officers) feel that their health and safety in danger. To maintain watch keeping and duty, officers and Master must take sufficient rest. As per recommendation from STCW 1974, duty officers must have at least 8 hours rest period. However, some of vessel operation may specify 12 hours for each 2 duties period. E.g from 1200-1800 hrs and 1800-0000 hrs.

Table IV : Crosstab between Engine and deck crews, nature – unpredictable working hours onboard ships

Engine and Deck crews * Nature - Unpredictable Working Hours * Type of Ships Crosstabulation					
Count			Nature - Unpredictable Working Hours		Total
Type of Ships			Sometime	Almost Always	
Foreign Going	Engine and Deck crews	Able Body		1	1
		Cook		1	1
	Total			2	2
Short-sea/Coastal	Engine and Deck crews	Able Body		1	1
	Total			1	1
Port	Engine and Deck crews	Able Body		1	1
	Greaser			1	1
Total				2	2
Others - Near Coastal	Engine and Deck crews	Bosun	0	1	1
		Able Body	1	2	3
	Ordinary Seamen		0	1	1
			1	0	1
	Greaser		1	0	1
	Cook		0	1	1
Total		2	5	7	

From Table 4 above, many of Deck-hand crews experience unpredictable working hours during carry out specific job onboard vessels. Operation during loading/discharging, bunkers, stand-by prior arrival and departure are most common reason why deck-hand crews experience unpredictable working hours. Although guideline has been setting up by IMO, Senior Officers does not have any option to instruct deck-hand crews to working extra hours. This is critical and serious matters when deck-hand crews unable to absorb the pressure and tiredness which contribute for major fatigues. This also has been affected to engine crews. Unpredictable working hours and insufficient crews to assist during perform tasks has made engine crews feel tension and tired.

Table V : Crosstab between Engineers, level of noise background and experience

Engineers * Location - Level of Noise Background * Experience Crosstabulation							
Count			Location - Level of Noise Background				
Experience			Almost Never	Sometime	Almost Always	Always	Total
2-5 years	Engineers	3rd Engineer		3			3
	Total			3			3
6-10 years	Engineers	Chief Engineer	1		0	2	3
		3rd Engineer	0		1	0	1
	Total		1		1	2	4
11-15 years	Engineers	Chief Engineer	1		1	0	2
		3rd Engineer	0		0	1	1
	Total		1		1	1	3

However, it different with Engineers which need to work daily at engine rooms. Engine rooms or machinery spaces contained of a lot of noisy situation, oily environment of works, slicky and play with dirty oil or sludges.

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From the result as Table 5, we can observe that Senior Engineers has facing the noisy during performing their job. This will taking into consideration when certain vessels has build-up with 4 units of main engines.

**Table VI : Crosstab between engine and deck crews and weather condition effect onboard ships**

Engine and Deck crews \* Location - Weather Condition Effect \* Type of Ships Crosstabulation

Type of Ships			Location - Weather Condition Effect				Total
			Never	Almost Never	Sometime	Almost Always	
Foreign Going	Engine and Deck crews	Able Body			1	0	1
		Cook			0	1	1
		Total			1	1	2
Short-sea/Coastal	Engine and Deck crews	Able Body		1			1
		Total		1			1
Port	Engine and Deck crews	Able Body			1	0	1
		Greas er			0	1	1
		Total			1	1	2
Others - Near Coastal	Engine and Deck crews	Bosun	0		0	1	1
		Able Body	0		0	3	3
		Ordinary Seamen	0		1	0	1
		Greas er	1		0	0	1
		Cook	0		0	1	1
		Total	1		1	5	7

It different with Engineers which need to work daily at engine rooms. Engine rooms or machinery spaces contained of a lot of noisy situation, oily environment of works, slicky and play with dirty oil or sludges.

From the result as Table 6, we can observe that Senior Engineers has facing the noisy during perform ing their job. This will taking into consideration when certain vessels has build-up with 4 units of main engines.

**Table VII : Crosstab between engine and deck crews and weather condition effect onboard ships**

Engine and Deck crews \* Location - Weather Condition Effect \* Type of Ships Crosstabulation

Type of Ships			Location - Weather Condition Effect				Total
			Never	Almost Never	Sometime	Almost Always	
Foreign Going	Engine and Deck crews	Able Body			1	0	1
		Cook			0	1	1
		Total			1	1	2
Short-sea/Coastal	Engine and Deck crews	Able Body		1			1
		Total		1			1
Port	Engine and Deck crews	Able Body			1	0	1
		Greas er			0	1	1
		Total			1	1	2
Others - Near Coastal	Engine and Deck crews	Bosun	0		0	1	1
		Able Body	0		0	3	3
		Ordinary Seamen	0		1	0	1
		Greas er	1		0	0	1
		Cook	0		0	1	1
		Total	1		1	5	7

Weather condition is the main factor that make the stability of vessels during through passage at open sea. Few of respondents may be feel that weather condition could be affected to their performance onboard.

There are many kind of maintenance that will be planned for a whole year. This is including operation wise and cargo

handling for loading/discharge are common job for deck crews. For engine crews, weather also play a role as they will carry out heavy job.

For vessels operates in Others – Near Coastal especially AHTS (Anchor Handling, Towing and Supply), most of deck crews having bad experience as they need to engaged the dangerous job during heavy weathers. There is have a cases when deck crews fall to the sea.

As for another vessels especially for Foreign Going trade, the ship is huge and big. As a result the stability quit comfortable and to compare with short-sea/coastal vessels which having small draft. The hogging and sagging will determine of the vessel effect to counter the heavy weather.

**Table VIII : Crosstab between Deck officers and experience feeling of tension using technology equipment onboard ships**

Deck Officers \* Technology - Experience Feeling of Tension Using Technology Equipment \* Type of Ships Crosstabulation

Type of Ships			Technology - Experience Feeling of Tension Using Technology Equipment				Total
			Almost Never	Sometime	Almost Always	Always	
Foreign Going	Deck Officers	Master	1		0		1
		Chief Officer	0		2		2
		Total	1		2		3
Short-sea/Coastal	Deck Officers	Master	0	0	1		1
		Second Officer	1	1	1		3
		Third Officer	0	1	0		1
		Cadet	1	0	0		1
		Total	2	2	2		6
Others - Near Coastal	Deck Officers	Master		3	1	1	5
		Chief Officer		2	1	0	3
		Second Officer		1	0	0	1
		Total		6	2	1	9

Deck officers has been familiarized them self to cope-up the basic standard latest technologies devices onboard such Radars, Electronic Navigation Aids, Echo Sounder, fire fighting alarm devices, telecommunication at high frequency devices, etc, which is very common for all type of vessels. International Maritime Organization (IMO) has set the basic standard operation procedure for all Officers to ensure this group are ready to navigate the vessels in any time. Technology equipment onboard vessels has been upgrade since the tragedy of Titanic, Exxon Valdez, Held of Enterprise etc. IMO has looking technology adaptation onboard as to prevent the incident and meantime to increase the level of safety among of seafarers onboard. But, due to demand and supply has been increase especially in Oil and Gas sectors, IMO has appointing Recognize Organization (RO) bodies such Lloyd Register, Bureau Veritas, American Bureau Shipping, etc to develop this industries up to the level which suitable with operation, safety and management. This including for those seafarers serve in many of ships i.e tankers, containers, etc, technology itself has become as mandatory requirement and all seafarers has no any other option to avoid. IMO looking this perspective to make the job more easier, less paperwork and monitoring. Seafarers has looking this matters towards high tension, less supervise and need to control single equipment for long hours.





#### IV. CONCLUSION

To ensure the shortages issues resolved towards recognizing Malaysia as Maritime Country beyond 2020, key focus areas in manpower development is a must by ensure sufficient competent personnel to drive the industry. Maritime research & development must be acknowledged to all shore base staff and attract their concern to gain the competitive edge through technological mass media. Many international researches has been exposed to the solution and proposed that the shift of work, environment of work and ship motion characteristic has created the elements which contribute to stress and fatigue. The involving of maritime industry at Malaysian has been gradually increased. The main of this background maritime sector are identified in 4 sub-groups. For each group are, Foreign Going vessels, Short sea or Near Coastal, port/tug operator and Others that can be classified other than above groups. Further discussion for this enquiry has been categorized based on ages, ranks and experience. The finding of analysis will adapt to the technology effect which contribute the highest potential of shortages. Working at variety location of work onboard the vessels is required trainings and specified skills which an adequate knowledge much helps to seafarers perform their job. As stated many kinds of vessels specification, IMO (International Maritime Organization (IMO) has set a guideline in order seafarers has a competency and valid as seafarers. Working environment is the highest potential that face by seafarers such, temperature depending on different of regions, noise of sounds especially at engine rooms, flexibility of long working hours, less entertainments and etc.

#### V. THE WAY FORWARD

In ideology and determinations of seafaring job onboard can be classified in contributing to the shortages issues in a working period. For deck officers, Master and officers may feel that the long period working in static area at Bridge. Without any much room to move has make officers maintain and static to maintain watch keeping. This is including to carry out chart correction or, calculate stability of the vessels, or to counter heavy traffic especially at Malacca Strait, Singapore Strait, Suez Canals or Panama Canals. This required especially Master to maintain at Bridge and assisted by officers. Every Officer has their responsibilities and to fulfil this requirement, every vessel accommodated minimum 3 officers for duty roasters each 4 hours. In offshore industry, the minimum 2 officers required. For this consideration if 1 officer is not able to perform their duty, it will affect to the navigation during the vessel take the passage. The Master need to replace for temporarily and unpredictable situation will arise if all officers are unable to perform the duty. Engine room is the place where all machineries such main engine, generators, hydraulic and all heavy duty equipment has been fixed to propelled the propeller. Engine room can produce certain noise levels which present the uncomfortable for Engineers and crews itself. The level of noise, vibrations and exposure to up extreme high temperature will felt by seafarers. This situation is greater other than seafarers which working at deck or bridge. These factors can adding up the level of stress and suffered by engine room workers. In addition to support above analysis, researcher which has experience as Deck Officers and serve variety of typical containerships and AHTS (Anchor Handling and Towing

Supply) vessels, engine room are building at the lowest part of any vessel and can restrict communication directly with other crew members. This comparison can be making with bridge and deck environment which they feel comfortable and less exposure threat to environmental that cope by engine room workers. All seafarers or respondents have agreed that they experience the effect of variety location onboard. This dedicated to the engine room workers that expose with extreme situation daily. The highest mean are selected from the higher ranked of work and they are dealing with lesser stress but high job responsibilities. Deck Officers and Engineers are leading to the increase capacity of work load. Every month the Company has set guideline for submission of Monthly Reports, whereby addressed by national and international regulations. This will affected to the operation of the vessels as Deck Officers and Engineers need to prepare this task in advance before the due dates. As for example, the higher ranked Deck Officers are much related to the management of ships. This including welfare of their crews. Even though the lower person rank onboard has lesser responsibilities, they are handling the maintenance of ships either at deck or engine room daily. The critical matters is when high ranked need cooperation from lower ranked to assist during bunkering of fuel or fresh water for vessel needful, and during cargo operation at ports. When the tight schedules and peak of much kind of operations has make seafarers in dilemma as the force of work gradually increase in short notice. The study has been thoroughly justify and investigate the issue of shortages in Malaysian seafarers for variety of maritime sectors. Naming of maritime sectors involved are foreign going trades, near coastal, port/harbour also others which including offshore support vessels in oil & gas industry. The total respondents is 40 persons and taking full responsibilities to assist by giving support and details required are came from various ranks and has been served for many type of ships. These evaluations through questionnaires much help to measure the weakness in contribution of shortages issues. Various ranges of ages, experience and different location of working area, has develop strong evidence that shortages issues has related to their nature of job, location of workplace also adaptation new technologies onboard which slightly give the impact for their future profession at sea itself. Typical questionnaires have been distributed and analyzed using SPSS software. Reliable suggestion and useful recommendations will be discussed to improve the quality of knowledge this research for Malaysian seafarers.

#### VI. SUGGESTIONS AND RECOMMENDATIONS

Good seafarers are dedicated for the right vessels. Therefore, the training academician such A.L.A.M, U.M.T, UNIKL and PELITA which sourcing and provide training facilities for all level ranks are wished that to progress their calendar training frequently. Promotion through fresh graduate either in Nautical, Engineer and ratings will elaborate more in the qualifications and primary results in excellent will ensure this pioneer to fix the future position rank onboard seriously as per guideline from Malaysian Marine Department.

The level of competencies strictly to utilize through sea time experience provided promotion scheme from shipping companies will ensure the demand and supply in optimum condition. Developments of questionnaires much appreciate if the future researcher needs to consider the type of ships characteristics or background operation. This is including period of passage/journey from point A to point B, type of propulsion systems, regulation of port operation, charterer constraint, the level awareness of update requirement and regulations e.g. MLC (Maritime Labour Convention), Malaysian Marine Union Clubs, MASA (Malaysian of Ship-owner Association), IKMAL (Institut Kelautan Malaysia) etc need to see all items while at sea, office, onshore and probably can make comparison on selective others maritime country, e.g. Singapore. The unique combination of potential stressors to contribute the solution of disciplinary at sea, fatigue, poor health, lack of companies benefits and increased the accident risk assessment. Advance researcher possibility need to look into technology and latest automation on vessels critical equipment especially located at bridge, deck and engine room whereby it required more details study in usage. The optimization and friendly-user will assist seafarers to perform their job while there is not contribute to the shortages issues. The determination of technology helps the seafarers to improve their quality of life while shipping companies will enjoy running their business without any retrain or shortages issues. Provided, the facilities, salary, benefits and welfares will come after to support the seafarers enjoy their working at open seas without any uncountable factors and fatigues.

The latest technology adaptation for new build vessels philosophy is required advance, innovative and to comply the latest mandatory requirement by IMO. While current seafarers has been initiate to receive new technologies, there will be present of effect and contradict as human being acceptance on latest technology in certain level. However, the utilization of technology is predicted to minimize the error especially during carry out operation and handling cargoes. From this analysis, researcher will prove that technology also will affect to the contribution of seafarers shortages issues.

It related to the advance technological research and developments and it is important to the seafarers and industry itself. With affordable from the Ship owner to reduce the human errors, this adaptation of new technologies will give some impact for the end users. However, seafarers have been trained and well adequate training to perform their jobs and not depending on technologies 100%. As this are depend on the workmanship which much more valuable for the operation of vessels. The increase of technology automation for each critical equipment onboard the vessels, it will require gradually high intention to monitor the equipment. The integrated systems and automation much to relieve the watch keeper to carry out task such setting courses, plotting positions, altering courses, alignment main engine and generator power distribution, bunkering process and lifting cargoes. However, this configuration does not relieve any watch keeper of his responsibility to act and make decision diligently. Especially to Senior Officers and Engineers shall known their overriding authority when critical and emergency situation to disobey the technology system in subsequent manner.

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