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Determining the Contribution of Distraction Factors on Seafarers Using a Systematic Average Rating Value

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ABSTRACT

Seafarers are exposed to various element of dangers on board ships due to significant distractions which affecting their physical and psychological conditions. Existence of distraction creates threats that possible of causing undesirable outcomes such as errors, injuries, casualties, poor health and even fatalities. Statistical report of marine casualties and incidents from European Maritime Safety Agency in 2016 shown a serious increment of reported cases from year 2011 to 2015 which should be concerned of as the marine safety was seriously threatened. Therefore, the objective of this research is to determine and rank the distraction factors based on their contributions in affecting seafarers' conditions, both physical and psychological wellbeing. A systematic average rating value technique incorporated with quantitative data collection is applied to determine the contributions of the involved factors in establishing the distractions problem among seafarers. Element of 'Food and nutrition' is recorded as the highest contributing factor to Malaysian seafarers, for deck and engine department respectively, in establishing the distraction related-problems among five other factors involved. The result provides useful information to the companies to recognize the potential causes of a poor shipping operation or marine incident which assists the companies to provide proactive actions in conducting detail assessment and finding solution to improve the system which less distraction.

1. Introduction

In maritime sector, when safety is a priority, element of human factor is crucial to be assessed in a particular system (IMO, 2004; Othman et al., 2015), because the discipline of human factors is devoted to understand human capabilities and limitations in order to design equipment, work environments, procedures, and policies that compatible with the human abilities. In this way, the designed technology, environments, and organizations will work with people and enhance their performance, instead of working against people and degrading their performance. However, the technologies, environments, and organizations that have been designed to enhance human performance may also act vice versa and be the key factors that lead to human errors as they may incompatible with the optimal human performance (Rothblum, 2000). These incompatible factors could increase the risk of human errors and result the occurrences of injuries, casualties, poor health and even fatalities. A serious increment of reported cases from year 2011 to 2015 which should be concerned of as the marine safety was seriously threatened as in Figure 1 (European Maritime Safety Agency (EMSA), 2016).

Based on the investigations conducted to the increasing number of reported marine casualties and incidents since 2011 to 2015 as shown in Figure 1, the most contributing factor that were causing the increase of marine casualties and incident per year is the human factor which were due to their erroneous actions in shipboard operation and it was represented by 71% of total events recorded as illustrated in Figure 1.

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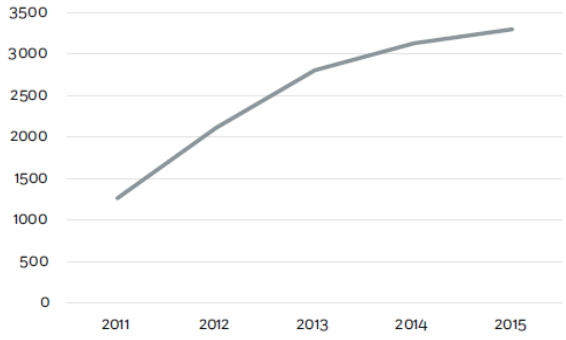
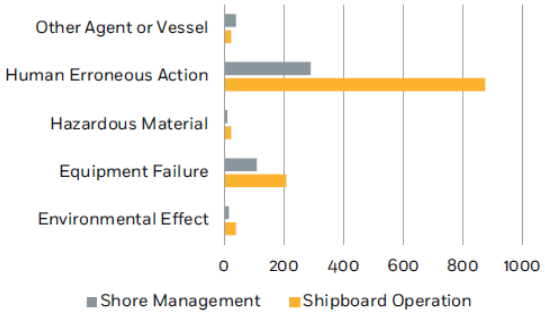
Figure 1: Number of reported marine casualties and incidents per year (2011-2015)



Source: (European Maritime Safety Agency (EMSA), 2016)

Figure 2: The main contributing factors lead to accidental events from 2011 to 2015



Source: citepart4-5

Such contribution of human erroneous actions in marine casualties and incidents induce a worrying situation to the whole shipping industry as the safety is a priority in maritime operation and huge losses could be incurred if such incident cases keep increasing.

Several studies relate that the causes of marine casualties and incidents in shipping industry are due to the effects of distractions experienced by seafarers at their workplace (Othman et al., 2015, 2016). Distractions, or other term used, interruptions, in almost all instances, are disruptive to performance and may increase the human errors (Trafton and Monk, 2007). The effects of interruptions also used to be studied in various fields of high-risk workplace environments such as aviation (Latorella, 1998), medicine (Sanderson and Grundgeiger, 2015) and vehicle operation (Kim et al., 2015) in which human error can have serious, potentially disastrous consequences. Besides, interruptions are also explored in less-safety critical workplaces, such as offices, where interruptions can induce stress (Gloria, Daniela and Ulrich, 2008), anxiety (Bailey and Konstan, 2006) and poorer performance (Cades et al., 2010).

2. Literature Review

Distraction can be defined a diversion process of an individual's or group's attention from the desired area of focus in which may block or diminish the reception of desired information. Distraction can be caused by several states of situations which consist of the lack of ability to pay attention, lack of interest in the object of attention, or the great intensity, novelty or attractiveness of something other than the object of attention (Post and Schumm, 1997). Sources of distractions come from both external sources, and internal sources (Alboher, 2008) which may significantly affect the seafarers and may cause many undesirable effects such as excess fatigue, mentally stress and poor work performances (Trafton and Monk, 2007; Othman et al., 2015).

Generally, poor performance of a worker is an effect of insufficient number of healthy staffs, or not providing care according to standards, and not being responsive to the needs of the community and environment (Dieleman and Harnmeijer, 2006). A poorly designed ship or a system where the crew is tired or unaware of cultural differences is said could contributes to lower the level of safety of the ship operations (IMO, 2010; Othman et al., 2015). Therefore, in the end, the outcomes of the effects could be more adverse which also may cause human injuries, serious marine casualties and also fatalities among crews (Othman et al., 2015).

Various factors can considered to contribute in generating distraction effects to seafarers on board ships, mostly through fatigue, stress, poor health and poor attentions. The possible

distractions factors exists on board may generated from various sources such as working and living conditions, interactions between human, individual factors, physical on board environment and also from food and nutrition supplied to them. This research is basically an extension work from the previous studies that conducted by (Othman et al., 2015, 2016). However, such papers does not clearly described or discussed the weightage value of each contributing distraction factor in affecting seafarers' conditions and rank them accordingly.

The previous study had referred only to the deck seafarers as a sample study. However, this extension study has taken into account both, the deck and engine seafarers, in order to figure out the most important factor in causing distraction on board and that should be given attention for improvement. In order to determine the contribution of the distraction factors among Malaysian seafarers, the list of parameters to be evaluated is based on the parameters pointed out by (Othman et al., 2015, 2016) and the parameters and their abbreviations which were classified into main criteria and sub-criteria, are shown in Table 2.

Therefore, the objective of this paper is to determine and rank the main distraction factors based on their contributions in affecting seafarers' conditions at the working place (on-board ship). This study is focusing on seafarers because they are valuable assets of the nation which play a crucial role in sustaining or increasing the profitability of the shipping business and marketability of local seafarers in global shipping industry. Thus, their well-beings shall be taken into sights for future improvement.

3. Methodology

A test case is developed using a systematic mathematical steps incorporated with an average rating value technique in order to determine the contribution of the distraction factors before they are ranked in preference order. The average rating value technique is a systematic mathematical algorithm is using a basic mathematical formula, the averaging, in order to produce more effective calculation steps and reliable outcomes (Jacobs, 1994; Foerster, 2006). In this research, the average rating value technique is technique that used to assist in finding weight for each of the parameters involved. It is a straightforward concept by calculating the central tendency of the parameters based on the evaluation given by the respondents compared to the other method which is more complex to understand that may lead to misconduct of the real concept of the method. In addition, the outcomes would also be easily understood and interpreted. The formulae used for this technique, generally, are shown in Equations 1 (Medhi, 1992; Jacobs, 1994; Foerster, 2006) and 2.

$$A = \frac{1}{n}\sum_{i=1}^{n} a_i$$

$$A = \frac{x_1 + x_2 + x_3 + x_4 + ... + x_n}{n} \quad (1)$$

where:

A = represent the arithmetic mean

$\sum$ = summation symbol; is the addition of a sequence of numbers; the result is their sum or total

X = value given per subject

n = total number of subject involved

a_i = value given per subject

Equation 1 is simplified to Equation 2 for further understanding and application.

$$Average\ Rating\ Value = \frac{Total\ value\ given\ for\ each\ category}{Total\ number\ of\ all\ categories\ involved} \quad (2)$$

The weighted values of the main criteria and sub-criteria used to determine the amount of distractions faced by the seafarers. The weighted values were based on the evaluations given by selected respondents using 5-points Likert scales values to each listed parameter involved in this study, after analysed using the systematic average rating value technique. The evaluation responses were gained based on survey process by distribution of sets of questionnaires to the total of 120 selected respondents, included; 1) senior deck cadets, 2) junior deck officers, 3) senior deck officers, 4) senior engine cadets, 5) junior engine officers, and 6) senior engine officers, which definitely have more than 12 months shipboard experience backgrounds and theoretical knowledge in shipboard operation. Responses from each of the groups were represented by a number of 20 respondents, respectively, in which to ensure the consistency in data collection as shown in Table **??**.

The sample respondents of this study was taken among Malaysian seafarers because there is lack of comprehensive research conducted regarding the distraction problem among Malaysian seafarers on board and based on that, this research may fill the gap of the literatures regarding distraction issue especially for shipping operation as the distraction may has its contribution in affecting seafarers at their workplace and induces errors in shipboard operation (Othman et al., 2015, 2016).

In this research, the spider web or radar chart is used to illustrate multivariate observations with an arbitrary number of variables or factors represented on axes starting from the same point and the score given (Chambers et al., 1983; Abdul Rahman et al., 2016). The purpose of using this chart is to illustrate and prove the tendency (score) or aptitude of contribution of each main criterion in affecting each group of ship's manning involved in this research.

4. Findings

A test case was created based on the current situation faced by Malaysian seafarers on board ships. The process of selection was started by identifying the issue faced by seafarers during on board ships and determining the parameters to be used as shown in Table 2. Secondly, the main body of the test case contains of 1) calculation of the rating value of the evaluation sub-criteria, 2) calculation of the average rating value of each sub-criteria in separated respondents' groups, 3) determination of average rating value of main criteria and 4) calculation of weight value of each main criteria for each category or group involved. Finally,

Table 1: The list of parameters

Main Criteria (Level 1)	**Sub-Criteria (Level 2)**
Working condition (WC)	Staffing or crewing strength/ number (SS) Burden of system in used/ Technological inventions (BS) Arrangement of working hours (AWH) Work pace/ demands /pressure (WP) Distribution of works (DW) Personal abilities /experiences (PAE)
Living condition (LC)	Comfortability of accommodations (CA) Recreational activities / facilities (RAF) Periods of rest (PR) Shore alienation / leaves (SL) Intensified activities (IA) Hygiene and tidiness (HT)
Human interactions (HI)	Language barriers among crews (LB) Quality of relationship (QR) Social isolation / family separation / away from home (SI) Level of autonomy (e.g. freedom from external control & influence) (LA) Multi-national crews/ cultures/ beliefs (MC) Supportive cultures (e.g. motivation & tutoring) (SC)
Behaviours/ Individual factors (IF)	Discipline (DI) Mind set (e.g. way of thinking, awareness) (MS) Approachability (AP) Firmness (FI) Responsibility (RE) Vigilance/ alertness/ sensitivity (VAS)
On-board environment (OE)	Ship motions (SM) Climatic Condition (CC) Weather and Mother nature (WM) Visual condition (VC) Exposure to hazardous substances/ cargoes (EC) Noise and vibrating circumstances (NV)
Food/ Nutrition (FN)	Organization of food nutrition/ composition (OF) Adequate supply of food (ASF) Quality of food preparation (QFP) Hygiene (HY) Equality in distribution of food / needs (EDF) Satisfaction on food preparation (SFP)

Table 2: Total respondents involved in this study

Respondents	**Working field**	**Total samples**	**Background**
Senior cadets	Deck	20	More than 12 months sea times and engaged with current scenario of shipboard
	Engine	20	operations
Junior officers	Deck	20	- More than 12 months sea times and engaged with current scenario of shipboard
	Engine	20	operations - Act as fourth officers/ engineers, third officers/engineers and second officers
Senior officers	Deck	20	on board
	Engine	20	- More than 12 months sea times and engaged with current scenario of shipboard operations - Consist of second engineers, chief officers, chief engineers and captains' of
Total		120	the ship.

it concluded with ranking the preference order of all main criteria. The illustrations of the steps conducted were shown further as below.

Step 1: Calculate rating value of the evaluation criteria

The total rate given by the respondents during the surveys conducted using the 5 - point 'Likert' scales were used to measure the contribution of each criterion and sub-criterion in affecting the seafarers' conditions and the evaluations given by the respondents were based on their experiences while working and living on board ship during their services. For example, sub-criterion 'SS' was recorded the rate in total of 72, after the rate given for the sub-criterion 'SS' by each respondent is total up according to separate category of respondents group, 'SDC'. The similar technique is used for all the other respondents groups involved in this study.

Step 2: Calculate the average rating value of the sub-criteria

All the feedbacks received from the respondents as according to the surveys were further analysed by using Equation 1 of Average Rating Value technique for evaluating the criteria and sub-criteria mentioned. The output values determined throughout this technique were represented as the average rating value of the sub-criteria involved. The example of the calculation using Equation 1 is shown below:

Average rating value for sub-criterion $'SS' = 72/20 = 3.60$

The value of 3.60 represents the average rating value recorded for the sub-criteria 'SS' based on the total evaluation made by

the total of 20 respondents from 'SDC' group. The similar calculations were performed for all sub-criteria in different key study areas for each group of respondents selected.

Step 3: Determine the average weight value of main criteria

To determine the average rating value of main criteria, firstly, the levels of criteria need to be identified and separated. For this study, there are two levels of criteria were identified as shown in Table 2. The main criteria were known as the Level 1, while the sub-criteria were known as the Level 2. The average rating values of sub-criteria recorded in this study were determined to influence on the average rating value of the main criteria. All the results will subject to the ranking process as the main factors in each group will be ranked based on the degree of distractions recorded for each ship's manning (Deck/ Engine) which it is indicated using average weight value.

Based on the Table 1 which used to illustrate that the Level 2 criteria are deemed to influence the Level 1 criteria, the average rating value of main criteria were determined based on the sum of the average rating value of all sub-criteria under each main criterion of separated groups. The total average rating value of 'WC' was determined as follow: Total average rating value of all sub-criteria under the criterion 'WC' for SDC group = 3.60 + 3.45 + 3.90 + 3.75 + 3.85 + 3.45 = 22.00

Similar calculations were performed to determine the average rating value of all main criteria. The average rating value of each main criterion is summarised as in Table 3.

Table 3: Average rating value of main criteria

Main Criteria / Categories		WC	LC	HI	IF	OE	FN
Deck	SDC	22.00	20.75	21.30	22.30	20.57	21.55
	JDO	19.50	19.35	18.90	20.80	17.95	20.95
	SDO	22.25	21.00	20.75	21.45	20.80	22.15
Engine	SEC	22.55	23.05	22.15	22.60	22.40	24.20
	JEO	23.30	22.60	22.20	22.50	20.90	23.25
	SEO	17.45	20.25	17.25	22.75	22.25	22.30

Meanwhile, the average weight value of the main criteria were determined based on the averaging calculations computed on the average rating value of each criterion as shown in Table 3 with the total number of the sub-criterion of the criterion they contribute, respectively. The calculations of average weight values of all criteria were using the Equation 2. Given the main criterion 'WC' for the senior deck cadets' (SDC) category as an example, the weight value was computed as follows:

$Weight of the criteria == 3.66667$

The weight of each criterion was determined by dividing the average rating value of the main criterion 'WC' (refer Table 3) which is 22, with the total number of the sub-criteria placed under the main criterion 'WC' which is total of 6. The output for the main criterion 'WC' is computed as 3.66667. Similar calculations were conducted to all criteria in order to determine the average weight value of all the main criteria. Table 4 summarized all the output values of the main criteria weight in average.

4.1. Step 4: Calculate the weight value of each main criteria for each category or group involved

The average weight contribution is determined to discover the tendency of the criteria in influencing each group/category of respondents involved in this study. The average weight contribution of a criterion is likely to represent the portion of contribution of the particular criterion when it is compared to the other contributions of the other criteria in similar group/category.

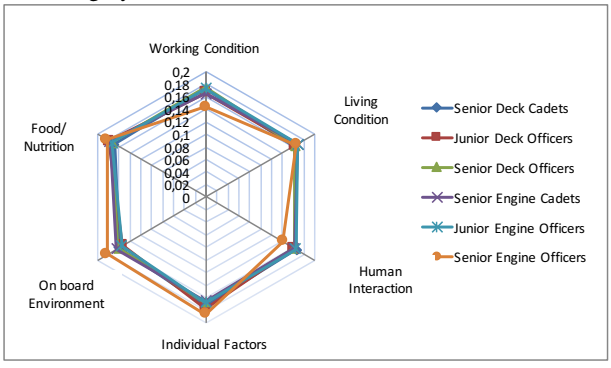
Taking the criterion 'WC' as example for determining a portion of contribution, the average weight value of 3.66667 is divided from the total value of all contributions recorded from six contributors for the 'Senior Deck Cadets' group, respectively, which are 21.41167 as shown below.

Average weight contribution of the criterion 'WC'
= 3.66667/21.41167 = 0.171246@0.1713

The output of the calculation which is also the average weight contribution of the criterion 'WC' is equal to 0.1713. In similar way, the weight calculation algorithm was applied to all other main criteria with the given average weight values for each category. Table 5 summarizes all the output values of the average weight contribution calculation for all the six categories involved.

The average weight contributions of main criteria were interpolated into a spider web or radar chart presentation to describe the average contribution of all main criteria on every category. The illustration of the main criteria contribution on each category is shown as in Figure 3.

Figure 3: The average weight contribution of all main criteria recorded on each category



Based on Figure 3, there were six parameters tested to determine their contributions to affect six groups of ship's manning. Each coloured line with dot represented a parameter. The contribution of each parameter was determined to the weighted amount of distractions which contributed to each group. The nearer the dotted coloured line to the group, the more significant/ the higher the amount of distractions that the parameter influences the group. If all the dotted coloured lines at the almost same point in a particular group, such illustration showing that the group was experiencing a significant distraction problem with the parameters tested.

Based on the values in Table 5, the average weight contributions of the main criteria for deck and engine side manning were determined separately, according to category, in the issue

Table 4: The average weight value of all main criteria for each category

Category/Criteria		WC	LC	HI	IF	OE	FN	TOTAL
Deck	Senior Deck Cadets	3.66667	3.45833	3.55000	3.71667	3.42833	3.59167	21.41167
	Junior Deck Officers	3.25000	3.22500	3.15000	3.46667	2.99167	3.49167	19.57501
	Senior Deck Officers	3.70833	3.50000	3.45833	3.57500	3.46667	3.69167	21.40000
Deck	Senior Engine Cadets	3.75833	3.84167	3.69167	3.76667	3.73333	4.03333	22.82500
	Junior Engine Officers	3.88333	3.76667	3.70000	3.75000	3.48333	3.87500	22.45833
	Senior Engine Officers	2.90833	3.37500	2.87500	3.79167	3.70833	3.71667	20.37500

Table 5: The average weight contribution of all main criteria for each category

Category/Criteria		WC	LC	HI	IF	OE	FN
Deck	Senior Deck Cadets	0.1713	0.1615	0.1658	0.1736	0.1601	0.1677
	Junior Deck Officers	0.1660	0.1648	0.1609	0.1771	0.1528	0.1784
	Senior Deck Officers	0.1733	0.1635	0.1616	0.1671	0.1620	0.1725
Deck	Senior Engine Cadets	0.1647	0.1683	0.1617	0.1650	0.1636	0.1767
	Junior Engine Officers	0.1729	0.1677	0.1647	0.1670	0.1551	0.1725
	Senior Engine Officers	0.1427	0.1656	0.1411	0.1861	0.1820	0.1824

of distractions on different departments because a person who have different job scopes and responsibilities will experiencing different types and amounts of distractions. The calculation for determining the overall ranking order for each side/ department was using the average weighting formula which generated from Equation 2. The example of calculation is shown as below and the outputs are summarised in Table 6.

Average weight for 'Deck Side' ranking = (weight in SDC + weight in JDO + weight in SDO) / (Number of categories)

Example: Average weight for deck side ranking (Working Condition) = (0.1713+ 0.1660 + 0.1733) / 3 = 0.1702

Similar calculation was also performed for the Engine side ranking to determine the average weight of each main criterion recorded in each category. Table 6 shows the average weight contribution of each main criteria which causing distractions on the deck and engine side/ department. It represents the extent or tendency to which the criteria are affecting both departments. As result, the 'Food & Nutrition' is recorded to be the highest contributing factors for both side/ department, followed by 'Individual Factors'. The average weight contribution of the other criteria can refer to Table 6 as each department experienced different amount of distractions.

5. Discussions

The factors of 'food and nutrition' and 'Individual factors' are leading the ranking order of overall analysis which means that they have a huge influential in affecting seafarers' conditions on-board ships compared to other factors involved in this research. The percentage value of contribution between each of the factors involved, regardless the departments that they being into, are having not so much different as each factor is interrelated with each other, for instance, food and nutrition may be the highest contribution in affecting overall Malaysian seafarers' conditions due to the effect of individual factors which managing it such as in term of the quality of preparation and maintenance of the food or the equality of the food served onboard. The quality of preparation and maintenance of the food can be seen in term of food preparation, taste, and hygiene during preparation and storage, meanwhile, the equality can be seen in term of quantity of the halal and non-halal foods served on-board the ship. Factor of individual may incorporated in the factor of the food and nutrition consumed as the individual factors of the steward crews may influence the hygiene and the quality of the food prepared. Thus, if the food and nutrition is not so good in term of hygiene, quality, tastes, and segregation of the 'halal' or non-halal' food, all the other crews, regardless which department, could be affected as they may engaged with the feeling of un-satisfaction or doubtful situation to consume the foods, thus will increase the poor consumption of healthy and nutritious foods for recovery from harsh working jobs. Besides, the crews may also experience a poor state of health condition due to consumption of poor quality of food as they may engaged with food poisoning, diarrhoea, nausea or dizziness, and these situations may probably interrupt the whole activities on-board as the affected person may distracted by the uncomfortable feeling and lead him to less aware or leave his duties to the other crew. Such actions may cause increase of negligence or unsafe acts to occur, or may cause other crew to engage with the fatigue problem during the working hours. In the end, the safety on-board will be jeopardized if such actions are not under control.

The issue of food and nutrition is being the main cause that contributes to increase the tendency of distraction problem among Malaysian seafarers, regardless from which departments, because it is not just about getting the right fuel into bodies but also significantly important on a psychological level of an individual. The boredom of life on-board ship can be treated by having good food, especially in good companies. Having good nutrition which seafarers look forward to, able to lift the mood of an individual and it is important to consider the role that food plays or can play on-board as they can influence seafarers' feeding rates and the rationale behind the consumptions.

As on-board a ship is occupied with multi-national crew which do have different lifestyle, eating and working habits, especially the steward crews, these may develop a variety of questionable scenario on seafarers which may distract them at most of the times, for example regarding the quality of food prepared, hygiene, tastes or variety of the foods serve each day

Table 6: The average weight contribution of all main criteria for each category

Rank	Deck side	Average weight	Engine side	Average weight
1	Food/ Nutrition	0.1729	Food/ Nutrition	0.1772
2	Individual factors	0.1726	Individual factors	0.1727
3	Working condition	0.1702	Living condition	0.1672
4	Living condition	0.1633	On-board environment	0.1669
5	Human interactions	0.1628	Working condition	0.1601
6	On-board environment	0.1583	Human interactions	0.1558

and also, the status of 'Halal' foods for Muslim seafarers. This is because the cook or steward of the ship may not a Muslim, so this may create a doubtful situation on seafarers, especially to the Muslim seafarers, because the quality of the foods is very important to them in term of how it's being handled, stored and prepared. Sometimes this issue is not been given a good attention by the companies and lead to a neglect of standard and equality of food preparation for Muslim seafarers, for instance. Most of Malaysian seafarers may consider the elements inside food and nutrition factor are very important as they may come from Muslim background or 'Halal' practiced person for non-Muslim. Therefore, the factor of food and nutrition became the most contributing factor to cause distraction problem among Malaysian seafarers in this research.

Based on the findings, regardless personal experiences, seafarers really need good and concern managers and owners that acknowledge the importance of good management of food onboard their ships, so that seafarers won't affected by the factor. With seafaring becoming an increasingly challenging with highly loaded and strict requirements, it is also vitally important that crews do not become over fed on junk food and soft drinks. Realising the possible effects that may develop, the requirements set by the authorities (i.e. in Occupational Safety and Health Administration, International Labour Organization, Maritime Labour Convention) should be well implemented and monitored not only on papers, but also in real situation, in order to provide good nutrition practice for seafarers. If not, seafarers tend to practice poor healthy diet and unable to fully recover to do the next jobs each day, thus increase the possibility of fatigue and negligence.

6. Conclusion

The contributions of all listed distraction factors are determined as shown in Table 5 which is meeting the objective of this study, to determine the amount of distractions faced by Malaysian seafarers while serving the shipboard operation due to the recognized distraction factors among seafarers at their workplace. The weightage values of the factors indicate that each factor does have variability of influence on the seafarers based on their work backgrounds. The findings of this study aims to contribute a scope of knowledge regarding the potential distraction factors which may exist and increase the number of adverse risks on board ships. Nevertheless, the potential factors of the distraction problem on seafarers basically, are very dynamic and subjective in which they are depending on the current situation of a particular area of study and who are being involved in the study. The findings of this study only based on the surveys made to several offshore ships in Malaysia.

This research contributes to the application of systematic evaluation approach to determine and rank the potential factors involved in creating distraction problem compared to the statistical data which can be retrieved from various sources. The value of this paper is to have a systematic approach in order to determine and rank the parameters by using the systematic average rating value technique where this systematic technique is a straightforward method and can be apply in any circumstances.

Besides, this research also may provide useful information to the companies to recognize the potential causes of a poor shipping operation or marine incident which may assist the companies to provide proactive actions in conducting detail inspection and in finding solution to improve the system to which less distraction.

The outcomes of this research and the systematic assessment approach are expected to benefits seafarers, shipping companies, shipping industry, society and also the nation as if the distraction rates among seafarers could be lowered, then their work performances could be increased. Excellent work performances will form a chain of improvements, including, but not limited to, improve shipping operations, increase companies' revenue along with reduction of operational and maintenance costs, lower turnover jobs, increase employability rates of local seafarers, establish good impression and perception of society toward seafaring career, and lower marine pollution due to shipping accidents at sea. Positive improvements also contribute the nation to increase of annual incomes from shipping sector.

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