

## USING CONSTRUCT OPERATIONALISATION AS DELPHI FIRST-ROUND TECHNIQUE TO DETERMINE ITEMS FOR SELF-MONITORING (*MURAQABAH*) INTERVENTION DURING THE PRE-SEA TRAINING AMONG MARINE STUDENTS IN MALAYSIA

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### Abstract

Delphi method is a technique used by researchers to reach the consensus of experts in several rounds above items or particular matters which a study is concerned. The number of rounds is determined by the researchers as the rounds end when consensus of opinions is achieved. Researchers have different approach to begin the first-round Delphi. This study aims to discuss the selection of construct operationalisation to develop the first round Delphi in selecting items to measure students' self-regulatory practice as an effort to succeed the pre-sea training. This study has selected Imam al-Ghazali's writing on *muraqabah* and the study of McCullough and Willoughby on religious practices which enhanced the practice of self-regulation, as the foundation to develop the framework of this research. Other related literatures, including *Self-regulation Questionnaire (SRQ)* developed by Brown, Miller, and Lawendowski (1999) were also referred to look for items which would support the development of the framework. Then, construct operationalisation was conducted, which run in four phases: 1) identifying concept related to the research, 2) redefining the concept, 3) concept was transformed into empirical indicators and sent to the experts, and 4) explaining the procedure on how the indicators can be used. The study found that the concept of *muraqabah*, and their elements should be applied within the theory of self-regulation. 51 items were identified and transformed into empirical indicators in the form of survey and sent to ten panel of experts for second-round Delphi. This research has offered another technique of approaching the first-round Delphi which consumes lesser time, cost and energy, than the open-ended survey in classical Delphi and another two techniques in modified Delphi which are the face-to-face and the focus-group interview. It is a hope that the finding and step-by-step procedure showed in this article will help other researches to conduct Delphi method in the future.

**Keywords**--first-round Delphi, construct operationalisation, Marine students, pre-sea training.

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### INTRODUCTION

The Delphi method is a group consensus method that involves panel of experts through several rounds. The Delphi cycle will stop when a consensus of agreement is reached. According to Skulmoski et al. (2007), Delphi is an iterative process used to gather and refine experts' decision using a series of questionnaires that are accompanied by feedback and the process stops when research questions can be answered, reaching consensus of experts, theoretical saturation, or exchange of information has had enough.

The Delphi technique helps the researcher to obtain the knowledge needed through field experts. In fact, field experts can also contribute their expertise through this technique. There are several reasons why Delphi is such a popular technique, including the anonymity of experts that leads to freedom of opinion and this can attract experts to contribute more ideas, opinions and knowledge (Ashmore, Flanagan, Mcinnes and Banks, 2016; Keeney, 2010). With this anonymity feature, experts are free to correct, modify, and improve their opinions without hesitation. It gives experts the confidence to give their best opinions based on their knowledge and experience.

This study is a limited study in which resources and previous studies are inadequate. Previous researches studying self-regulation focus more on self-regulated learning and attitude. Studies on religious factors that can help to improve self-regulation skills and the impact of worship performance on self-regulation are less.

Therefore, the selection of Delphi techniques with the help of field experts can contribute greatly to the implementation of this study.

Nonetheless, the discussion of this study is focusing on the first round of Delphi, which is selecting items for the Delphi questionnaire. The instrument developed for the Delphi technique was built based on the type of Delphi technique selected by the researcher; classic or modified, and the number of Delphi rounds the researcher will perform. This study used modified Delphi technique which it did not follow the process of classical Delphi.

### THE DIFFERENCES OF CLASSICAL AND MODIFIED DELPHI

Davidson (2013) conducted his research in three-round Delphi which began with the first round of sending open-ended questions to the experts. Then, the answered questionnaire were returned to the researcher. Keywords were extracted from the answers given by experts. Then, the inputs from round one were returned to the experts to be listed in priority/ need and they needed to justify the selected they've made. Again, the questionnaire were returned to the researcher. The research ends with the third-round, which the researcher send the summary of the second round to the experts. They were asked to explain three most critical issues in round two.

Meanwhile, Ashmore et al. (2013) an Keeney et al. (2011) have conducted four-round Delphi with the purpose to give the experts sufficient opportunities to decide and reach consensus,

however, they also believed that additional subsequent rounds would further decrease the strength and efficiency of opinions due to continuous pressure. Skulmoski et al. (2007) do not limit the number of rounds for Delphi research, however, they believe that more rounds are needed for a study with heterogeneous group of experts. Less than three rounds is acceptable for a group of homogenous experts with lesser conflicting opinions.

Then, researchers have started to modify the approach for the first round Delphi. Instead of beginning the rounds with open-ended questions, modified Delphi method starts with face-to-face or focus-group interview (Davidson, 2013; Keeney et al., 2011).

This approach has been adopted by Irdayanti, Ramlee and Abdullah (2015) in their research. The experts were interviewed in round one. The interviews were recorded and transcribed. The transcriptions were analysed using Atlas-Ti to develop related themes. All themes retrieved from the data were used to develop questionnaires for the second round Delphi. In round two, experts indicated their level of agreement based on the items developed from the data of round one using five-point Likert scaling. Additional of new items were allowed. The rating were analysed using SPSS through median and the IQR (inter-quartile range). The round two procedure was repeated in round three and four.

Other than face-to-face and focus-group interview, there are also researchers who have developed the questionnaire for round-two Delphi through literature review. Eon-Song and Dong -Wook (2015) in the study of the relationships among corporation networking, collaboration, knowledge gaining, and the value of logistic maritime, construct operationalisation approach was applied to find the elements from the literature to reach the research objectives. According to Dixon, Singleton and Straits (2016), the construct operationalisation must be accompanied with the concept of conceptualisation.

Kennett and Shmueli (2017) define construct operationalisation as theory or method used to measure a concept and it includes concepts which can't be measured or abstract values, also the development of concepts over time. In the study Eon-Song and Dong Wook (2015), construct operationalisation involved the identification of empirical indicators to measure the concepts selected for the research.

Dantzker and Hunter (2012) recognise these indicators as variables which can be divided into two or more, or in groups known as 'characteristics'. Phang, Kankahalli and Sabherwal (2009) also have applied the construct operationalisation to develop questionnaires for their study. Two sets of questionnaire were developed through literature review and the items were selected based on the definition and the description of the concept. Meanwhile, Bo-Chiuan, Chen and Widjaja (2012) have developed a research framework using construct operationalisation on the supports of IT leaders towards implementing Green IT initiatives.

**METHODOLOGY OF RESEARCH**

Construct operationalisation was used to conduct this research to develop a set of questionnaires for the second-round Delphi. The constructs were developed from the concepts found from the literature review and some Quranic verses. The items which supported the concept found from the literature were amended to suite the background of the respondents and the setting of the research.

Construct operationalisation most of the time is accompanied by conceptualization and both are very important in measurement. Dixon, Singleton and Straits (2016) have elaborated conceptualisation and operationalisation as we have simplified in the following Table 1.

**Table 1.** Definition and Methods of Conceptualisation and Operationalisation

Measuring Process	Definition	Methods
Conceptualisation	Development and explanation on a particular concept used in a research	i) Identify definitions of concepts through literature ii) Choose/ develop concept and theory which can fit the framework
Operationalisation	Process of identifying empirical indicator and procedures used to measure a concept.	i) Demonstrating concepts through conceptualization in the form of questions such as empirical indicator (eg: questionnaires) ii) Explaining the procedure on how these indicators can be used

From Table 1, we believe that the construct operation should begin with conceptualisation. Therefore, concept from the literature review was used to develop the framework for this study.

**RESEARCH FINDINGS AND DISCUSSION**

The questionnaires were developed by applying the steps provided by Dixon et al. (2016) as follow:

**STEP 1: Identify definitions of concepts through literature.**

To measure the implementation of *muraqabah* (self-monitoring) during the phase of planning and implementing the strategies to

succeed the pre-sea training, literatures related to self-regulation and self-monitoring from the Islamic and western perspectives were identified. The concept of *muraqabah* was found from the writing of Imam al-Ghazali (n.d.) in his *Ihya' Ulumuddin*, described as an element of self-regulation as introduced by Carver and Scheier (1982) and then further enhanced by McCullough and Willoughby (2009) who have suggested religious elements as boosters towards mastering self-regulating skills. The impact of the role of religious elements is illustrated in the following Figure 1.

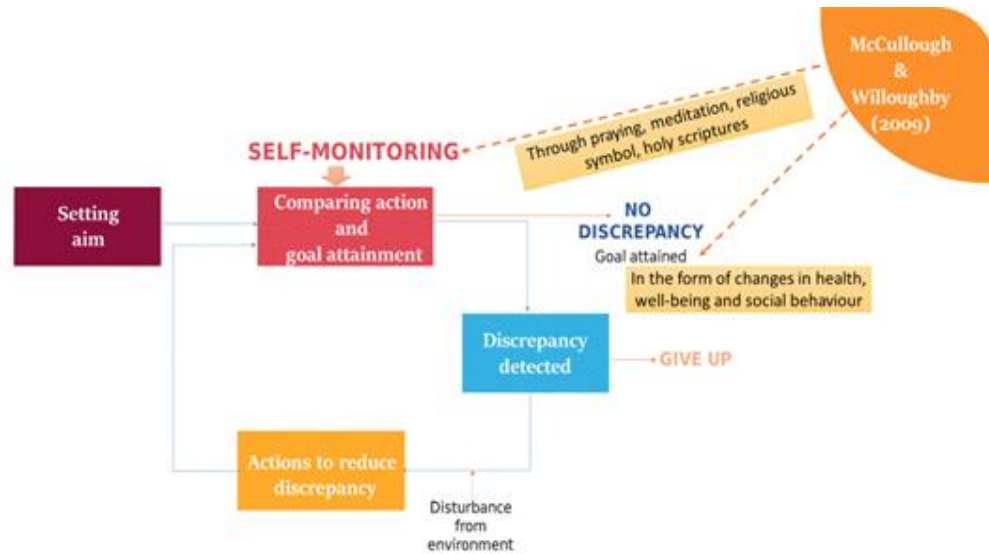


Figure 1. Enhancing Self-Regulation (Carver and Scheier, 1982) through Religious Elements (McCullough and Willoughby, 2009)

This idea is actually almost similar with the concept of *muraqabah* by Imam al-Ghazali (n.d.), however, the idea of McCullough of Willoughby (2009) applies to all religions in general, whereas, Imam al-Ghazali emphasises on the acknowledgement of The Supreme Being, known as Allah SWT in Islam. He defines *muraqabah* as monitor because humans are being monitored by Allah SWT, thus self-monitoring should be implemented so that humans are aware with the actions they are

going to proceed. For that, monitoring the planning and the implementation of actions help Muslims to achieve a number of collective aims including the well-being in the hereafter and the reward of heaven. Walid et al. (2015) believe that self-monitoring brings followers closer towards Allah SWT especially when they are facing difficulties and emotional breakdown. The following Figure 2 illustrated the description of Imam al-Ghazali on *muraqabah*.



Figure 2. The Concept of *Muraqabah* (Imam al-Ghazali, n.d.)

**STEP 2: Choose/ develop concept and theory which can fit the framework.**

When the two concepts of *muraqabah* were identified (*muraqabah* during planning the behaviour and *muraqabah* during the implementation of the planned behaviour), they need to be redefined to fit the framework of the research. The research was so concerned with the strategies that the students have planned and practiced to succeed the pre-sea training. As according to McCullough and Willoughby (2009), religious elements further enhance the implementation of self-regulation thus leads individuals to have greater chances on achieving aims in life, therefore, by implementing self-monitoring during planning and implementation of the strategies to succeed the

pre-sea training, the Marine students will have better chances to graduate the course and finally become a great seafarer.

The concepts of *muraqabah* as defined by Imam al-Ghazali (2009) were redefined so they can be utilized by the Marine students. Furthermore, the setting was on-board, where the implementation of self-regulation skills are different from other situations. The definitions are as follow:

**i. *Muraqabah* before an action is taken:**

A process of self-monitoring through early description of what actions should be taken. At this stage, the students develop early description of the strategies they plan to implement and the

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same time fulfil a number of requirement which should be aligned with the principles of Islam, including to insure that the strategies are parallel with the virtues of Islam, aspiring on giving impact towards the development of *ummah* and setting intention for the sake of Allah SWT.

**ii. *Muraqabah* during an action is taken:**

A process of self-monitoring actions taken to achieve particular aims set earlier according to the values prescribed in Islam, through the activation of self-awareness and acknowledging the present of Allah SWT, as well as recognising the reward and punishment as Allah SWT has promised. All of these help the students to recognize hardships and be motivated to spend effort as an act of recognizing Allah SWT as the All-Seeing Supreme Being.

**STEP 3: Demonstrating concepts through conceptualization in the form of questions such as empirical indicator**

After we have identified and defined the concept of *muraqabah*, further literatures were identified and related points were listed out, which separated the concepts into categories with certain characteristics (Dantzker and Hunter, 2012). The process of identifying items were guided by the development of Self-regulation Questionnaire (SRQ) developed by Brown, Miller, and Lawendowski (1999). The following Table 2 illustrated the items found from different literature to measure *muraqabah*, then further supported by the Quranic verses.

**Table 2.** Sources of Items to Measure *Muraqabah*

Sub-constructs	Sources from the Literature	Items	Supporting Sources from Quranic Verses
<b>Construct I: <i>Muraqabah</i> before an action is taken</b>			
Parallel with the virtues of Islam	Imam al-Ghazali (t.t.)	1 <i>Istiqamah</i>	30:30
		2 Guidance from Allah SWT	16:125
		3 Spend effort for the well-being in the hereafter	70:26
		4 The world as the harvest field	11:7
		5 Not conflicting with the implementation of ' <i>ibadah</i> '	84:6
Aspiring on giving impact towards the development of <i>ummah</i>	From the reading of self-regulation theory	6 <i>Amr bil ma'ruf wa nahy'anil munkar</i>	9:71
		7 Avoid transgressing	25:43-44
		8 Shape the image as a Muslim	41:34-35
		9 Become a pious Muslim	7:96
		10 Set as an example	33:21
		11 Help other friends to succeed	5:2
Setting intention for the sake of Allah SWT	Imam al-Ghazali (t.t.)	12 For the sake of Allah SWT	2:193
		13 Avoid deification	18:110
		14 Always remember Allah SWT	13:28
		15 Sincerity	22:37
		16 An act of love towards Allah SWT	3:31
		17 <i>Tawakkal</i>	31:22
<b>Construct II: <i>Muraqabah</i> during an action is taken</b>			
Internalizing the virtues	Imam al-Ghazali (t.t.)	18 Based on Islamic moral values	2:207
		19 Help to gain knowledge	
		20 Strengthen relationship	80:37
		21 Avoid pride	49:11
		22 Stay away from evil deed	39:23
Self-awareness	McCullough & Willoughby (2009)	23 Status as slave of Allah SWT	23:115
		24 Accept weaknesses	4:28
		25 Ask for help	5:2
		26 Become confident during hard times	29:2
		27 Allah SWT tests people based on their capability	2:286
		28 Humans are the best creation	3:110
		29 Status as vicegerent of Allah SWT	6:165
		30 Accept the will of Allah SWT	3:139
		31 Committing mistakes is the persuade of evil	36:60-62
		32 The promise of a slave towards his master	7:172-173
		Feel the present of Allah SWT Allah SWT	McCullough & Willoughby (2009)
34 Total dependence on Allah SWT	60:4		
35 Asking help from Allah SWT	7:55-56		
36 Believe with the strength Allah SWT has granted	61:14		
37 Believe in the assistance from Allah SWT	94:5-6		
38 Believe that Allah SWT is near	2:214		
39 Asking protection from Allah SWT	23:97-98		
40 Learn the sign of the power of Allah SWT through the creation of the universe	35:27-28		
41 Start with <i>bismillah</i>	6:118		
42 Sacrifice life for the sake of Allah SWT	2:207		
43 <i>Dzikir</i>	33:41-43		
44 Allah SW is The All-Knowing	64:4		
The Role of	McCullough	45 Remind of the sins	74:35-37

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Reward and Punishment	&Willoughby (2009)	46	Heavenly reward for staying strong in hard times	25:75
		47	Heaven as reward for those who work hard	18:30
		48	High status in the eyes of Allah SWT	3:162-163
		49	Worldly awesome reward	32:17
		50	Success in world	62:10
		51	Heaven and reward from Allah SWT are real	3:133

Based on Table 2, the total items screened out from the literature review is 51. The items were divided into two elements which were later identified as constructs; *Muraqabah* before an action

is taken, and *Muraqabah* during an action is taken. Every construct consisted of items identified as sub-constructs. Table 3 summarizes the number of constructs, sub-constructs and items.

**Table 3.** Summarisation of Number of Constructs, Sub-constructs and Items

Constructs	Sub-constructs	No. of Items	Total Items
I. <i>Muraqabah</i> before an action is taken	Parallel with the virtues of Islam	5	17
	Aspiring on giving impact towards the development of ummah	6	
	Setting intention for the sake of Allah SWT	6	
II. <i>Muraqabah</i> during an action is taken	Penerapan nila-nilai Islam	5	34
	Kesedaran sendiri	10	
	Merasai kehadiran Allah SWT	12	
	Fungsi ganjaran dan balasan Allah SWT	7	
<b>TOTAL</b>	<b>10</b>	<b>51</b>	<b>51</b>

Based on Table 3, there are three sub-constructs for Construct I and four sub-constructs for Construct II. Every sub-construct has particular number of items, which is based on the literature. This is when construct operationalisation process begins. The items from Table 2 were transformed into empirical indicators. Empirical indicators can be in the form of questionnaires,

pictures, tests, and other indicators which can be measured. We decided to transform these items into the form of questionnaires, which were rated using five-point Likert scale, so that it could be analysed statistically. The transformation is shown in the following Table 3.

**Table 4.** Transforming Items to Become Empirical Indicators

Constructs and Sub-constructs	The original statements	Operationalised Items
<b>Construct I: <i>Muraqabah</i> before an action is taken</b>		
Parallel with the virtues of Islam	1   <i>Istiqamah</i>	Choosing a strategy made me hold steadfast in the path of Allah SWT.
	2   Guidance from Allah SWT	I prayed to Allah SWT for guidance to choose the best strategy.
	3   Spend effort for the well-being in the hereafter	I chose a strategy which helps me to spend effort for the well-being in the hereafter.
	4   The world as the harvest field	My action of planning an effective strategy was an act of worship which will be rewarded by Allah SWT in the hereafter.
	5   Not conflicting with the implementation of 'ibadah	The strategy I chose did not abstain me from practicing 'ibadah.
Aspiring on giving impact towards the development of ummah	6   <i>Amr bil ma'ruf wa nahi'anil munkar</i>	I chose a strategy which gave me a space to spread kindness to other crews of the ship.
	7   Avoid transgressing	I didn't mind planning a strategy which will violate the rights of other people. (Negative item)
	8   Shape the image as a Muslim	I represented the image of good Muslim when I planned an effective strategy.
	9   Become a pious Muslim	When I planned, I felt the sense of piety.
	10   Set as an example	I set a good example in the eyes of other crews when I planned an effective strategy.
	11   Help other friends to succeed	My friends also asked my help to plan strategies like what I did.
Setting intention for the sake of Allah SWT	12   For the sake of Allah SWT	I set my intention to plan for the sake of Allah SWT.
	13   Avoid deification	I hold on to the help from Allah SWT and did not associate Him with other beings when I was planning the strategy.
	14   Always remember Allah SWT	My mind was centered only towards Allah The Almighty during the planning period.
	15   Sincerity	I became sincere to plan for the purpose of getting reward from Allah SWT.
	16   An act of love towards Allah SWT	Planning strategies pictured my act of love towards Allah SWT.
	17   <i>Tawakkal</i>	I relied whole-heartedly in the hand of Allah SWT after I had planned the strategies.
<b>Construct II: <i>Muraqabah</i> during an action is taken</b>		
Internalizing the virtues	18   Based on Islamic moral values	I implemented strategies based on the act of sincerity and trustworthy.

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	19	Help to gain knowledge	Implementing the strategies I had planned helped me to gain knowledge.
	20	Strengthen relationship	I implemented strategies which strengthen relationship with other crews.
	21	Avoid pride	I knew the strategies I had implemented were the best than other people.
	22	Stay away from evil deed	I would not implement strategies which oppressed others.
Self-awareness	23	Status as slave of Allah SWT	When I was implementing strategies, I reminded myself of the status as a slave of Allah SWT.
	24	Accept weaknesses	I realised when I committed mistakes during implementing the strategies it was due to human weaknesses.
	25	Ask help	I asked for help when I was depressed from a pious person.
	26	Become confident during hard times	When I stumbled on obstacles, I realised that good people are always tested.
	27	Allah SWT tests people based on their capability	I realised that Allah SWT tested people based on their capability, so I became strong enough to implement my strategies.
	28	Humans are the best creation	I built my confidence based on the narration that humans are the best creation.
	29	Status as vicegerent of Allah SWT	Realising the status of human being as vicegerent of Allah SWT made me brave to implement the strategies.
	30	Accept the will of Allah SWT	I accepted the tests from Allah SWT during implementing the strategies with an open heart.
	31	Committing mistakes is the persuade of evil	When I felt lazy to implement the strategies I had planned, I reminded myself of that evil persuasion.
	32	The promise of a slave towards his master	Reminding myself that human are created to worship Allah SWT made me stopped from spending effort to implement the strategies. (negative item)
Feel the present of Allah SWT Allah SWT	33	Responsibility to accomplish tasks	I worked hard to implement my strategies as I believe that Allah SWT was watching.
	34	Total dependence on Allah SWT	I hold fast onto the hands of Allah SWT when I had accomplished implementing my strategies.
	35	Asking help from Allah SWT	I asked for the help from Allah SWT when I was in the middle of nowhere.
	36	Believe with the strength Allah SWT has granted	I believed with the strength Allah SWT had granted throughout the implementation of strategies.
	37	Believe in the assistance from Allah SWT	When I was sad, I made myself aware of the assistance from Allah SWT.
	38	Believe that Allah SWT is near	I believed that Allah SWT was near to me all the time.
	39	Asking protection from Allah SWT	I asked help from Allah SWT to protect me from evil temptation.
	40	Learn the sign of the power Allah SWT has acquired through the creation of the universe	I was thinking of the power of Allah SWT through the creation of the universe, and that made me believed even more.
	41	Start with <i>bismillah</i>	I started implementing the strategies with the pronunciation of <i>bismillah</i> so that my steps would be eased.
	42	Sacrifice life for the sake of Allah SWT	I would sacrifice everything I had for the sake of Allah SWT.
	43	<i>Dzikr</i>	I kept on practicing <i>dzikr</i> with the hope to build inner strength to face challenges during on-board.
	44	Allah SWT is The All-Knowing	I realised that Allah was The All-Knowing and I could not hide anything from Him, even deep in my heart.
The Role of Reward and Punishment	45	Remind of the sins	When I felt lazy, I reminded myself of the punishment for those who did not try their best in life.
	46	Heavenly reward for staying strong in hard times	I kept of thinking about the heavenly reward for staying strong in hard times
	47	Heaven as reward for those who work hard	I reminded myself about the heaven as the reward for those who struggled for the best.
	48	High status in the eyes of Allah SWT	I was thinking about the high status in the eyes of Allah SWT when I stop myself from giving up.
	49	Worldly awesome reward	I became motivated to spend all of my efforts to implement the strategies because I realised that Allah SWT also granted human being with worldly awesome reward.
	50	Success in world	I realised that I would achieve success in life when I worked hard and <i>tawakkal</i> after I had spent effort.
	51	Heaven and reward from Allah SWT are real	I worked hard as I believed that heaven from Allah SWT were real.

**STEP 4: Explaining the procedure on how these indicators can be used.**

After we transformed all the items into empirical indicators, we decided on the procedure which was the selection of measurement or rating for these items. As the items were transformed into questionnaires, the five-point Likert scaling was selected to indicate the rating of opinions among the experts for selecting these items to be inserted in students' questionnaire. The questionnaire would afterward use as an instrument to measure the influence of religious elements during the practice of self-regulation throughout the pre-sea training. Therefore, rather than choosing the items ourselves and send it to the field experts, due to limited references and previous researches, we believed that with the help from Delphi technique, the items selected would be precise and new ideas can be integrated in the questionnaire as these experts have experience in the pre-sea training, either as lecturers, managers, or they themselves have experienced it before they graduated with Marine academic qualification. The consensus of opinion among the experts were analysed through Median analysis and the Inter-quartile Range.

**CONCLUSION**

This article has discussed the steps to conduct construct operationalisation in details, so that it can be a guideline for other researches to approach the first-round Delphi in different way other than the open-ended survey in classical Delphi and another two techniques in modified Delphi which are the face-to-face and the focus-group interview. The summary of the steps is shown as follow:

- 1) Identifying concept related to the research
- 2) Redefining the concept
- 3) Transforming the concept into empirical indicators and send to the experts
- 4) Explaining the procedure on how the indicators can be used.

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