



SUSTAINABILITY COMPETENCY ASESMENT IN MARINE INDUSTRY

N. Soliha Sahimi^{1*}, Faiz Turan¹ and Kartina Johan¹

¹Faculty of Manufacturing,
Universiti Malaysia Pahang,
26600 Pekan, Pahang

ABSTRACT

Toward National Transformation 2050 (TN50) that was introduced by sixth's Malaysia Prime Minister before, our country faced massive social, environmental and economic challenges. Moreover, Environmental Democracy Index (EDI) published that Malaysia has been ranked as the second worst environmental democracy among 70 countries in May 2015. This is due to lack of participation in sustainability compliance and less awareness on sustainability by Malaysia's business partners, especially in marine industry. By combating and achieving these, an integration of Green Project Management (GPM) in the marine industry with consciousness approach. This paper attempts to prepare a tool for assessing a sustainability practice in the marine industry. Thus, the level of consciousness will be improved and enhance the Environmental Democracy Index to a better rank by doing a self-assessment on the sustainability.

Keywords : *sustainability, attitudinal, consciousness, elicitation, multiplier*

1.0 INTRODUCTION

Recent years, natural environment becomes part of crucial issues to business organizations as a result of global and local environment problems. Business operations are believed to be responsible for most of these problems [1]. Malaysia is the fastest growing economies among ASEAN countries besides Malaysia rich with natural resources. Therefore, this rapid growth however lead to environmental degradation due to unsustainable practices especially in marine system. In addition, most practitioners in the field of "marine pollution" as broadly defined in Marine Pollution Bulletin [2]. To make things worse, environmental degradation would impact on the country societal and life's quality. As community starts to realize the importance of sustainability, sustainable development has been applied as policy objectives by governments, institutions, business and others [3].

From early 1990s, sustainability assessment has gradually become a new important appraisal method for supporting decision making and policy in a broad of sustainability elements in many sectors all over the world. The first serious discussions and analyses of Sustainability emerged during 1983 at new World Commission on Environment and Development (WCED)[4][5] by Norwegian prime minister Gro Harlem Brundtland. In the report titled "Our Common Future", sustainable development is define as, "...the development that meets the needs of the presents without compromising the ability of future generations to meet their own need" (WCED,1987)[6]. The persistence of this report is to provide long-term environmental strategies, to define shared perceptions of

*Corresponding author: solihahasahimi_ump@gmail.com

long-term environmental issues and to concern into greater co-operation among developing countries and between countries at different stages of economic and social development that interrelationship between people, resources, environment and development [7]. After recent year, sustainability always be a hot debatable issue over the world, constantly being discussed in huge number of professional and growing realization among leading scientist, the public and politicians. Thus, it is growing concern about the long-term future in many industries in Malaysia.

Malaysia is a country covered with coastal and marine area, and being managed by national, state and local organization and the area for Malaysia maritime are 332,800 km² [8]. There are various department and agencies all around Malaysia including private, government and education organization were taken place to sustain the maritime sector. For example, Maritime Institute of Malaysia (MIMA) was uphold their own agenda to make an oceans change for sustainability. Such in their mission is to provide maritime-related advice and consultancy services to stakeholders through policy research, training, education and public awareness programs [9]. Although sustainability is drastically develop since 1987 up until now but from World Resources Institute (WRI) with the Access Initiative, Malaysia has been ranked from Environmental Democracy Index (EDI) evaluation as the second worst environmental democracy among 70 countries. For example, in headline FMT News, 7 June 2017 [10] the marine pollution and overfishing among others, are threatening the state of our global water and putting 500,000 to 10 million marine species at risk.

Therefore, government, business and civil society all over the world together with United Nation have been started to mobilize an effort to achieve sustainability development agenda 2030. The agenda calls for universal and inclusive action by all countries to improve lives people in everywhere [11]. In 2015, countries adopted an agenda 2030 for sustainable Development with their 17 goals call Sustainable Development Goals (SDG) and officially came into force on January 2017. An integration between Green Project Management (GPM) in marine Industry with consciousness approach will help to improve the performance of the industry.

2.0 METHODOLOGY

The proposed framework for this study regarding on the result obtained in marine industries were divided into three phase, such a summary in table 1 below:

Table 1: the three phase regarding on sustainability competency assessment in marine industry

Phase	Tool/method	Purpose	Deliverables
Baselining	Survey	<ul style="list-style-type: none"> Collecting the respondent information based on the targeted individual or focused survey 	Variety of respondent in different perception and attitude on sustainability
Data analyses	Microsoft Excel Elicitation Method Attitudinal theory	<ul style="list-style-type: none"> as a statistical analyses that minimize the variance data collection convert qualification data to quantification data 	Develop an attitudinal multiplier for marine industries using weighting criteria
Data representation	Minitab	<ul style="list-style-type: none"> To prove that the multiplier will provide a better sustainability competency assessment 	Can be visualized and compared the performance of marine sustainability.

2.1 Weighting criteria

Table 2: Weighting Criteria in Marine Industry

Numerical rating score	Descriptions
-0.9	Disagree
0	Neutral
0.9	Agree

Generally, this scoring method is used to convert qualification data into a quantification data. Then, the weighting criteria value according to attitudinal theory that proposed and describe more on previous research [12]. Table 2 above show, how the rating score were calculated to form a qualitative data. This process was occurs during second stage which is data analyses. In this stage, the respondent answers are interpreted using attitudinal method that involves normalization technique. By this, each of twelve elements of GPM will have its own value. Thus, multiplier is developed in order to make data collected in both case study significant using expert elicitation technique. In simple words, this multiplier can be called as expert performance indicator.

3.0 RESULT AND DISCUSSION

The raw data is obtained through distributed the survey questions by using focused group survey method. The survey was developed by considering twelve criteria of Green Project Management (GPM) that has been classified into three main factors: people, planet and profit and Sustainable Development Goals (SDG). In addition, every survey questions have their own scoring to quantify the data collection.

In order to make all the data significant, a technique called expert elicitation is applied to this research. A multiplier is developed using the raw data which considering the respondent background education on knowledge and consciousness in sustainability area. Hence, the respondent whom involved in this focused survey were assumed as expertise regarding sustainability issues. Thus, the level of awareness on sustainability was developed as a benchmark of marine industry in Malaysian's context. As a result, the different between before and after-effect usage of attitudinal multiplier is shown in figure 1 and figure 2 below.

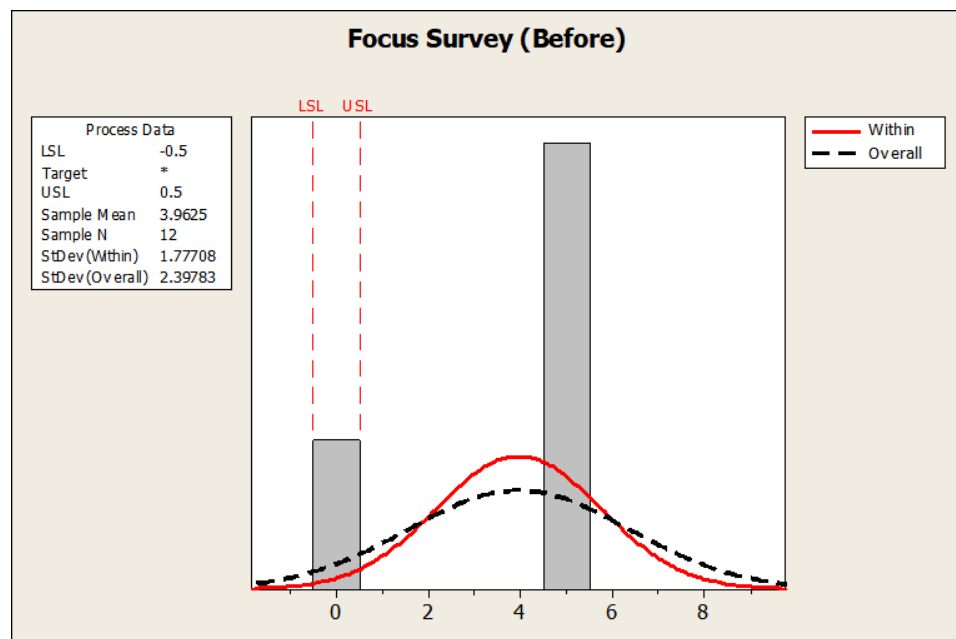


Figure 1: the distribution graph before applied the multiplier in raw data

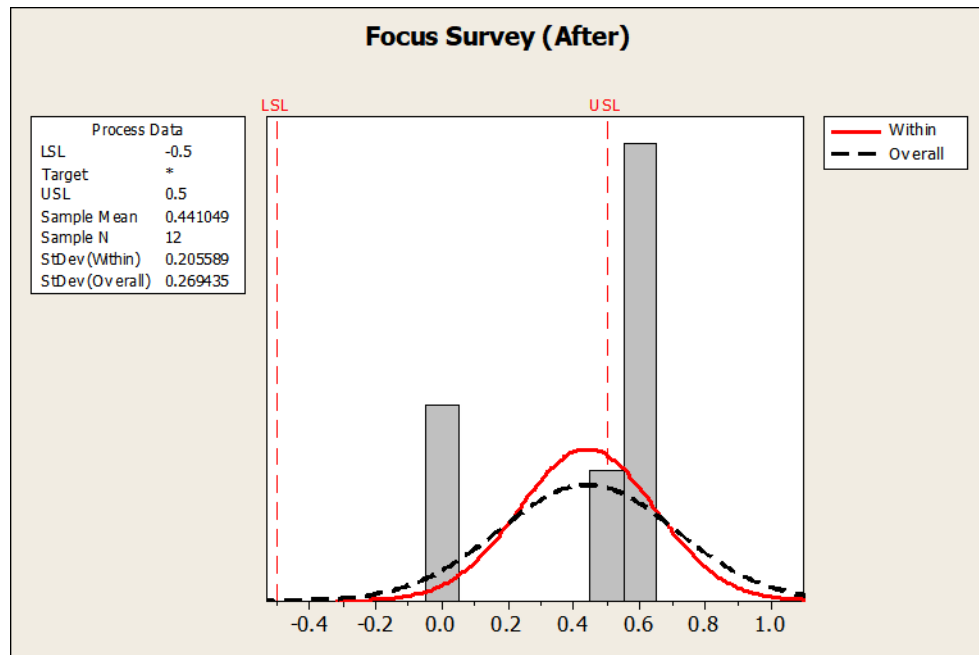


Figure 2: the distribution graph after applied the multiplier in raw data

For this focus survey in figure 1 and figure 2 above, an attitudinal multiplier towards raw data or currently sustainability practice was shown a better trend of distribution. The multiplier was improved the standard deviation from 1.77708 to 0.205589. From the different between before and after multiplier, the elicitation method enable to reduce a standard deviation or has the “detox” effect on data distribution to a better deviation. Hence, attitudinal multiplier accentuates signal by noise reduction and make data more significant.

Based on all the figure above, case study show the positive effect of using attitudinal multiplier. For this focused survey, focus survey has effect of pushes down after attitudinal multiplier is applied to raw data. Data distribution before multiplier is used is quite insignificant and has a lot of “noise”. Hence, the attitudinal multiplier managed to reduce the noise and shows the exact level of consciousness towards sustainability. Thus, the application of multiplier is applicable in Malaysia’s context in marine industry.

3.0 CONCLUSIONS

This research has been focused on business sustainability consciousness Assessment of marine industry. Basically, this research uses survey method for data collection and use focused group respondents to investigate the consciousness’ level in marine industry by developing a tool as an assessment. The survey questions are based on twelve elements of GPM and 17 Sustainability Development Goals (SDG). The implementation of an expert elicitation’s technique is to develop attitudinal multiplier align with context of Malaysia. Thus, this research contribution can improvise the results of the sustainability competency assessment. As a result, this research finding will be a benchmarking purposes and as a point of references for sustainability in marine industry in Malaysia.

ACKNOWLEDGEMENTS

The authors would like to give special thanks to Research & Innovation Department, Universiti Malaysia Pahang (Fundamental Research Grant Scheme, FRGS – RDU150120) for funding this research project.

REFERENCES

1. Eltayeb, T. K., Zailani, S., & Ramayah, T. (2011). Green supply chain initiatives among certified companies in Malaysia and environmental sustainability: Investigating the outcomes. *Resources, conservation and recycling*, 55(5), 495-506.
2. P. G. Wells, "State of the marine environment reports — a need to evaluate their role in marine environmental protection and conservation," vol. 46, pp. 1219–1223, 2003.
3. Mokhtsim, N., & Salleh, K. O. (2014). Malaysia's Efforts toward Achieving a Sustainable Development: Issues, Challenges and Prospects. *Procedia - Social and Behavioral Sciences*, 120, 299-307. doi:<https://doi.org/10.1016/j.sbspro.2014.02.107>
4. F. M. Turan, K. Johan, W. N. S. Wan Lanang, and A. Asmanizam, "Assessing Sustainability in Environmental Management: A Case Study in Malaysia Industry," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 226, no. 1, 2017.
5. N. S. Sahimi, F. M. Turan, and K. Johan, "Development of Sustainability Assessment Framework in Hydropower sector," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 226, no. 1, 2017.
6. G. H. Brundtland, "Our Common Future: Report of the World Commission on Environment and Development," *United Nations Comm.*, vol. 4, no. 1, p. 300, 1987.
7. WCED, "Report of the World Commission on Environment and Development: Our Common Future," *Sustain. Dev.*, vol. 154, pp. 1–374, 1987.
8. Z. M. Tarmidi, A. Rashid, M. Shariff, A. R. Mahmud, Z. Ibrahim, and A. H. Hamzah, "Issues and Challenges in Managing Malaysia 's Marine Spatial Information Sharing," no. Boateng 2006, pp. 1–8.
9. <http://www.mima.gov.my/>, july 2018
10. <http://www.freemalaysiatoday.com/category/opinion/2017/06/07/seeking-a-more-sustainable-future-for-our-oceans/>, June 2017
11. K. Johan and F. M. Turan, "Framework of systematic sustainability assessment strategy (FSSAS) for hydroelectric power industry in Malaysia," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 226, no. 1, 2017.
12. Daniel, 2017. *Artificial Intelligent Based Techniques for Supporting Aspects of Product Development Engineering*, PHD Thesis, UMP, Malaysia.