Factors Influencing Sustainable Supplier Selection: Evidence from Palm Oil Refining and Oleochemical Manufacturing Industry

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***Abstract*—This study focuses on the sustainable supplier selection in Malaysia palm oil refining and oleochemical manufacturing industry. A sustainable supply chain could lead to smoothness in the long run and thus ensure higher excellence and productivity. It is important to have suppliers that adapt to the sustainability nature of the organisation in order for the entire supply chain to be productive. The independent variables which have been used for this study are the unit price, CSR engagement, and environmental competencies. The leading theory used to support this study is the triple bottom line theory and backed by the resource dependency theory and stakeholder's theory. This study was aided by surveying 151 respondents who are directly from palm oil refining and oleochemical manufacturing sector, which is the population for this study. After using the statistical tools to analyse the data retrieved from the questionnaires, it has been inferred that the unit price, quality, and environmental competencies have a significant effect on the dependent variable whereas CSR Engagement does not have a significant relationship. This study highlights the implication in the form of theoretical and social perspectives. It concludes with the limitation and the future recommendation of sustainable supplier selection in Malaysia palm oil refining and oleochemical manufacturing industry.**

***Keywords*—** *Triple bottom line theory, sustainable supplier selection, palm oil refining, oleochemical manufacturing industry*

1. Introduction

In the past several few years, the worldwide demand for palm oil has been steadily rising at a rate of 7.1% yearly. Malaysia being the worldwide leading player of the palm oil industry, the versatility of palm oil in the various application, has made it one of the top seventeen oils and fats sources in the world. With a total of 5.076.962 hectares of palm oil plantation area in Malaysia, it is estimated about 51.39% hectares encompassing in Peninsular Malaysia and 49.61% hectares from Sabah and Sarawak. The Malaysian palm oils industry players include the public, private sector and independent planters.

The main product in palm oil plantation is fresh fruit bunch (FFB) which it will be brought to the milling process. The milling process can be elaborated to become several products such as Crude Palm Oil (CPO), Crude Palm Kernel Oil (CPKO), Empty Bunch Shell and Fiber. Palm kernel is processed differently compared to others which are by crushing industry to produce Crude Palm Kernel Oil (CPKO) and other by-products such as Palm Kernel Cake can be directly sold as animal feed. Refinery industry also produces RBD Palm Stearin and RBD Palm Olein. Instead, RBDPO is processed by the oleochemical industry to produce Palm Fatty Acid Distillate (PFAD). Refineries do not produce all CPO products, but part of them through the fractionation processes that produce Crude Palm Olein and Crude Palm Stearin.

Supply chain management typically inclusive of entire activities from sourcing, manufacturing to inventory material management and marketing [1]. By ensuring the best service provided to customers,

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it coordinates and manages the flow of products and other relevant activities. The sustainable competitiveness of a supply chain requires integration and coordination of supply chain partners. Supply Chain requires well-integrated planning of procurement, production and distribution of goods, in compliance with quantity, time, quality and cost restrictions. The supply chain must be considered holistically to enable the palm oil companies to focus on their core product to improve competitiveness and react fast to market changes in the industry. This creates an opportunity for the company to focus on its new product development. From the end of the 20th century, MNC giants such as IBM, HP, Amazon, and GM could be taken as a good example and among pioneers that have managed to transform supply chain management to next level [2].

The main challenges in the supply chain are strategies to manage resources and meet the demands, to select the suppliers that will deliver goods, and return of the product from customer due to quality issue [3]. Selecting the proper supplier has been the greatest challenge in supply chain management [4]. In other words, the role of supplier selection is vital in the success of the entire end to end supply chain management in the palm oil industry. Suppliers must have the ability to meet the changes in supply and demand besides there must be integration between suppliers. Efficiency can be improved, and conflicts or confusions can be minimised when suppliers can respond to unexpected changes in customer demands or deal with any other environmental changes. Supplier flexibility also allows for a more unified response to shortening the time which needed to match supply and demand, reducing investments in total logistics costs [5].

Long ago, the corporate strategy was most commonly developed without involving operation strategy, leaving the operational function such as procurement, manufacturing, and distribution to minimise costs. Nevertheless, over the past ten years, successful industrial firms have begun to refocus on the operation as a profit centre. The repositioning of the operation functions has become a new and useful competitive tool. The vital elements of attitude, process improvement, waste elimination, and technology are compulsory in allowing operations to provide a competitive advantage within the typical industrial firm [6]. A greater buyer-supplier relationship will enhance performance throughout the supply chain. Companies that make supplier affiliations a priority are rewarded with better financial performance and higher customer satisfaction [7]. Higher levels of integration with supplier's results in improved the overall organisation performance. However, the appropriate level of supplier integration will depend on the relationship, and an effort should be made to identify a strategy tailored to each relationship [8]. Also, integration of suppliers beyond the first tier of the supply chain may increase the organisation performance [9]. Selection of the proper suppliers is more vital than the success of the whole manufacturing networks [10]. This is the real scenario of supply chain management of Malaysia's palm oil and oleochemical manufacturing industry. Traditional supplier relationship comprises what [11] portray as the "arm's the length", portrayed by multiple suppliers' annulment of long term (or in some cases any) agreements and regular price reviews. The rationalisation for this strategy has been to counteract the negotiating power of suppliers [12]. Therefore, it is necessary to understand the requirements for the suppliers in this area and to produce a practical and meaningful criteria system [13].

By looking at the global standpoint, today, the average U.S manufacturer spends roughly half its revenue on purchasing goods and services [14]. This makes a company's success dependent on their interactions with the suppliers. The role of procurement managers (buyers) within companies has become essential, and often involving perplexing dollar values. As such, the existence of procurement functions in coordinating the sourcing, selecting the supplier and procuring the items, is critical. In order to ensure the services to be provided, the customers demand requirements, the whole process of supply chain management needs vital and detailed attention to avoid redundancy and increase efficiency. A recent cross-industry survey of companies in areas oscillating from aerospace to semiconductors-placed companies' average total spends per attaining employee at $115 million [15].

By referring to Malaysia context focusing in the entire end to end supply chain, palm oil supplier plays a crucial part in the Malaysia economy and are thought to be the foundation of the edible and non-edible palm oil industry in the nation. Being a top-five world's ranking producers and exporters of

palm oil, Malaysia palm oil production manufacturer currently produce almost 40.45% of the world's production [16]. The primary aim for Malaysia palm oil industry is to export the palm oil to China and middle east country. It is estimated that around 58 million tons of oils and fats will be consumed worldwide by 2020 [17]. Moreover, it has likewise been estimated that domestic palm oil production will increment to 26.6 million tons in Malaysia by 2035. While the local demand for the palm oil industry for food consumption, industrial non-edible uses and demand for bio-diesel are also expected to increase by more than 200 % to 1.4 million tons by 2035 [18], therefore, this study will focus on critical factors influencing sustainable supplier selection in Malaysia's palm oil refining and oleochemical manufacturing industry.

2. Research Framework

Sustainability has been a regular goal of businesses, non-profits and governments in the previous decade, yet measuring the level to which an organisation is being sustainable or pursuing sustainable growth can be difficult. However, in the sustainability focus area, the triple bottom line (TBL) tenure went beyond the conventional way where the measure of profits, return in investment, and shareholder esteem should be integrating environmental and social dimension. Theory of triple bottom line will measure economic, social and environmental aspect. 'Triple bottom line' term, is often attributed to John Elkington, a co-founder and chair of sustainability, a sustainable business consultancy [19].

Concerning illustration, it evolved, triple bottom line reporting needs to be utilised by organisations for an overabundance of purposes. The triple bottom line has been rising as dominant conceptualisation, and reporting vehicle for articulating corporate social, environmental, and economic performance. Also, it will be accepting critical consideration relating to its efficacy and sufficiency as a means for reporting the extent to which an organisation meets its societal responsibility. In this fast-moving globalisation era, an organisation portrait an image of concern and sensitivity to the three dimensions of social responsibility: economic, environmental, and social [20]. Thus, in this study, it is used in sustainable supplier selection in Malaysia palm oil refining and oleochemical manufacturing industry.

Through the perspective of the purchaser, the unit price always plays an essential role in supplier selection. However, according to Sarkis and Talluri [21], the relationship between buyer-supplier that solely based on price is no longer adequate. However, this does not mean price has been overlooked amid supplier choice. Even though there are so many other criteria develop in supplier selection, but until today price factor still is one of the top three factors in supplier selection. The negotiation process with a supplier is to dependably get the service quoted by no less than three other suppliers. This can create some competitive pricing. In the palm oil industry, each year, the manufacturers are pressed to process higher quality oil without jeopardising competitive price [22]. When supplier able to provide competitive price, eventually other palm oil industry players can provide competitive price to the customer. Hence, undeniable that pricing is still in the position that influencing supplier selection. Based on this literature, the first hypothesis was formulated:

H_1: The unit price factor of crude palm oil has a significant relationship to the selection of sustainable supplier in Malaysia palm oil industry.

According to Holjevac [23], quality refers to the ability of a product or service to consistently meet or exceed customer's expectations, getting what you have paid for and not something that is adopted as a particular highlight; instead, it is a crucial piece of a product or service. Most of the companies will select those suppliers that can supply good quality of product and services.

There are many kinds of literature which have been collected about supplier evaluation and selection models, and to evaluate quality, most of these models have used rate of rejects [24]. In another study, a quality index defined with the integration of technology and design level, ease of repair, and reliability [25]. Taguchi loss function assumed 3% defective products as the standard rate of rejects, and quality could be calculated with Taguchi loss function and this target value [26]. In this fierce worldwide competition, quality turned to be one of the main factors which directly affects supplier selection decision. Based on this literature, the second hypothesis was formulated:

H_2: The quality factor through product offered by suppliers is positively related to the selection of sustainable supplier in Malaysia palm oil industry.

Corporate social responsibility is crucial for the sustained development of any organisation. The organisation with sound notorieties for the financial result as well as for environmental and social contributions guarantee long term sustainable growth. Continuous corporate social responsibility (CSR) development exerts weight around

organisation should allocate resources for the environment and social manageability around this planet.

Therefore, CSR needs to get a standout amongst the enormous numbers of aggressive weights which organisation face over today's benefits of the business surroundings [27]. So as on react will vulnerability and reputational risks, the organisation must perfect their abilities with recognise progressions in CSR prerequisites, furthermore, react on these transforms auspicious and thoroughly secure their focused position in the marketplace [12, 29]. Stakeholder theory infers that it could make advantageous for those firm to captivate clinched alongside specific CSR exercises that non-financial stakeholders recognise with a chance to be necessary, because, absent this, these bunches may withdraw their help to the firm.

The hypothesis of the fixed points of view on CSR needs a few essential meanings. The primary is that CSR could have a chance to be essential analytics component of a firm's business what is more corporate-level separation methodologies that should be considered as a form of strategic investment. Significantly, even when it is not explicitly attached to a product highlight or product manufacturing process. CSR can be viewed as a kind of reputation building or maintenance [29]. CSR can be used to differentiate their self from other suppliers, and this can be the factor that influences the company to select them as their supplier. Based on this literature, the third hypothesis was formulated:

H_3: Supplier engagement in Corporate Social Responsibility (CSR) has a positive relationship towards the sustainable selection of supplier in Malaysia palm oil Industry.

An expanding amount about the organisation rightly recognises corporate obligation and environmental consciousness as obligatory business objectives. In fact, rather than being a costly annoyance, environmental initiatives have, become a source of competitive advantage [30]. In like manner, the significance of these environmental desires has resulted in high importance of green procurement [31]. An expanding number of organisations are incorporating green acquisition under their daily operation across palm oil industries. As evident in the palm oil industry, Roundtable Sustainable Palm Oil (RSPO) program was introduced, and this program is increasingly sophisticated in that they go beyond necessary green procurement initiatives and focus on sophisticated green supplier development activities that try to move forward on the supplier capabilities. However, not all palm oil refining and oleochemical manufacturing firms follow green supplier development ideas to the same extent because these initiatives require more advanced capabilities.

Even though institutional pressures can lead to the adoption of green practices, firms must develop resources and capabilities that can help them to respond to these forces and ultimately result in superior performance [32]. Since, when the palm oil refining and oleochemical manufacturing organisation starts to adopt sustainability environment, this implies supplier need to turn to be sustainable as well to have long term business partnership with them. Supplier selection, either in GSCM or sustainable supply chain management (SSCM), has been identified as significant in making a purchasing decision [33]. It is commonly understood that Green Supply Chain Management (GSCM) involve in engaging suppliers screening based on their environmental performance and work in a collaborative business with those that meet specific environmental regulations or standards. Vendor selection plays a substantial role in future relations and the capability to work in a supply chain environment, especially in the palm oil industry. The green suppliers can be the greatest assets for the organisation. Based on this literature, the fourth hypothesis was formulated:

H_4: Environmental programs by suppliers have a positive relationship in sustainable supplier in Malaysia palm oil industry

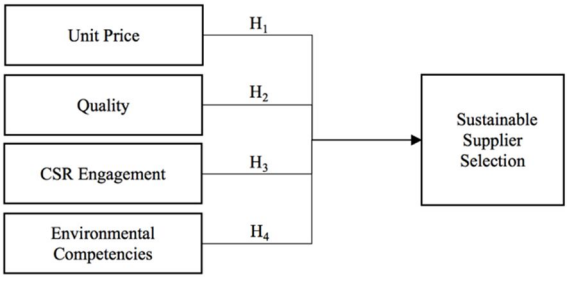

Figure 1. Theoretical Framework of factors that influence Sustainable Supplier selection in Malaysia Palm Oil Refining and Oleochemical Manufacturing Industry

3. Research Methodology

This study is quantitative research, and thus, it is using a survey questionnaire as the primary research instrument. This research also uses hypothesis testing as a means to investigate the variables that

are there in the theoretical framework. The unit of analysis of focus will be palm oil refining and oleochemical manufacturing firm which include a small or medium enterprise (SME). However, since literature suggest that listed companies and SME owners can represent firm, they will be the respondents. The company's owner is the most relevant personnel who are engaged and understand the issue in the organisation, especially form the operational and management perspectives. This study mostly focuses on the organisation from Malaysia palm oil industry. Thus, the unit of analysis will be the organisation, and they are the listed and SMEs from palm oil refining and oleochemical manufacturing industry in Malaysia.

The population for this study includes the entire palm oil refining and oleochemical manufacturing sector in Malaysia palm oil industry. It is comprising of the organisation which consists of Refined, Bleached, and Deodorize of palm oil, Fatty Acid Fractionation, Glycerol Refining and Separation, Fatty Acid Hydrogenation, Fatty Acid Distillation, Esterification, Short Path Distillation, Spray Cooling and Spray Drying. These sectors comprise the population for this study and are the main area for the study. The minimum sample size chosen for this study is based on the number of variables in the study. As per the rule of thumb of PLS, 50 is the minimum sample size as there are five variables, including the dependent variables. The sample size, however, should be greater than 100 to run the tests in the software as well as get a good representation of the population. The online survey was used to cover more comprehensive geography and ease of access, and within 2.5 weeks, 180 questionnaires were distributed as a sample of this study. However, only 151 were returned and completed for this research to analyse further.

4. Analysis and Findings

The findings of this research are tabulated and described in the following order; beginning with the demographic profile of the respondents, descriptive statistics, confirmatory factor analysis for testing the reliability and validity of the data plus hypothesis.

4.1 Demographic Profile of Respondents

The demographic profile aims to provide a comprehensive insight and characteristics of the respondents. The first questions deal with gender. From Table 1, we can see that majority of the respondents were male with a frequency of 80. This result represents a total of 53% as opposed to the 47% who were the respondents. Thus, we can see that majority of the respondents for this survey were male, but there was an acceptable percentage of females taking part as well.

Table 1. Demographic Profile

Demographic Profile	Total	%
Gender		
Male	80	53
Female	71	47
Age		
25 and below	37	24.5
26-30	33	21.9
31-35	30	19.9
36-40	31	20.5
41-45	14	9.3
46 and Above	6	3.9
Educational Qualifications		
High School	5	3.3
Certificate/Diploma	19	12.6
Bachelor's Degree	85	56.3
Master's	33	21.9
PhD	4	2.6
Others	5	3.3
Work Experiences		
Less than 5 years	61	40.4
5-10 years	33	21.9
11-15 years	30	19.9
More than 15 years	27	17.9
Job Position		
Department Manager	28	18.5
Executive	49	32.5
CEO/President/Vice President	6	4
Others	68	45

The next profile is the age group of respondents. Majority of the respondents lied in the range below 25 years. They had a frequency of 37, representing 24.5 %. Thus, the majority were in this age group, followed by 33 respondents and 31 respondents, respectively representing 26-30 years and 36-40 years. Thus, it can conclude that majority of the respondents were reasonably young as they were from these three age groups. Thus, combined with almost 90 % of the respondents were within the age of 25-40 years old. Hence, the respondents are relatively young. The third profile category deals with the educational qualification of the respondents. There is a clear majority, with 56.3 % of the respondents having a bachelor's degree with 85 respondents. It is followed by 33 respondents

having a master's degree representing 21.9 % of the total respondents.

When it comes to the working experience of the respondents, majority of them were in the category of fewer than five years of experiences with 61 respondents (40.4 %), followed by the respondents being in the category of 5-10 years with 33 respondents (21.9%). The last profile deals with the job position of the respondents. It can be viewed that majority of the respondents were in the category of others, with 68 respondents representing 45% of the total respondents. This is followed by 49 respondents being executive representing 32.5 % of the total respondents.

4.2 Descriptive Statistics

Based on Table 2, it is observed that the range of scale used for each variable is 1 to 5. Besides that, we can observe that all variables' mean value is above 3.0, indicating that most of the respondents agree with the statements laid out in the question items in each variable. The mean is highest for quality, and the lowest is for corporate social responsibility.

Table 2. Descriptive Statistics

Items	Mean	Std. Deviation	Minimum	Maximum	Range
UP1	3.96	0.85	1	5	4
UP2	4.09	0.78	1	5	4
UP3	3.56	0.91	1	5	4
UP4	3.52	0.94	1	5	4
UP5	4.06	0.87	1	5	4
Q1	4.34	0.77	1	5	4
Q2	4.02	0.90	2	5	3
Q3	4.12	0.74	2	5	3
Q4	3.92	0.76	2	5	3
Q5	4.01	0.81	2	5	3
CSR1	3.66	0.83	2	5	3
CSR2	3.49	0.89	1	5	4
CSR3	3.86	1.06	1	5	4
CSR4	3.73	0.97	1	5	4
CSR5	3.76	0.94	2	5	3
EC1	4.27	0.86	1	5	4
EC2	3.87	0.98	1	5	4
EC3	3.82	0.93	1	5	4
EC4	3.54	1.04	1	5	4
EC5	3.91	0.97	1	5	4
SSS1	4.06	0.73	1	5	4
SSS2	4.08	0.72	2	5	3
SSS3	4.01	0.75	1	5	4

4.3 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was performed using SmartPLS 3.0 in order to validate both measurement and structural models by applying partial least squares. From Table 3, it is confirmed that the measurement model demonstrates convergent validity (AVE > 0.5) and high internal consistency reliability (CR>0.7). It is to note that some of the items with poor outer loadings were removed to improve AVE so that n average; the construct explains more than half of the variance of its indicators [34].

Besides that, Table 4 shows that the constructs of the variables were found to have discriminant validity since all the HTMT ratios are below 0.85. Based on the convergent validity, internal consistency reliability and discriminant validity done so far for the measurement model is fit to be used as the structural model to examine the hypothesis.

Table 3. Composite Reliability and Average Variance Extracted (AVE) of Constructs

Model Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)
Unit Price	0.843	0.643
Quality	0.848	0.528
CSR Engagement	0.868	0.574
Environmental Competencies	0.899	0.640
Sustainable Supplier Selection	0.868	0.687

Table 4. HTMT Ratio for all the Constructs

Construct	CSR Engagement	Environmental Competencies	Quality	Sustainable Supplier Selection	Unit Price
CSR Engagement					
Environmental Competencies	0.772				
Quality	0.719	0.685			
Sustainable Supplier Selection	0.634	0.724	0.800		
Unit Price	0.438	0.342	0.653	0.519	

4.4 Hypothesis Testing

The structural model is employed to test the hypothesis of the research model. Figure 2 shows the finalised structural model. This structural model allows finding out the significance value or p-value for each of the arrows in the construct of the model. By running the bootstraps, the results to conclude the hypothesis obtained. Table 5 shows a summary of the structural model with the hypothesis with the decision.

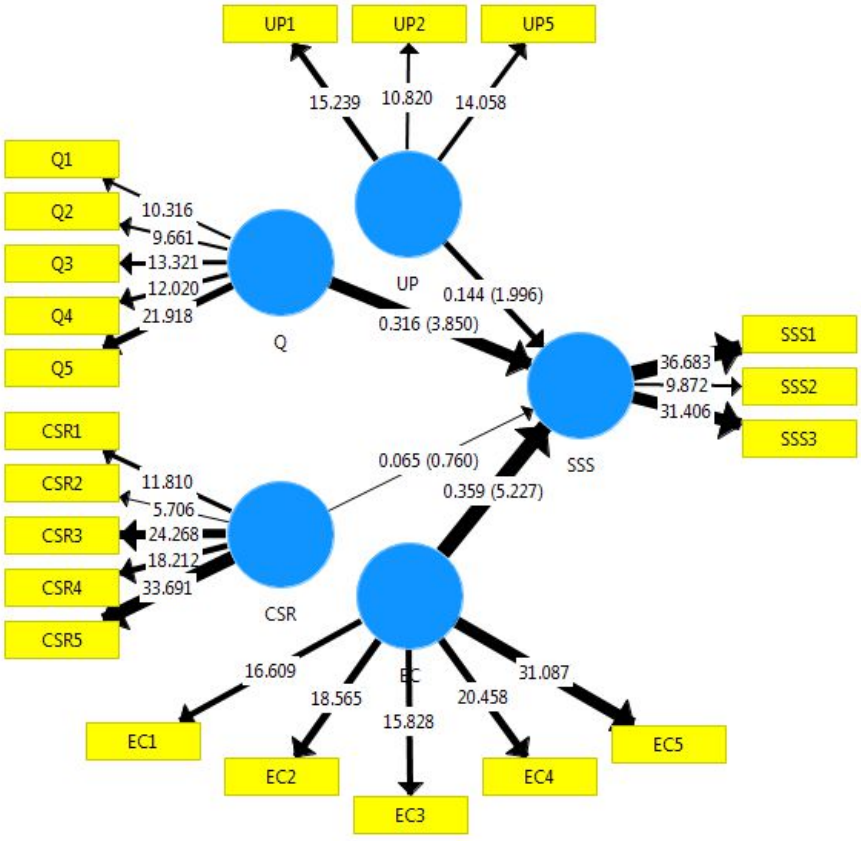

Figure 2. Structural Model of the Constructs

Table 5. Summary of the Structural Model with Hypothesis Decision.

Hypothesis	Relationship	Coefficient	Standard Error	t-value	Supported
H_1	Unit Price→Sustainable Supplier Selection	0.144	0.073	**1.996****	Yes
H_2	Quality→Sustainable Supplier Selection	0.316	0.083	**3.850****	Yes
H_3	CSR Engagement→Sustainable Supplier Selection	0.065	0.086	0.760	No
H_4	Environmental Competencies→ Sustainable Supplier Selection	0.359	0.068	**5.227****	Yes

Based on the above assessment, it can be concluded that Unit Price (UP), Quality (Q) and Environmental Competencies (EC) are the key factors influencing sustainable supplier selection in supply chain management of Malaysia palm oil refining and oleochemical manufacturing industry. Thus, it can be concluded that H3 is not supported.

4.5 Goodness of Fit Analysis

By using the formula below of GoF, the GoF value can be obtained. From the PLS algorithm, R2=0.515 is already determined, and the average communality is obtained by averaging all the AVE values of the latent variables that is equivalent to 0.6144. Using these two values plugged into equation below, the GoF = 0.5625 which is considered large based on baseline values (GoFsmall=0.1, GoFmedium=0.25, GoFlarge=0.36) [36]. Thus, it can be concluded that the overall structural model is considered to have a great Goodness of Fit.

$$GoF = \sqrt{Average\ of\ AVE\ x\ R^2}$$

5. Discussion and Conclusions

This study has thus managed to find the factors which are significant in the selection of sustainable suppliers in the Malaysia palm oil refining and oleochemical manufacturing industry context. CSR Engagement, which was hypothesised to have a significant relationship with the sustainable supplier in palm oil refining and oleochemical manufacturing industry in this study, has been rejected. This means that CSR Engagement is not significant in Malaysia palm oil refining and oleochemical manufacturing industry context. Being sustainable and ensuring that the entire supply chain acclimates to it could be a reasonably expensive task or could tend to increase the unit cost, thus, in turn, the selling price. In the palm oil industry, there are two types of palm oil which RSPO (Round-table Sustainable Palm Oil) certified and another is not RSPO certified, which is directly related to CSR Engagement. RSPO certification is directly related to CSR Engagement in palm oil refining and oleochemical manufacturing industry. Suppliers sell RSPO certified palm oil at a higher price compare to non-RSPO certified; thus, if the unit price has the effect that means it jeopardises the overall profit margin. This could be one of the prominent reasons why the CSR Engagement does not have a significant relationship with sustainable supplier selection in palm oil refining and oleochemical manufacturing industry. On the other hand, unit price plays a massive part in the selection of sustainable supplier selection and cannot be compromised. The rejection of CSR Engagement and acceptance of unit price as significant in sustainable supplier selection explains the importance of Unit Price to CSR Engagement in palm oil refining and oleochemical manufacturing industry in Malaysia context.

Quality is essential and should be given the uttermost importance, especially in the selection of sustainable supplier selection as only quality suppliers can have a sustainable supply chain in Malaysia palm oil refining and oleochemical manufacturing industry.

Environmental Competencies also plays a crucial role and has a significant role as it deals with the environment and the various impacts it may have. Palm Oil Industry in Malaysia contributes to Malaysia's GDP, which is crucial in booming Malaysia's economy overall. All these factors are vital, and Palm Oil Refining and Oleo Chemical Manufacturing organisation need to ensure they are sustainable at all time. Thus, this study shows these key factors that are responsible for the sustainable supplier selection in Malaysia palm oil refining and oleochemical manufacturing industry.

This study, however, has a few notable limitations. First, a cross-sectional research design was adopted with data collected at a single point in time. The palm oil refining and oleochemical manufacturing industry is a fast-moving industry, and it is proliferating. Perhaps this might affect the study from the view of one point. Secondly, the data was collected using the online Google forms. The process of completion of the online surveys could not be monitored, and this can be answered by the personnel who have little or no knowledge about the research topic. The cover letter, along with the online Google forms link, may sometimes be delivered to the wrong department, and the least relevant personnel sometimes answers it in the organisation.

Thirdly, some of the organisation have flat out refused to be part of the survey even though their organisation may be part of this industry which use high-end niche technology that the study targeted. Their refusal was mostly based on the fact that the company rules and regulation plus policies which did not permit them to leak any information to an outside or third party. Due to that, some of the useable data could not be retrieved due to the restricted guidelines of the companies. Fourthly, this study is entirely dependent on how much the respondents are open. The tendency of the answering online Google survey forms contributes to a bias where the respondents may answer according to their preferences as opposed to the real practices taking place in their respective organisation.

This study has thus shown the effect of the various independent variables on the sustainable supplier selection in palm oil refining and oleochemical manufacturing industry, the energy efficiency, together with a low carbon footprint. The research findings have shown that three out of the four independent variables have a significant effect on the dependent variables. The three independent variables which have a significant relationship with the sustainable supplier selection in palm oil refining and oleochemical industry are the Unit Price, Quality and Environment Competencies. The one independent variable which does not have a significant relationship is the CSR Engagement.

Nevertheless, this study has successfully managed to build a framework and test the same to come to valid results which assist in analysing the same. There are three distinct theories, namely the triple bottom line theory, stakeholder theory and the resource dependency theory in order to support the framework.

This study also helps to provide empirical data and analysis that can be used for future work and can also be used by palm oil industry organisation in order to have a better understanding and improve their supplier selection process. Thus, the study can also be used in other types of oil-based industry such as Sunflower Oil or Coconut oil in order to get a better understanding of the Sustainable Supplier Selection in their respective context.

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