Analysis of Drivers and Barriers The Implementation of Sustainability Supply Chain Management (SSCM) in PT. ABC

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Abstract. PT. ABC is one of government industry. Although the company has implemented SSCM, but in its implementation many problems still occurred. The problems that this company faced such as the unavailability of sufficient information to achieve sustainability goals to top management, budget allocation for the sustainability of the operation that not provide enough, the technology to adopt sustainability has not been efficient, etc. Some studied by another researcher had been done in this company but none studied about this topic. This study aims to analyze the factors that driving and inhibiting factors of supply chain implementation of sustainability management (SSCM) in PT. ABC. Based on TOPSIS method, it was found that the integrating factor sustained in a proactive plan with a value $v = 0.8765$, adequate budget $v = 0.6204$, support infrastructure and facilities for sustainable operations $v = 0.5032$, access to sophisticated technology for sustainable operations $v = 0.3122$, to enforce the government draft legislation effectively $v = 0.3122$, raising public awareness of the value of sustainable products $v = 0.2780$, and implementing sustainable waste management with the value $v = 0.2423$.

Keywords: SSCM, TOPSIS, drivers, barriers

1. Introduction
Environmental issues today become one of the worlds industry discussion. This is evidenced by the level of public awareness of environmentally products. With the level of public awareness of environmentally products and then encourage the industries to apply the concept of environmental awareness into their businesses. Components, process and flow of information needed to build as a supply chain management system simultaneously. Hence there is a government regulation to raise awareness in terms of protecting the environment. So the company currently can not ignore environmental issues if they want to survive in the global market [1,2]. Integration with SCM sustainability increasingly emphasized in almost all industries through the cooperation of all parties, including the government, suppliers and customers. Responding to rapid changes as a result of environmental uncertainty and strong demands from governments, communities and markets to implement sustainable principles (sustainability), as well as the development of technology and increasingly global competition caused many companies to implement the strategy of Sustainability Supply Chain Management (SSCM) [3,4]. Sustainable supply chains account environmental aspects in
all activities, ranging from raw materials to the final disposal of the goods, but environmental issues in the supply chain decision-making process does not stand alone, the aspect of financial gain either [5,6].

The ability of PT. ABC as a company that has implemented a quality management system certified ISO 9001, management of the effectiveness of environmental activities certified ISO 14000, the management of occupational safety and health certified HSE (SMK3), supply chain management of sustainable certified RSPO and ISPO would have supported the production process of a planned sustainable. In order to produce a product that can meet the needs of consumers, enterprises should carry out activities from the beginning of the raw material in the get up of these products to the end users [7,8]. Focus on Supply Chain Sustainability is doing widespread adoption and development of sustainability issues from upstream to downstream. The issue of sustainability has to start from the beginning of raw materials to delivery to the end consumer. The issue of sustainability also have to integrate the issues and currents that go beyond the core of Supply Chain Management [9]. As described previously, sustainable SCM is the integration of sustainable development and management of the supply chain that contains three dimensions, which integrate environmental, social and economic issues that give effect to the company's strategy [10].

Although PT. ABC has implemented a system of SSCM but in the application still occurred many problems. The problems experienced by PT. ABC among others, is not an adequate information is available to achieve sustainability goals to top management, do not provide enough budget allocation for the operation of sustainability, technological tools to adopt sustainable yet efficient, yet effective rules to ensure government regulations for sustainability enforced, and the perception of stakeholders factory management is not the same with the top leadership.

2. Research methods
The research was conducted at PT. ABC as a palm oil processing plant with a capacity of 75 tons/hour which operates 22 hours/day and 6 working days/week. The data used in this study are primary data obtained directly from the production process at the plant and information of staff authorized in PT. ABC.

Data processing is performed in this study include the presentation the consensus of the experts on the factors driving and inhibiting the implementation of supply chain management sustainability by using Technique for Order Preference by Similarity to Ideal Solutions (TOPSIS) [11,12].

Data collection techniques used in this study are as follows:

• Interview
  The collection of data by conducting research directly by visiting and interview the company’s management to obtain the necessary data.

• Questionnaires
  Questionnaires is a collection of data by spreading or provide a list of questions to respondents with expectations of respondents gave the answer according to the statement. Data collected by giving questionnaires to employees of various levels of experts such as the staff and the manager at the company of palm oil who have understood deeply about the sustainability of the company's supply chain management in charge and give them the measured structural modeling interpretative method.

• Data processing
  Data processing by using the method Technique for Order Preference by Similarity to Ideal Solutions (TOPSIS).

3. Result and discussion

3.1. TOPSIS (Technique for Order Preference by Similarity to Ideal Solution)
Topsis method could be applied in solving problem and it started with choose respondent that would give information by answering questionnaire that arranged for this research. Questionnaire sustainability factors that supporting supply chain management, as follows.

Table 1. The driving factor of SSCM.

| No. | Factors that drivers of sustainable performance |
|-----|-----------------------------------------------|
| 1   | An adequate budget                            |
| 2   | Developing the infrastructure and facilities to support ongoing operations |
| 3   | Access to advanced technologies for sustainable operations |
| 4   | Raising public awareness of sustainable products |
| 5   | Enforcing regulations and laws effective      |
| 6   | Applying sustainable waste management         |
| 7   | Integrating sustainable operations in a proactive plan |

Source: Expert opinion

Table 1 shows the factors that drivers of sustainable performance for company. These factors came from interview and discussion with the experts at the company. Company's budget, infrastructure and facilities, advanced technologies, public awareness, regulations and laws, sustainable waste management and sustainable operations were the factors that influences the sustainable performance. Besides the questionnaire about the drivers of sustainability factors, here also a questionnaire that inhibiting supply chain management (barriers), as follows:

Table 2. Barriers of SSCM.

| No. | Inhibitors for organizational change for sustainability |
|-----|--------------------------------------------------------|
| 1   | Commitment of leader is not optimal                    |
| 2   | Financial constraints                                  |
| 3   | Inefficient technology                                 |
| 4   | Inefficient legal framework                            |
| 5   | Supporting infrastructure is not optimal               |
| 6   | Perception of stakeholders is not the same             |
| 7   | Lack of sustainable waste management                   |

Source: Expert opinion

In Table 2 could be seen that there are some factors that inhibit sustainability such as lack of commitment, financial, technology and legal framework that inefficient, infrastructure, different perception and waste management. After the questionnaire answered by respondent, and processing the data then we found obstacle factor with normalization of decision matrix score as could be seen in Table 3.

Table 3. Decision Matrix Score Normalization Influence To All Expert

| Factors                                      | Obstacle factor |
|----------------------------------------------|-----------------|
| An adequate budget                           | 3.5869 2.9771 3.8731 |
| Developing the infrastructure and facilities to support | 2.7448 2.9638 3.5869 |
ongoing operations
Access to advanced technologies for sustainable operations 2.7448 3.3071 2.5420
Enforcing regulations and effective law 2.2781 2.9771 2.3362
Raising public awareness of sustainable products 3.3219 2.3362 2.2781
Applying sustainable waste management 3.3219 2.4599 1.6093
Integrating sustainable operations in a proactive plan 4.2009 3.8731 3.3219

From Table 3 we know that all of the factor had different value for each of the obstacle factor that would be used to calculated the preferences result. In Table 4 the result of that calculation is shown.

Table 4. Decision Matrix Score Normalization Influence To All Expert

| Factors                                                      | $D_i^+$ | $D_i^-$ | $D_i^+ + D_i^-$ | $V$   | Rank |
|--------------------------------------------------------------|---------|---------|-----------------|-------|------|
| An adequate budget                                           | 0.4416  | 0.7218  | 1.1634          | 0.6204| 2    |
| Developing the infrastructure and facilities to support ongoing operations | 0.5733  | 0.5807  | 1.1539          | 0.5032| 3    |
| Access to advanced technologies for sustainable operations   | 0.5708  | 0.5159  | 1.0868          | 0.4748| 4    |
| Enforcing regulations and effective law                      | 0.7582  | 0.3441  | 1.1023          | 0.3122| 5    |
| Raising public awareness of sustainable products             | 0.8399  | 0.3234  | 1.1633          | 0.2780| 6    |
| Applying sustainable waste management                        | 0.8871  | 0.2836  | 1.1707          | 0.2423| 7    |
| Integrating sustainable operations in a proactive plan        | 0.1363  | 0.9678  | 1.1041          | 0.8765| 1    |

From the value of $v$ in Table 4, it can be seen that the most good motivating factor for minimizing the inhibiting factor in PT. ABC is sustainable operations integration in a proactive plan factor with a value of $v = 0.8765$, then factor an adequate budget to the value of $0.6204$, support infrastructure and facilities for the operation continuing with the value of $v = 0.5032$, access to advanced technology for continuous operation with a value of $v = 0.4847$, enforcing regulations and laws effective with the value of $v = 0.3122$, raising public awareness about sustainable products with the value of $v = 0.2780$, and the last is applying sustainable waste management with the value $v = 0.2423$. The all process for the drivers factors to get the rank was applied to the barriers factor and the value for the most highest factors are as follow, the technology is inefficient, facilities and supporting infrastructure is not optimal, and the perception of stakeholders is not the same.

4. Conclusions
Based on the research results and analysis of driving and inhibiting factor in the application of SSCM in PT. ABC, it can be concluded as follows:

- The driving factors for the result is that, develop the infrastructure and facilities for sustainable operations, access to advanced technologies for sustainability, enforce regulations and laws reactive, implementing waste management is sustainable, as the four drivers of the most influential in the implementation of SSCM in PT. ABC
- Factors inhibiting the result is that the technology is inefficient, facilities and supporting infrastructure is not optimal, and the perception of stakeholders is not the same is a key barriers factor to implementation SSCM
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