Effect of Green Supply-Chain Management Implementation on Marketing Performance (Study on Paper Industry in West Java Province of Indonesia)

Osep Hijuzaman

Abstract: The purpose of this study was to determine and analyze the effect of implementation of Green Supply-Chain Management on Marketing Performance. Object: This research is the paper company that existed in West Java Province of Indonesia, which amount to 30 companies as well as a sample of research, while variables studied are Variable Green Supply-Chain Management Implementation and Variable of Paper Marketing Industry Performance in West Java Province. The method used SEM with Variance Based or Component Based with Software used is Smart PLS 3.0. Conclusion This research is a Direct Influence of GSCM Implementation on Marketing Performance in Paper Companies in West Java Province of Indonesia.

Keywords: GSCM, Marketing Performance

1. Introduction

1.1 Background

Paper is known as the primary medium for writing, printing and painting and many other uses which can be done with paper, e.g. cleaning paper (tissue) that can be easily used for dishes, cleanliness, toilet and so on. Paper is a thin material made from vegetable fibers of short, precipitated and dried, usually mixed with other supplemental materials or dyes (Jagat Paper, 28). Fiber used is always natural, and contains cellulose and semifellulosa. Their paper is a new revolution in the world of writing that donated great significance in world civilization. Before you found the paper, the nations first use of clay tablets were burned. This can be found from the Sumerian civilization, inscriptions on stone, wood, bamboo, leather or animal bone, silk, even the palm leaves that are arranged as found in the manuscripts of the archipelago several centuries.

In 2016, the pulp and paper industry sector has been weakening prices since the last three years. The price of pulp three years ago that ranged in US $ 1,000 per ton, now drops to 25%. Not only that, the supply of raw materials was reduced so that industrial utilization only left 40%. In addition, the competitiveness of the pulp and paper industry of Indonesia is quite high now began to be feared by other countries. As a result, superpowers such as the United States impose an import duty on pulp and paper products from Indonesia of 107%.

The high production of paper in Indonesia required the handling of environmentally friendly paper production ranging from the procurement of paper raw materials to the end-user consumer of paper. There are several advantages gained when the national industry uses environmentally friendly products namely: The key to entering global markets and free trade markets in strengthening product brands, saving energy-efficiency production costs, selling goods at low prices and contributing to reducing carbon emissions and improving productivity of goods production processes.

Uses of environmentally friendly raw materials, proper waste handling, pollution reduction, reuse and recycling are some of the strategies in applying Green Supply-Chain Management (GSCM) concept. The traditional supply chain consists of five parts: raw materials, industry, distribution, consumer, and waste. Any links to the supply chain can cause pollution, waste, and other hazards in the environment. To overcome the occurrence of pollution, waste, and other hazards in the environment due to the impact of activities in the supply chain, including the paper industry, the development of green supply-chain management was developed.

Green supply-chain management as a process of using environmentally friendly inputs and converting those inputs into reusable outputs at the end of its life cycle creates a sustainable supply chain (Penfield, 2007). An environmentally friendly supply chain aims to limit waste in industrial systems to conserve energy and prevent harmful materials to the environment. The cost of eco-friendly supply-chain management is higher than that of Conventional Supply-Chain Management, but on the other hand, can create a corporate reputation on environmental concerns, which in turn can improve the competitiveness of the company.

As noted by Krugman (1997), competitiveness is a measure on the ability and performance of an enterprise in the business sector. It is also called the organizational ability to act and react through a financial power (Feurer and Chaharbaghi, 1994). Since its inception, competitiveness has become an interesting concept at various levels of study, including enterprise level, industry level (or micro-economic level), and national level (or macroeconomic level) (Nelson,
1992). The competitiveness of enterprises has become a core topic of competitive research.

The authors suspect that the concept of environmentally friendly paper industry from start procurement of raw materials to final products accepted by consumers or in other words, the concept of Green Supply-Chain Management influence on Performance paper companies in West Java.

Based on the above theme, Paper Marketing Performance in Indonesia, especially in West Java, is believed to be supported directly or indirectly by Green Supply-Chain Management Implementation through the competitiveness of the company. Therefore, the authors wish to raise a Research section of the Doctoral Dissertation entitled “Effect of Green Supply-Chain Management on Marketing Performance in West Java Province of Indonesia.”

1.2 Specific Objectives Research

This research was conducted to know and analyse, Direct Influence Implementation of Green Supply-Chain Management on Paper Marketing Company Performance in West Java Province of Indonesia.

2. Literature Review

2.1 Green Supply Chain Management

Bowen (2001) in Rao and Holt (2005) suggests that companies will adopt green supply-chain management if they identify that Green Supply-Chain Management will deliver results in financial and operational benefits. Therefore, there is a need for clear research to create a potential link between green supply-chain management initiatives and increasing competitive levels and improving economic performance to encourage companies to adopt “green” in their supply chain. Supply-Chain Management can integrate environmental management practices into every supply-chain management in order to achieve green supply-chain management and maintain competitive advantage and also to increase business profits and market share objectives.

Zhu and Sarkis also define Green Supply-Chain Management as a management that ranges from green purchasing to integrated supply chains from suppliers, to factories, to customers and reverse logistics, which "close loops." Green Supply-Chain Management is an integration of environmental thinking into supply-chain management, including product design, source and selection materials, manufacturing processes, final delivery of products to consumers and end-of-life product management after their useful life (Srivastava, 2007: 53).

Green Supply-Chain Management improves operational work using environmentally-conscious solutions: (a) improves agility; Green Supply-Chain Management helps to reduce risk and accelerate innovation; (B) improve adaptation: Green Supply-Chain Management analysis often yields innovative processes and continuous improvement; (C) Promoting alignment: Green Supply-Chain Management involves negotiating policies with suppliers and customers, resulting in better alignment of business processes.

2.2 Marketing Performance

Ferdinand (1999) suggests that marketing performance is a common factor used to measure the impact of a company's strategy. Company strategy is always directed to generate marketing performance such as sales volume, market share and sales growth rate and financial performance. Suggested performance measurements using marketing activities that result in performance of units sold and customer turnover (Ferdinand, 2000).

Sales growth is a concept to measure market performance of a product. Sales growth is a source of market share growth. Sales growth is used for all researchers as one of the market-forming performance variables. Market performance is part of marketing performance (Mckee, et al, 1989 in Han, et al, 1998, p.36 and permadi, 1998, p.75).


2.3 Research Hypothesis

The author makes the following hypothesis: Competitiveness of Companies has a direct positive effect on the Performance of Corporate Marketing Paper In West Java Province.

3. Research Methodology

3.1 Research Subject

The subject of this research is paper industry located in the industrial area of West Java Province.

3.2 Types and Data Sources

The data collected are primary and secondary data. Primary data was obtained directly from questionnaires or questionnaires containing questions relating to variables studied: Green Supply-Chain Management Implementation, and Marketing Performance. Whereas secondary data is derived from previous research studies that have been summarized in the appropriate research journals and supportive of the problems studied.

3.3 Population, Samples and Sampling Techniques

The population specified in this study is the entire paper industry companies in the Industrial Area of West Java Province, which has applied the concept of green supply-chain management during the last three years of 2013 to 2015.

According to Uma Sekaran (2006: 123), Sample is part of the population. The sample consists of a select number of
members from the population. Sampling is the process of selecting an enough element from the population, so research on the sample and understanding of its nature or characteristics will allow us to generalize those traits or characteristics to the population element. The sample of this research is all paper companies in West Java Province, which amounted to 30 paper companies.

3.4 Data collection technique

To collect data for the purposes of this study used measuring instruments in the form of a questionnaire consisting of a number of questions that are closed following alternative answers that have been provided, so that respondents just choose the answer in accordance with the actual situation. The level of measurement of variables in this study is ordinal, and the answer category consists of 9 (nine) answer categories ranging from by referring to Ordinal Scale (Ordinal scale), as shown in the picture below:

<table>
<thead>
<tr>
<th>Table 1 : Ordinal Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
</tr>
</tbody>
</table>

According to Bailey in Ulber Silalali (2012: 219), Ordinal scale is defined as follows:

“An ordinal scale not only categorizes the variable in such a way as to denote qualitative differences among the various categories, it also ranks-ordres the categories in some meaningful way”.

The above picture is used to answer the variable Implementassi Green Supply-Chain Management as variable X, Y variable is the Marketing Performance used data from observations in the field related to the performance results of paper industry companies in Industrial Area West Java Province of Indonesia.

3.5 Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) is a combination of two separate statistical methods of Factor Analysis and Regression. There are two models of SEM with Covariance Based, which are represented by Software Lisrel and Amos, and SEM with Variance Based or Component Based with Software used like SmartPLS. Structural Equation Modeling (SEM) used in this research is SEM model with Variance Based, that is multivariate statistic technique, which do the comparison between multiple dependent variable and multiple independent variable, it is used because of small sample size, that is only 30 companies of paper industry In West Java Province, using Smart PLS 3.0 software.

According to Imam Ghozali (2008: 18) the, please be put forward as follows: please use algorithmic literatures consisting of ordinary least square's analysis series, the problem of model identification is not a problem for the recursive model, nor does it assume a particular distribution form for a variable size scale. Furthermore, the number of samples can be small with rough estimates. According to Fornell cited Imam Ghozali (2008: 1) other advantages obtained by using Partial Least Squares (PLS) are as follows:

- SEM-based variance or PLS provide the ability to perform path analysis with latent variables. This analysis is often referred to as the second generation of multivariate analysis.
- The advantages of PLS include:
  a) PLS can analyze as well as construct formed with reflexive indicator and formative indicator.
  b) The flexibility of the algorithm, size dimensions are not a problem, can be analyzed with many indicators.
  c) The sample data should not be large (less than 100).

The way PLS work according to Imam Ghozali (2006: 19) that all the latent variables in the PLS consist of three sets of relationships, namely (1) inner model Which specifies the relationship between the latent variable (structural model), (2) outer model that specifies the relationship between the latent variables with the indicator or the variable of the manifest (measurement model), dan (3) weight relation In which case values of latent variables can be estimated. Without loss of generalization, it can be assumed that the latent variable and the indicator or manifest of zero means and variance unit variables are equal to one so that the location parameter (constants parameter) can be omitted in the model.

According to Willy Abdillah and Jogiyanto HM (2015: 189), the stages of running the PLS are as follows:
1) Draw a path diagram
2) Determine how many blocks (latent variables) will be built with indicators on each latent variable
3) Estimate each latent variable as the total weight of the indicator
4) Renew inner relations, then update outer relations
5) Estimates depend on the choice Modes used
6) Estimate case values for each observation by using formative or proportional weights for loading by considering the variance constraint (F) = 1. Then, the estimator continues until the weight change is small.

Evaluation of the model carried out by PLS is done by evaluating outer model and inner model. Outer model is a measurement model to assess the validity and reliability of the model. While Inner Model, is a structural model to predict the relationship of causality between latent variables.

4. Analysis and Discussion

The object of this research is a paper company that existed in West Java Province, which amounts to 30 companies. From a number of paper companies, all companies are willing to give permission to carry out this research.

The number of questionnaires distributed for each paper company ranged from one questionnaire consisting of 52 research statements consisting of 21 statements are Green Supply-Chain Management variables.; One statements are variable's Marketing Performance. Number of questionnaires sent by mail, and email to several paper companies is one questionnaire for each paper company in West Java Province of Indonesia.Of the total number of questionnaires distributed...
and sent, die 30 questionnaires, the number of questionnaires filled and returned is 30 questionnaires.

4.1 Data analysis

4.1.1 Reflective Construct Testing

4.1.1.1 Assessing the Outer Model or Measurement Model

The data processing technique using Smart Partial Least Square (Smart PLS) based SEM method will be done in two tests: reflective construct test and formative construction test. There are three criteria in using data analysis techniques with Smart PLS to assess the outer reflective construct model die Convergent Validity, Discriminant Validity and Composite Reliability.

a. Convergent validity

Convergent validity of measurement models with reflexive indicators is judged by correlation between an item score / component scores estimated with SmartPLS Software. Individual reflective sizes are said to be high if they correlate more than 0.70 with measured constructs. However, according to Chin, 1998 (in Ghozali, 2006) for the initial stages of development the scale of measuring the loading values of 0.5 to 0.6 is considered sufficient. In this, study used the load factor limit of 0.60. The following is the result of the PLS algorithm: The first stage is shown in Figure 2:

![Figure 2: Path Diagram Research Model Effect of GSCM Implementation on Marketing Performance on Paper Industri in West Java Province of Indonesia With SmartPLS 3.0 (Before Modification)](image)

Table 2: Outer Loadings (Measurement Model)Variable Implementation of Green Supply Chain Management

<table>
<thead>
<tr>
<th>GSCM</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCM1</td>
<td>0.552</td>
<td></td>
</tr>
<tr>
<td>GSCM2</td>
<td>0.422</td>
<td></td>
</tr>
<tr>
<td>GSCM3</td>
<td>0.541</td>
<td></td>
</tr>
<tr>
<td>GSCM4</td>
<td>0.784</td>
<td>0.784</td>
</tr>
</tbody>
</table>

Table 3: Outer Loadings (Measurement Model)Marketing Performance Variables

<table>
<thead>
<tr>
<th>MP2013</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.981</td>
<td></td>
<td>0.981</td>
</tr>
</tbody>
</table>

Table 4: Outer Loadings (Measurement Model)Variable Implementation of Green Supply Chain Management

<table>
<thead>
<tr>
<th>GSCM</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCM4</td>
<td>0.784</td>
<td>0.784</td>
</tr>
<tr>
<td>GSCM7</td>
<td>0.614</td>
<td>0.614</td>
</tr>
<tr>
<td>GSCM8</td>
<td>0.603</td>
<td>0.603</td>
</tr>
<tr>
<td>GSCM9</td>
<td>0.607</td>
<td>0.607</td>
</tr>
<tr>
<td>GSCM10</td>
<td>0.726</td>
<td>0.726</td>
</tr>
<tr>
<td>GSCM15</td>
<td>0.795</td>
<td>0.795</td>
</tr>
</tbody>
</table>

Table 5: Outer Loadings (Measurement Model)Marketing Performance Variables

<table>
<thead>
<tr>
<th>MP2013</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.981</td>
<td></td>
<td>0.981</td>
</tr>
</tbody>
</table>

As shown in Table 2 and Table 3 above shows that there is a loading factor value below 0.60 Therefore, model modification is performed by issuing indicators that have a loading factor value below 0.60. Outer Loadings Variable Implementation of Green Supply Chain Management issued from the model are GSCM1, GSCM2, GSCM3, GSCM5, GSCM6, GSCM11, GSCM12, GSCM13, GSCM14, GSCM16, GSCM17, GSCM18, GSCM19, GSCM20, GSCM21. Then Outer Loadings Variable Competitiveness issued from the model are: CC1, CC2, CC6, CC9, CC10. So the results of the loading factor values that are above 0.60 can be seen in the following table:

Table 5: Outer Loadings (Measurement Model)Marketing Performance Variables

<table>
<thead>
<tr>
<th>MP2013</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.981</td>
<td></td>
<td>0.981</td>
</tr>
</tbody>
</table>

Now the result has met convergent validity because all loading factors are above 0.60. To see how the display image, we can see into the Figure 3 path diagram which is the second stage below:
Table 8 shows that 1) GSCM construct correlations with indicators higher than the correlation of GSCM indicators with other constructs (competitiveness and performance marketing). 2) the correlation of the marketing performance with the indicator is higher than the correlation of marketing performance indicators with other constructs (competitiveness and GSCM).

Table 9: Composite Reliability and Cronbach Alpha

<table>
<thead>
<tr>
<th>Variable</th>
<th>Composite Reliability</th>
<th>Cronbach Alpha</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCM</td>
<td>0.868</td>
<td>0.810</td>
<td>0.570</td>
</tr>
<tr>
<td>Marketing Performance</td>
<td>0.991</td>
<td>0.986</td>
<td>0.974</td>
</tr>
</tbody>
</table>

Source: Data Processing with SmartPLS, 2017

The outputs of composite reliability and cronbach alpha are all constructed above 0.70. Unless the competitiveness construct has an average variance extracted of 0.488 <0.70. However, the test is still done to the next stage due to composite reliability and cronbach alpha all constructs are above 0.70.

4.1.2 Inner Model Testing

Test on the structural model is done by looking at the R-Square value which is a goodness-fit test model. The influence of Green Supply-Chain Management Implementation on Marketing Performance gives R-square value of 0.281, which can be interpreted that the variability of Construction of Marketing Performance, which can be explained by the variability of the Green Supply-Chain Management Implementation of 28.1%.

Table 10: R Square

<table>
<thead>
<tr>
<th>Variable</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Performance</td>
<td>0.281</td>
</tr>
</tbody>
</table>

Source: Data Processing with SmartPLS, 2017

4.2 Formative Construct Testing

4.2.1 Hypothesis Testing

Hypothesis testing is done through the value of T Statistics and Probability value (P Value) influence among the

<table>
<thead>
<tr>
<th>Indicator</th>
<th>GSCM</th>
<th>Marketing Performance (MP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC3</td>
<td>0.478</td>
<td>0.198</td>
</tr>
<tr>
<td>CC4</td>
<td>0.530</td>
<td>0.356</td>
</tr>
<tr>
<td>CC5</td>
<td>0.535</td>
<td>0.276</td>
</tr>
</tbody>
</table>

Figure 3: Path Diagram Research Model Effect of GSCM Implementation on Marketing Performance on Paper Industri in West Java Province of Indonesia With SmartPLS 3.0 (After Modification)

Image path diagram the above PLS algorithm is the result of modification as a condition in order to meet the convergent validity. To be able to clearly see the values of the outer loading of each construct above, then it is shown in the following table:

Table 6: Outer Loadings (Measurement Model) Variable Implementation of Green Supply Chain Management

<table>
<thead>
<tr>
<th>Variable</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCM4</td>
<td>0.846</td>
<td>0.846</td>
</tr>
<tr>
<td>GSCM7</td>
<td>0.677</td>
<td>0.677</td>
</tr>
<tr>
<td>GSCM8</td>
<td>0.699</td>
<td>0.699</td>
</tr>
<tr>
<td>GSCM9</td>
<td>0.596</td>
<td></td>
</tr>
<tr>
<td>GSCM10</td>
<td>0.721</td>
<td>0.721</td>
</tr>
<tr>
<td>GSCM15</td>
<td>0.799</td>
<td>0.799</td>
</tr>
</tbody>
</table>

Source: Data Processing with SmartPLS, 2017

Table 7: Outer Loadings (Measurement Model) Marketing Performance Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Initial Model</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP2013</td>
<td>0.982</td>
<td>0.982</td>
</tr>
<tr>
<td>MP2014</td>
<td>0.990</td>
<td>0.990</td>
</tr>
<tr>
<td>MP2015</td>
<td>0.988</td>
<td>0.988</td>
</tr>
</tbody>
</table>

Source: Data Processing with SmartPLS, 2017

4.1.1.3 Composite Reliability

Criterion validity and reliability can also be seen from the reliability value of a construct of each construct. The construct is said to have composite reliability, cronbach alpha, average variance extracted (AVE) which is high if the value is above 0.70. In table 9 presented the value of composite reliability and cronbach alpha for all variables.

4.1.1.2 Discriminant Validity

Discriminant validity is performed to ensure that each concept of each latent variable is different from other variables. The model has good discriminant validity if each loading value of each indicator of a latent variable has the largest loading value with another loading value against other latent variables. Discriminant validity test results are obtained as follows:

Table 8: Discriminant Validity

<table>
<thead>
<tr>
<th>Indicator</th>
<th>GSCM</th>
<th>Marketing Performance (MP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC3</td>
<td>0.478</td>
<td>0.198</td>
</tr>
<tr>
<td>CC4</td>
<td>0.530</td>
<td>0.356</td>
</tr>
<tr>
<td>CC5</td>
<td>0.535</td>
<td>0.276</td>
</tr>
</tbody>
</table>

4.2 Formative Construct Testing

4.2.1 Hypothesis Testing

Hypothesis testing is done through the value of T Statistics and Probability value (P Value) influence among the
variables by looking at the value of parameter coefficients contained in Table 11 below.

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Original Sample</th>
<th>T Statistics</th>
<th>P Values</th>
<th>Hypothesis Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCM → Marketing Performance</td>
<td>0.602</td>
<td>2.075</td>
<td>0.038</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Source: Data Processing with SmartPLS, 2017

From the results of Path Coefficient above shows the effect of the direct variable as follows: Direct Effect of Green Supply-Chain Management Implementation on Marketing Performance. The magnitude of the parameter coefficient of 0.584 has a positive influence Implemental Green Supply-Chain Management on marketing performance. The better the implementation of Green Supply-Chain Management, the better the Marketing Performance with the statistical t value of 2.431 is significant because (t table significance 5% = 1.96). Therefore, the statistical t value is greater than t of table 1.96. The second hypothesis which reads Green Supply-Chain Management Implementation has a direct positive effect on Paper Marketing Company's performance in West Java Province is accepted.

5. Conclusion

Based on the results of Analysis and Discussion of Effect of Green Supply-Chain Management Implementation on Marketing Performance with Competitiveness Mediation Paper Company in West Java Province concluded as follows: There is a Direct Influence of GSCM Implementation on Marketing Performance in Paper Companies in West Java Province.

6. Acknowledgement

The researcher would like to thank the Ministry of Research and Technology of the Republic of Indonesia, who has assisted researchers in the form of Research Doctoral dissertation Year 2017.

References


**Author Profile**

Osep Hijzaman received the S.Pd., M.T. Lecture of STT. Wastukancana Purwakarta, West Java, Indonesia. I had studied postgraduate in Electrical Engineering Education from University of Indonesia in Bandung (1999) and Magister Industrial Engineering and Management from Pasundan University (2007), now studying at the University of Indonesia in Bandung, Doctoral Program in Management of Science.