

2018 - Analysis of Green Supply Chain Management Implementation on Competitiveness, Environmental Performance, and SMEs Performance

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3 Analysis of Green Supply Chain Management Implementation on Competitiveness, Environmental Performance, and SMEs Performance

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Abstract— This article analyze the implementation of Green Supply Chain Management (GSCM) on competitiveness, environmental performance and food and beverage SMEs performance in Pasuruan. This study aims to determine how significant GSCM implementation to competitiveness, environmental performance, and SMEs performance. The population was 75 food and beverage SMEs from 13 districts in Pasuruan. Data were collected using questionnaires and interviews. Analysis technique was by *Partial Least Square* (PLS 1.0). Results indicated that GSCM implementation significantly influenced competitiveness, environmental performance, and SM 25 performance. However, there was no significant influence between environmental performance and SMEs performance.

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Keywords— Food and Beverage SMEs, Green Supply Chain Management; competitiveness; environmental performance; SMEs performance

I. INTRODUCTION

Globalization cannot be avoided by any country where automatically pushes all business actors to continuously develop, so they are able to compete in global market [1]. The rapid changes impact to increasing demands on various sectors, one of them is food and beverage products. In East Java, the increasing demands also experience changing, especially in SMEs sectors [2]. Pasuruan is one of eight investment concern areas in Indonesia. 2,174 billion IDR investments boosted the SMEs growth in Pasuruan from 245,028 to 249,683 [3]. Along with the growth, consumers' preferences tend to change as well; they give more acknowledgements on environmental friendliness, hygiene and nutrition, so SMEs actors should give more attentions to run their business.

Public awareness on environmentally-friendly products encourages business actors to give m 24 attention to their production activities. Many SMEs offer products that are more environmental 27 friendly and hygienic. Those products are produced by implementing Green Supply Chain Management (GSCM) [4].

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Green Supply Chain Management (GSCM) is one of the strategies to meet the current global market trends which increasingly lead to environmentally-friendly and hygienic

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products. Whereas the definition of Green supply chain management is to involve the environment in Supply Chain Management, such 23s product design, manufacturing processes, purchase of raw materials, supplier selection, and distribution of goods to end consumers and recycle from after the useful life [5].

Green Supply Chain Management significantly influences to company's competitiveness [6]. It was supported by other researchers that GSCM positively and significantly influenced company's competitiveness [7];[8];[9];[10];[11];[12]. However, there were other researchers argued GSCM did not significantly influence company' competitiveness [13];[14].

Implementing GSCM properly is able to increase company's performance [15]. To increase environmental resilience and to maintain distribution flows from upstream to downstream, implementing GSCM is one of the solution [16]. GSCM has role to reduce environmental damage through lifecycle concept by green manufacturing, green purchasing, recycling and reusing packaging, as stated [17]. They mentioned that there was positive influence between GSCM implementation and environmental performance. However, it was different with Yang and Sheu research [18].

Green Supply Chain Management also influence the increasing of company's performance [19];[20];[21];[22], yet there is no comprehensive result on how company's performance increase due to GSCM implementation [23]. However, Bowen at al. disagreed with the statement that GSCM implementation has no influence on company's performance [24]. Aside of influenced by GSCM implementation, company's competitiveness has positive influence to company's performance [25];[26];[27];[28];[29].

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For SMEs, environmental management also has an impact profit, one of which is to add value and create good image . Environmental performance has a positive impact on improving company performance [17];[21]. However, there were studies disagreed to this opinion [30]; [31];[32]. These problems became a research gap in which leading to the importance of this rese 2ch. The research aims to determine the effect of GSCM implementation on competitiveness, environmental performance, and SMEs performance.

16 Green Supply Chain Management is a management of chain supply relating to environmental aspects [33]. GSCM is one of the strategies that is important to achieve sustainable development for SMEs [21];[27]. The GSCM implementation had several advantages, one of which is to improve competitiveness and environmental performance [21]. It is the reason why GSCM becomes a new business trend. GSCM implementation was divided into: eco design, green manufacturing and packaging, environmental participation, green marketing, stock and suppliers [33]. Other opinions argued that GSCM implementation is divided into intra-organizational and inter-organizational environmental practices [34].

The competitiveness is the ability of business actors to achieve economic benefits that exceed their competitors in the same market industry [35]. Competitiveness is possibly performed by consumer offering values including prices and services [36]. Competitiveness is a value created by business actors for customers measured using delivery dependability, product innovation and time to market [37]. Competitiveness is a set of unique characteristics possessed by an organization to win the market. Therefore, competitiveness is the ability or additional value possessed by business actors that are differed from each business actor in order to win the market.

Environmental performance is an inseparable part of industrial production. The environment becomes directly or indirectly related to industrial operating activities [38]. To improve environmental performance, every business actor should be able to produce high-quality and environmentally responsible products [39]. Whereas others defined company performance as the result obtained by the company in a certain period at the specified standard [35] and to measure company performance, market-based operational, financial performance, and operational performance was used [40].

The hypotheses on this research were:

- H1: there was significant-positive influence on GSCM implementation to SMEs competitiveness.
- H2: there was significant-positive influence on GSCM implementation to SMEs environmental performance.
- H3: there was significant-positive influence on GSCM implementation to SMEs performance.
- H4: there was significant-positive influence on SMEs competitiveness to SMEs performance.
- H5: there was significant-positive influence on environmental performance to SMEs performance.

II. RESEARCH METHODS

A. Population and Sampling

19 The population was food and beverage SMEs in Pasuruan. Sampling was infinite where the number was unknown due to dynamic conditions of SMEs as many SMEs were closed or opened unknowingly by local government. Sampling technique used Maximum Likelihood Estimation (MLE) with 75

respondents taken from 13 districts in Pasuruan with an error rate of 5%.

B. Research Variable

Variables used were GSCM, competitiveness, environmental performance, and SMEs performance.

Green Supply Chain Management is a practice involving environment in supply chain to achieve SCM greener to maintain competitiveness and offer business benefits and market share [21];[34];[35]. Indicators used were choosing, making, sending which refer to [34]; [20];[41].

Competitiveness is the ability of business actors to achieve economic benefits exceeding their competitors in the same market industry [35]. Competitiveness is a value created by business people for buyers that is measured using delivery dependability, product innovation, time to market [37];[42];[20]. Indicators used were price, quality, product innovation, time to market.

Environmental performance indicators used were compliance and recycling which refer to [43];[17];[20]. SMEs performance indicators used were profit targets, productivity costs, production costs, scope of market scope, and consumers' satisfaction which refer to [40];[26].

C. Data Analysis Technique

18 Data were analyzed using Partial Least Square (PLS) 1.0 with variant-based Structural Equation Model (SEM).

III. RESULTS AND DISCUSSION

A. Results

17 Table 1 shows result of validity and reliability test which meet the prerequisite requirement.

13 TABLE I. VALIDITY TEST

	original sample estimate	mean of subsamples	Standard deviation	T-Statistic
GSCM				
Tot_Buy	0.887	0.886	0.039	22.831
Tot_Co	0.773	0.752	0.102	7.554
Tot_Snd	0.766	0.769	0.097	7.888
MSMEs perf				
Cst	0.860	0.866	0.033	26.178
Pd	0.799	0.799	0.085	9.451
Tot_Mkt	0.678	0.654	0.127	5.324
Tot_St	0.544	0.504	0.204	2.660
Competitive				
Prc	0.761	0.749	0.113	6.747
Tot_IN	0.731	0.707	0.144	5.097
Tot_Qt	0.849	0.844	0.064	13.262
environ perf				
KPT	0.854	0.843	0.069	12.339
Ryc	0.862	0.857	0.055	15.675

Table I indicates that outer loading of each GSCM, competitiveness, environmental performance, and SMEs performance indicator was more than 0.50 – 0.60 meaning that all indicators were parts of construct research variables.

TABLE II. COMPOSITE RELIABILITY

	Composite Reliability
GSCM	0.851
SMEs perf	0.816
Competitive	0.825
environ perf	0.848

Table II indicates that all variables have Composite Reliability value more than 0.70 (>0.70) meaning that all variables were reliable or passed reliability test.

TABLE III. R-SQUARE

	R-square
GSCM	
SMEs perf	0.448
Competitive	0.284
environ perf	0.188

Using R-square, Table III indicates that the value of GSCM as exogenous variable to describe each endogenous variable in the research.

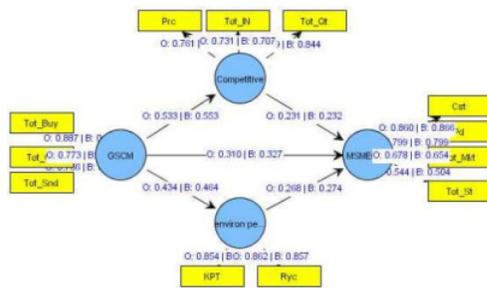


Fig. 1. Model Struktural PLS 1.0

To examine the relationship among the constructs, a bootstrapping procedure was performed. The dependent variable had an effect when the t-statistic was more than the t-table, with significant value of 5% = 1.96 as seen in figure 1.

TABLE IV. HYPOTHESES TEST

	original sample estimate	mean of sub samples	Standard deviation	T-Statistic
GSCM -> SMEs perf	0.310	0.327	0.127	2.436
Competitive -> SMEs perf	0.231	0.232	0.102	2.255
environ perf -> SMEs perf	0.268	0.274	0.155	1.728
GSCM -> Competitive	0.533	0.553	0.107	4.960
GSCM -> environ perf	0.434	0.464	0.123	3.525

Table IV indicates the hypotheses as:

- H1: there was significant-positive influence on GSCM implementation to SMEs competitiveness.

- H2: there was significant-positive influence on GSCM implementation to SMEs environmental performance.
- H3: there was significant-positive influence on GSCM implementation to SMEs performance.
- H4: there was significant-positive influence on competitiveness to SMEs performance.
- H5: there was no significant-positive influence on environmental performance to SMEs performance.

B. Discussion

The results indicated that the relationship between GSCM and competitiveness, environmental performance as well as SMEs performance in food and beverage SMEs in Pasuruan was positive-significant. Likewise, the relationship between competitiveness on SMEs performance was positive-significant. Whereas the relationship between environmental performance and SMEs performance was insignificant. Based on data analysis, the relationship between GSCM implementation and competitiveness was positive-significant due to SMEs in Pasuruan performed GSCM activities. In addition, improving SMEs competitiveness was possibly done by product innovations such as mushroom abon and Moringa leaves noodles. This was along with researches conducted [7];[8];[9];[10];[11];[12].

The relationship between GSCM implementation and environmental performance was positive-significant as proved by SMEs did not discharge their wastewater directly to body-river and most of them already had wastewater treatment and similarly for solid waste. They also partially have home industry products licenses for product and environment cleanliness. It is similar to research conducted [17];[19]. The relationship between GSCM implementation and SMEs performance was positive-significant proved by many SMEs actors maintain employee' productivity as well as sell their product to other areas. It is similar to research conducted ho stated that GSCM and SMEs performance had positive-significant relationship [20];[21].

The relationship between competitiveness and SMEs performance was positive-significant seen besides from how SMEs always maintain employee' productivity and sell their products to other areas, it also produces many innovation for their respective products, such as SMEs coffee, they are able to produce coffee with a variety of variants ranging from Luwak coffee, robusta, arabica and rempak coffee branded with "LEDUG" coffee as well as desien new packaging from logo to sizes and in which supported previous researches [25];[26];[27];[29]. For the relationship between environmental performance and SMEs performance, there was no significant relationship proved by the lack consistency SMEs especially in maintaining the environment around the production site daily, they only clean the area surround production sites whenever inspection was performed, such as when issuing home industry products licenses permit, requesting capital loans from banks and Corporate Social Responsibility from companies in which was similar to previous researches [30]; [31];[32]. which found that

environmental performance had no influence to SMEs performance.

IV. CONCLUSION

In conclusion, GSCM implementation had a significant positive influence on SMEs competitiveness because the better GSCM implementation performs, the stronger impact is showed in SMEs competitiveness. GSCM implementation had positive-significant influence on environmental performance proved by many SMEs already implemented GSCM in their activities. And GSCM implementation had positive-significant influence on SMEs performance of MSMEs. In addition, competitiveness had positive-significant influence on SMEs performance. However, environmental performance had no significant influence on SMEs performance meaning that environmental performance does not always have impact on SMEs performance.

According to results, it is suggested for future research to have broader location of the study and with more research variables. In addition, SMEs in Pasuruan should give more attention to activities that increase their SMEs performance. Lastly, local governments, especially the Cooperatives and SMEs Office in Pasuruan should provide guidance and training especially in implementing GSCM.

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