

# 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 SMEs performance. However, there was no significant influence between environmental performance and SMEs performance.

**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 more attention to their production activities. Many SMEs offer products that are more environmentally-friendly and hygienic. Those products are produced by implementing Green Supply Chain Management (GSCM) [4].

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

products. Whereas the definition of Green supply chain management is to involve the environment in Supply Chain Management, such as 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 researches 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].

For SMEs, environmental management also has an impact on 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 research. The research aims to determine the effect of GSCM implementation on competitiveness, environmental performance, and SMEs performance.

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 processed 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

The population was food and beverage SMEs in Pasuruan. Sampling was infinitive 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 and 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

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

## III. RESULTS AND DISCUSSION

### A. Results

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

TABLE I. VALIDITY TEST

	original sample estimate	mean of subsamples	Standard deviation	T-Statistic
<b>GSCM</b>				
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
<b>MSMEs perf</b>				
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
<b>Competitive</b>				
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
<b>environ perf</b>				
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.



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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