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## Article

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## OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

# The effect of managerial intention and initiative on green supply chain management adoption in Indonesian manufacturing performance

Ilyas Masudin<sup>1\*</sup>, Tri Wastono<sup>2</sup> and Fien Zulfikarjah<sup>2</sup>

**Abstract:** The objective of this study is to determine the influence of initiative and intention for an organization to adopt green supply chain management (GrSCM). The effects of GrSCM implication and trust inter-organization to organization performance are also determined in this study. In this article, quantitative research is done by collecting 91 purposive sampling data of Indonesian manufacture and descriptive and inter-correlation analysis using SPSS and smartPLS. The results of this study show that the initiative influences positively and significantly to the adoption of GrSCM application, while intention has no significant effects on GrSCM adoption. The application of GrSCM has a low significant relationship to the organization performance. Moreover, the initiative variable is not able to moderate GrSCM application; however, trust is able to moderate the influence of GrSCM adoption to organization performance.

**Subjects:** Environmental Management; Industrial Engineering & Manufacturing; Production Engineering

**Keywords:** green supply chain management; initiative; intention; trust; performance

### 1. Introduction

In the last two decades, environmental sustainability issues in the business context have been discussed intensively in green supply chain management (GrSCM). In the same time, most research about GrSCM in developed and developing countries involve the social sustainability and

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### PUBLIC INTEREST STATEMENT

The controversy of the positive and negative impacts on the implementation of green supply chain management (GrSCM) on the performance of organization has increased in academic research. Numerous discussions of the positive impacts on GrSCM adoption on the organizational performance have been undertaken by researchers, but several studies have found different results in these relationships. This article will help to reduce the controversy by investigating the effects of intention, initiative behavior and trust on GrSCM adoption on manufacturing industry performance.

environment in the management operations and supply chain. It is indicated that researchers in GrSCM are categorized into two topics: the GrSCM framework and performance measurement (Ninlawan, Seksan, Tossapol, & Pilada, 2010). Research about GrSCM's framework discussed how to improve the relationship collaboration between manufacturers and suppliers, gap exploration between framework and reality, developing and comparing current—alternative GrSCM system and determining decision variables in order to produce high supply chain management (SCM) performance (Bag, Anand, & Pandey, 2017; Dubey, Gunasekaran, & Papadopoulos, 2017; Zhu, Geng, Fujita, & Hashimoto, 2010). Meanwhile, research about GrSCM performance investigates the factors affecting in GrSCM adoption and its implication on the organization performance. Previous research shows that there is a different perspective in terms of the economic implications of GrSCM adoption for an organization (Vanalle, Ganga, Godinho Filho, & Lucato, 2017; Wagner, Schaltegger, & Wehrmeyer, 2001). It is also supported by Bowen, Cousins, Lamming, and Faruk (2001a) and Ramanathan and Gunasekaran (2014) who found that in the short-term periods, the adoption of GrSCM would not impact significantly on the financial performance of the organization. However, some researchers indicate that for a successful application of GrSCM requires inter-disciplines. For instance, the integration between environmental management and SCM has led practitioners to study the implication of other aspects of organizations such as initiative and intention factors on the adoption of GrSCM. Lin, Jones, and Hsieh (2001), Wee and Quazi (2005) and Masa'deh et al. (2017) who studied environmental management in the business practices found that the personal intention and behavior, in the organizations play a significant role for successful practices in GrSCM. Anthony Swaim, Maloni, Henley, and Campbell (2016) and Luthra, Garg, and Haleem (2015) found that personal intention for the top and middle management level is required to accelerate a successful application of GrSCM. Huang, Huang, and Yang (2017) and Zhu, Sarkis, and Lai (2007b) indicated that personal commitment and initiative from management in the operational, middle and top levels results in positive impacts on GrSCM practices. However, study about the influence of personal intention and personal behavior on the adoption of GrSCM is not given much attention. The previous study focuses on the effects of personal intention and personal behavior on GrSCM components alone. For instance, personal intention and behavior are investigated in terms of its influences on the adoption of green supply chain components such as e-procurement and a liner distribution system (Gamal Aboelmaged, 2010; Lu, Lai, & Cheng, 2007). Thus, this study attempts to investigate the influence of intention and initiative of middle and top management levels in the practices of SCM performance.

The balance between environmental performance and financial performance is becoming crucial for an organization to advance the competition, global regulations and customer's demand (Edwards, 2014; Epstein, Buhovac, & Yuthas, 2015; Shultz & Holbrook, 1999). Prior study about the dimension of organization supply chain performance focuses on customers service, production effectiveness and financial performance (Gunasekaran & Kobu, 2007; Hult, Ketchen, Adams, & Mena, 2008b; Hult et al., 2008a; Vachon & Klassen, 2006). Furthermore, in terms of enhancing organizational performance, interrelationship with other partners should be developed under the trust (Jiang, Jiang, Cai, & Liu, 2015), while Anderson and Narus (1990) and Bammens and Collewaert (2014) believe that trust is the basic point for an organization to get positive or negative performance on their activities.

In spite of the numerous discussions of the positive impacts on GrSCM adoption on the organization performance that have been done by researchers, some studies found different results on that relation. For instance, the implication of GrSCM application on the organization performance, whether it is positive or negative, is still controversy (Wagner et al., 2001). Moreover, Gil, Jiménez, and Lorente (2001) and Tippayawong, Tiwaratreevit, and Sopadang (2015) showed that although the adoption of GrSCM could have a positive influence on organization's financial performance, however Bowen et al. (2001a) mentioned that financial performance of the organization that adopts GrSCM could not increase organization profitability and sales in short-term horizons.

This managerial intention on GrSCM investigation is important to understand the influence of intention variables (Jimmieson, Peach, & White, 2008) and initiative (Wooi & Zailani, 2010) on the organization. It is also important to understand its decisions in carrying out GrSCM practices, as well as the extent to which the effects of such practices on organizational performance. Furthermore, a more understanding of whether trust strengthens/weakens the influence of GrSCM practices on performance is needed to assist in the development of more integrative GrSCM practices. Thus, this study attempts to investigate the influence of intention, initiative, and trust on organization performance for the adoption of GrSCM.

## 2. Literature review

### 2.1. Definition of green supply chain management

The implementation of GrSCM is numerous in terms of the conceptual framework and business activities. The conceptual framework in GrSCM has been done by Chin, Tat, and Sulaiman (2015), who investigated the link between GrSCM practices and environmental collaboration and sustainability performance. The GrSCM practices involved green procurement, green production, green distribution and reverse logistics while sustainability performance includes environmental, social and economic performance. The results indicated that there was a positive relationship between those factors of GrSCM practices to sustainability performance.

Some researchers discuss GrSCM in terms of comparing the benefit of the application of GrSCM and the conventional SCM. For instance, in financial impact, it proves that there is a strong correlation between the application of green manufacturing and green logistics; which are part of GrSCM components, and financial performance of the firm (Tippayawong et al., 2015). It is also supported by the research by Yee Phuah and Fernando (2015), who stated that the main goal of a GrSCM application is reaching the whole balance of financial performance and the environmental performance of supply chain. In cost saving, implementing GrSCM practices would gain a significant cost saving in conserved materials, reduced water and energy used and better public image, while ignoring green or environmental principles in SCM impacts on money losses in lower stock price (Flammer, 2012; Wisner, Tan, & Keong Leong, 2012). Rao (2002) stated the outbound activities of GrSCM as reverse logistics, environment-friendly packaging, eco-distribution can lead to cost saving and enhance global competitiveness. Moreover, on transportation and distribution costs, Saridogan (2012) found that the application of GrSCM has reduced transportation costs in terms of fuel consumption, maintenance, repairing and expenditure. Other research by Ala-Harja and Helo (2014) resulted that a successful application of GrSCM in the food industry can improve cost saving in transportation as well as the logistics efficiency.

According to the literature review, there are many points of view related to determining the dimension need to be involved in applying GrSCM. Lee, Tae Kim, and Choi (2012) believed that GrSCM practices should include strategic and operational corporate strategies such as internal environmental management, green purchasing, customer relationship management and eco-design. Then the study by Green, Zelbst, Meacham, and Bhadauria (2012) suggested that GrSCM practices need to include internal environmental management, green information system, green purchasing, eco-design and investment recovery. Moreover, there are four dimensions of the GrSCM application need to be considered as green procurement, green manufacturing, green distribution and reverse logistics (Ninlawan et al., 2010; Thoo, Hamid, Bakar, Rasli, & Zhang, 2014).

### 2.2. GrSCM adoption and performance measurement on GrSCM

The growing literature about GrSCM starts in 1990 with the issues of environmental management in organizations, sustainable manufacturing strategy and SCM (Zhu & Sarkis, 2006). Most previous research about GrSCM discusses the relationship between the application of GrSCM and organization performance including environmental, financial and operational performance. Some of them

investigate the patterns of the potential relationship about supply chain to environmental improvement and found that there is a strong relationship on that relationship (Florida, 1996; Florida & Davison, 2001; Geffen & Rothenberg, 2000; Handfield, Walton, Sroufe, & Melnyk, 2002; Sarkis, 1995). Frosch (1994) argued that the cooperation between organizations should rely on the trusts that lead performance improvement, while Geffen and Rothenberg (2000) stated that the interaction between supplier and manufacturer could encourage an organization to adapt and enhance the innovative development of environmental technology. Most studies in GrSCM adoption are numerous when discussing the positive and negative impact of the GrSCM application on financial performance. For instance, adopting GrSCM would positively impact on the economic performance specifically on the profitability of the organizations. Moreover, Bowen et al. (2001a) suggested that in terms of short-term profitability and sales improvement, the organization should consider adopting GrSCM.

From the managerial focus, performance measurement can be shared as information about the process and product outcomes, which are supplemented and resulted in achievement with objectives, patterns, past results and other products and processes (Pires & Aravechia, 2001). The effects of GrSCM adoption on organizational performance in the manufacturing industry are paid more attention by researchers and practitioners recently. The most factors initiate firms on adopting GrSCM are because of two factors such as customers' pressures (Vachon, Klassen, & Johnson, 2001; Zhu & Sarkis, 2007) and government regulations (Shi, Peng, Liu, & Zhong, 2008; Wu, Ding, & Chen, 2012; Zhu, Qu, Geng, & Fujita, 2017). In addition, for the firms adopting GrSCM, it is also important to highlight that a managerial performance evaluation system needs to focus on outcomes.

In the perspective of SCM, the performance indicators used to measure GrSCM performance has been discussed widely in different aspects such as environmental performance (Al-Tuwaijri, Christensen, & Hughes, 2004; Dubey, Gunasekaran, & Ali, 2015; Hervani, Helms, & Sarkis, 2005), financial performance (Al-Tuwaijri et al., 2004; Dwyer et al., 2009; Tippayawong et al., 2015), and service level (Gunasekaran & Spalanzani, 2012; Kim, Youn, & Roh, 2011; Vachon et al., 2001). Therefore in this study, we posit a hypothesis.

*Hypothesis 1: GrSCM adoption affects positively on organizational performance.*

### **2.3. Role of trust on GrSCM**

GrSCM applications required inter-organizational collaborations among partners involved the supply chain network (Chandra & Kumar, 2001). One of the main factors for a successful GrSCM application is trust. The role of trust for supply chain partners should be positive, constructive and harmless (Sako, 1991). Moreover, in the business-to-business (B2B) and business-to-customer (B2C) sectors, developing trust with supply chain partners is an important driver for a successful GrSCM engagement among firms. For the B2C sector, customer plays a larger role in the impact of environmental improvements than suppliers than in B2B sector, but the opportunities for a joint development to create clean products and processes between customers and suppliers are lower (Hoejmose, Brammer, & Millington, 2012).

The effects and interactions of trust as the factor affecting knowledge sharing on GrSCM have been discussed by Cheng, Yeh, and Tu (2008). It is found that trust is the main factor affecting inter-organizational knowledge sharing on the firms adopting GrSCM. Zhu and Sarkis (2004) and Hervani et al. (2005) has also recognized that trust in data sharing, acquisition and monitoring effects the performance of GrSCM adoption. Moreover, trust is one of the factors that positively associated with the improved supply chain responsiveness (Handfield & Bechtel, 2002). Therefore, in this study, we test two hypotheses about trust.

*Hypothesis 2: External trust on organization positively supports GrSCM application on GrSCM performance improvement.*

*Hypothesis 3: Trust affects positively on organizational performance*

#### **2.4. Intention behavior on the supply chain perspective**

Some of the limited applications of the behavioral theory of both behavioral theories (theory of planned behavior—TPB and theory of reasoned action—TRA) in the context of sustainable SCM are presented in Table 1. There are several sustainable supply chain studies that use planned behavioral theory. For example, Montalvo (2003), Sarkar and Young (2009), and Zhang, Yang, and Bi (2013) emphasize the attitude and willingness to adopt green technology, while Cordano and Frieze (2000) focus on behavior, characteristics, and attitudes for pollution reduction, recycling and waste management. Lin et al. (2001) found that environmentally conscious business practices are divided into three dimensions: an analytical dimension that takes into account procedural strategies and decisions; behavioral dimensions that take into account cultural and motivational issues; and organizational dimensions that consider supply chain rules and environments. However, Wee and Quazi (2005), in his research, have identified seven important factors that play a role in environmental management, namely: top management commitment, total employee involvement, continuous training, green product/process design, supplier management, measurement, and information management.

In the TPB and TRA, the antecedent reason of subjective norms relates to social approval which and/or disagreement about the performance of certain behaviors (Ajzen & Madden, 1986). Perceptions of others may be considered important when they are considered relevant to the organization (Montano & Kasprzyk, 2008). Perceptions of customers, communities, markets, and governments are considered important by the organization because they can change the behavior of their intention to adopt GrSCM. To achieve competitive advantage, many organizations have made their internal structure more environmentally friendly (Tseng, 2013; Tseng, Divinagracia, &

**Table 1. GrSCM literature using the theory of planned behavior/reasoned action**

<b>Discipline</b>	<b>Authors</b>	<b>Research</b>
	Hawkins, Gravier, and Wittmann (2010)	<i>Enhancing reverse auction use theory: an exploratory study</i>
	Cantamessa, Montagna, and Neirotti (2012)	<i>Understanding the organizational impact of PLM systems: evidence from an aerospace company</i>
	Rutner, Aviles, and Cox (2012)	<i>Sustainable logistics evolution: a comparison of military and commercial logistics thought</i>
<i>Sustainable supply chain management</i>	Cordano and Frieze (2000)	<i>Pollution reduction preferences of US environmental managers: applying Ajzen's theory of planned behavior</i>
	Montalvo (2003)	<i>Sustainable production and consumption systems—cooperation for change: assessing and simulating the willingness of the firm to adopt/develop cleaner technologies. The case of the in-bond industry in Northern Mexico</i>
	Sarkar and Young (2009)	<i>Managerial attitudes towards green IT: an explorative study of policy drivers</i>
	Zhang et al. (2013)	<i>Enterprises' willingness to adopt/develop cleaner production technologies: an empirical study in Changshu, China</i>



Divinagracia, 2009; Walker, Di Sisto, & Mcbain, 2008). Customers become aware of the organization's internal processes and can require them to reach certain specifications about their processes and products (Seuring & Müller, 2008). Modern society demands green innovation to be the foremost and holds the organization's responsibility for its policies and actions now (Mann, Kumar, Kumar, & Mann, 2010). Finally, local, national and international regulations may force organizations to implement green development innovations (Mann et al., 2010; Montalvo, 2008; Seuring & Müller, 2008). Therefore, external pressures such as market influence, customer influence, public pressure and government pressure can influence the adoption of organizational behavior in implementing GrSCM practice.

The personal commitment of individuals (including founders and owners) has been found to be positively associated with GrSCM (New, 2000). Wycherley (1999) found that environmental activities performed on the site were seen as a way of life after a leading environmental organization analyzed it. The personal and ethical values of corporate founders are screened through the whole organization and are more interesting because it is not top management alone but also the middle management support are the key positions to a successful implementation of environmental improvement practices (Carter, Ellram, & Ready, 1998). Operational and environmental improvements have been found to be positively associated with employee engagement (Hanna, Rocky Newman, & Johnson, 2000).

Thus, in this study we posit hypotheses:

*Hypothesis 4: Intention behavior has a positive impact on GrSCM application*

*Hypothesis 4A: An organization positive behavior on GrSCM adoption influences organizational intention to adopt GrSCM.*

*Hypothesis 4B: Subjective norm on GrSCM adoption positively influences on organizational intention to adopt GrSCM.*

*Hypothesis 4C: Intention control on the application of GrSCM positively impacts on organizational intention to adopt GrSCM*

### **2.5. GrSCM practice initiative**

The TRA with its development in the form of a TPB has been used to predict and explain behavioral behavior in terms of attitude constructs to behavior, subjective norms. The implementation of green initiative on the supply chain in manufacturing industry has been discussed in different ways to understand the significance of initiative/policy on GrSCM. For instance, green initiative is applied to fashion supply chain for selecting (decision-making) models (Wang, Chan, Yee, & Diaz-Rainey, 2012), organizational initiatives for the environment in relation to cost savings, increased efficiency, awareness to serve customers (Rao & Holt, 2005; Srivastava, 2007), the willingness of supplier participating on GrSCM initiative (Lee, 2008a).

The drivers of GrSCM practice initiative can be categorized into five main categories: internal and external factors (Pil & Rothenberg, 2003; Zhu et al., 2007b), customers (Lakshmi & Visalakshmi, 2012; Lee, 2008a; Sarkis, 2003; Zhu et al., 2007b), competition (Chen, 2005; Rao & Holt, 2005; Walker et al., 2008; Zhu & Sarkis, 2006), society (Bose & Pal, 2012; Lee, 2008a; Vachon & Klassen, 2006), and suppliers (Klassen & Vachon, 2003; Lee, 2008a; Vachon & Klassen, 2006). Thus, we propose hypotheses:

*Hypothesis 5: Initiative has a positive impact on GrSCM application*

*Hypothesis 6: The external initiative to organization positively supports organizational behavior intention to adopt GrSCM.*

### 3. Methodology

The research object of this GrSCM adoption study is the medium and big manufacturers located in East Java province, Indonesia, which has more than 80 employees (Bappeda, 2015). The managers and decision-makers in the selected organization are selected on purposive random sampling with a sample size of 10 times the number of latent variables (Barclay, Higgins, & Thompson, 1995), which are 80 samples.

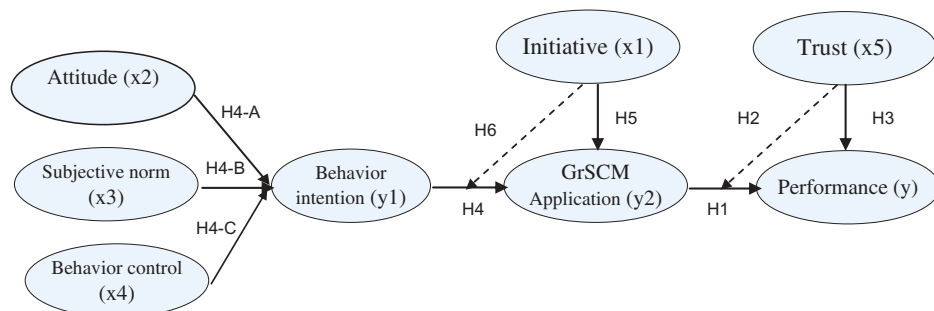
A quantitative approach is used in this study with instruments are developed by Zhu and Sarkis (2004). There are four indicators of GrSCM adoption used such as government initiative, customers, supplier, and competitors. Data about intention behavior are adopted from French et al. (2005) who predicted intention to increase organization activities. Questions in this term are focused on the intention behavior on the need value on GrSCM adoption. These questions involve attitude, subjective norm, and perceived control of staff in the organization in adopting GrSCM.

Research framework developed in this study is to investigate the relationship between GrSCM application factors such as internal and external factors including green production, customer's relationship management, and eco-design at Indonesian manufacturers. The dimensions and items of GrSCM application are made based on prior studies (see Carter et al., 1998; Walton, Handfield, and Melnyk, 1998; Zhu and Cote, 2004; Zsidisin and Hendrick, 1998). In this study, 19 questions about GrSCM performance questioned to the respondents are developed based on Zhu and Sarkis (2004). On their study, GrSCM performance is focused on environmental performance, financial performance, and operational performance.

Nine hypotheses were developed based on the research model plan framework. GrSCM practice initiatives, organizational intention behavior along with its three reflective variables, and inter-organizational beliefs on the implementation of GrSCM practice and performance are the dependent variables. The hypothesis between the internal dimensions of attitudes, subjective norms, and behavioral controls perceived as the reflective variable of intentional behavior toward the implementation of GrSCM practice and performance and behavioral intention and initiative on performance will not be established in this study. The purpose of this study is to find the value of the direct relationship between three reflective variables on the behavior of intention, the behavior of intention and initiative toward GrSCM practice, as well as GrSCM practice and trust on performance. In addition, it finds the relationship of moderation of initiative variables on behavioral intention to GrSCM practice and moderation of confidence variables on GrSCM practice on performance. Research framework and hypotheses are shown in Figure 1.

The survey was held in the manufacturing industries which are consisted of major industries such as chemistry products, food and beverages products and electronic products. The selection of these types of manufacturing industry because the manufacturing industry provides the largest value of the gross domestic product in East Java province (29.48%) compared to other types of products (Bappeda, 2015).

**Figure 1. Framework and hypotheses.**





#### 4. Results and discussion

It is indicated by descriptive statistics analysis that response from respondents of the application of GrSCM to organization performance is in positively agree with the point of 3.39 (agree = 2.57 and strongly agree = 3.56). Detail of statistics descriptive results for each indicator is shown in Table 2.

The results also indicate that all constructs in this study are more than 0.70 in both composite reliability and Cronbach's  $\alpha$  value (see Table 3). It shows that the constructs are reliable and be able to proceed to the next step.

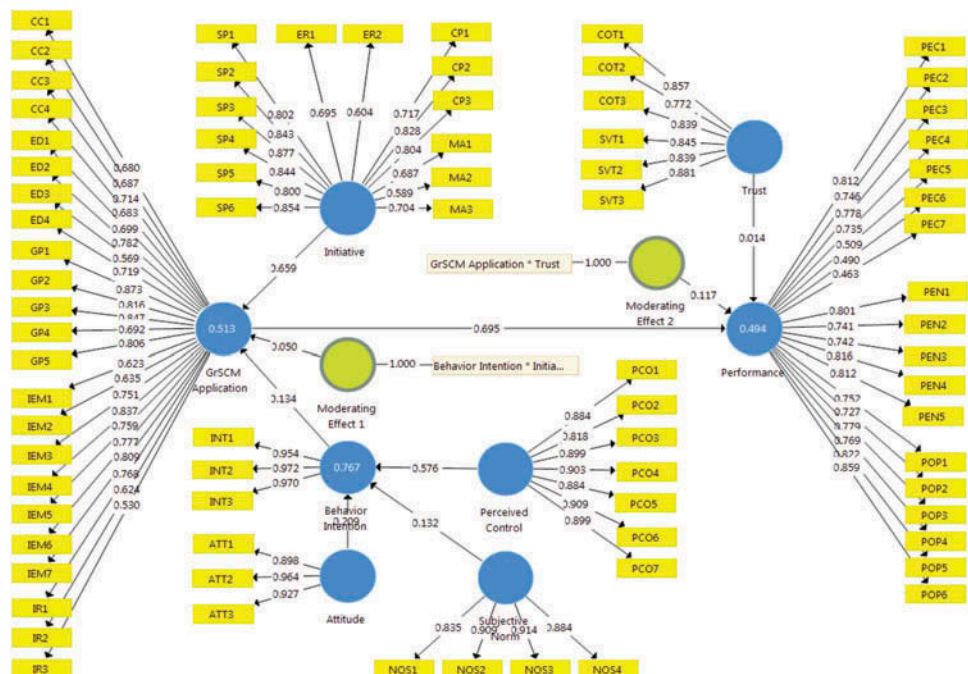
This study uses the standard value of composite reliability  $\geq 0.60$  (Nunnally & Bernstein, 1994), standard Cronbach's  $\alpha \geq 0.70$  (Allen & Yen, 2002), and average variant extracted (AVE)  $\geq 0.50$  (Hair Jr et al., 2016). The results of outer loading test to examine the validity and reliability of the data constructs are shown in Table 4.

In order to evaluate the final structural model, this study uses determination coefficient analysis ( $R^2$ ) (Cohen, 1992; Hair Jr et al., 2016; Hair, Ringle, & Sarstedt, 2011; Henseler, Ringle, & Sinkovics, 2009). Table 5 shows the value of  $R^2$  for dependent variables.

The value of  $R^2$  test for organization performance (y), which is 0.511, indicates that performance of the organization is correlated by GrSCM application and inter-organizations trust with the value of 51.1%, while the rest (48.9%) is not able to be described in this study. Moreover, the value of determination coefficient for the GrSCM application (0.529) is constructed by initiative and behavior intention of organization staff. The biggest value of  $R^2$  (0.775) is shown on the intention behavior variable. It indicates that there is a high correlation between organization's staff behavior intention and its constructs: attitude, subjective norm, and attitude control. All constructs in this study have a significant difference on sig. ( $\alpha$ ) 0.01 with  $t_{table}$  (2.75).

Another model evaluation has been done using path coefficient to identify the significance of path coefficient between variables (Figure 2). The results that indicate path coefficient between variables are shown in Table 6.

**Figure 2. Final structural model partial least squares (PLS).**



**Table 2. Statistic descriptive**

Var	Indicator items	Descriptive statistics					
		Sum	N	Mean	Std. dev	St. dev/mean	
Initiative (x1)	Rules	2	102	3.82	0.88	23.1%	
	Marketing	3	102	3.97	0.80	20.1%	
	Supplier	6	102	3.75	0.84	22.51%	
GSCM practice (y2)	Competitor/society	3	102	3.72	0.95	25.7%	
	Environmental management	7	102	4.04	0.79	19.5%	
	Purchasing	5	102	3.71	0.85	22.8%	
	Cooperation	4	102	3.68	0.73	19.8%	
	Investment return	3	102	3.67	0.86	23.4%	
Performance (y)	Eco design	4	102	4.00	0.74	18.4%	
	Environmental performance	5	102	4.07	0.74	18.3%	
	Operational performance	6	102	3.69	0.93	25.3%	
	Financial performance	8	102	3.39	0.95	28.0%	
	Value sharing	3	102	3.35	0.75	22.3%	
	Communication	3	102	3.16	0.81	25.6%	
Intention behavior (y1)	Opportunistic behavior	3	102	2.31	0.70	30.5%	
	Attitude	3	102	4.97	0.92	18.4%	
	Subjective norm	4	102	5.00	0.88	17.7%	
	Control behavior	7	102	4.84	0.92	19.0%	
	Initiative behavior	3	102	4.90	1.02	20.7%	
	Trust (x5)	Trust	3	102	3.69	0.93	25.3%
		Trust	3	102	3.35	0.75	22.3%
Trust		3	102	3.16	0.81	25.6%	

**Table 3. Reliability test**

Latent variables	Composite reliability	Cronbach's alpha	Remark
Attitude (x2)	0.951	0.922	Reliable
Subjective norm (x3)	0.936	0.908	Reliable
Behavior control (x4)	0.962	0.954	Reliable
Behavior intention (y1)	0.976	0.963	Reliable
GrSCM application (y2)	0.960	0.954	Reliable
Initiative (x1)	0.957	0.949	Reliable
Trust (x5)	0.934	0.920	Reliable
Performance (y)	0.959	0.955	Reliable
Moderation #1 (initiative—intention)	1.000	1.00	Reliable
Moderation #1 (trust—GrSCM application)	1.000	1.00	Reliable

**Table 4. Final outer loading test Variable latent**

	Composite Reliability	Cronbach's alpha	AVE	Remark
Attitude (X2)	0.951	0.922	0.865	Valid and reliable
Subjective norm (X3)	0.936	0.908	0.785	Valid and reliable
Behavior control (X4)	0.962	0.954	0.784	Valid and reliable
Behavior intention (y1)	0.976	0.963	0.931	Valid and reliable
GrSCM application (y2)	0.963	0.959	0.534	Valid and reliable
Initiative (X1)	0.951	0.944	0.587	Valid and reliable
Trust (X5)	0.935	0.92	0.704	Valid and reliable
Performance (Y)	0.955	0.95	0.547	Valid and reliable
Moderation #1 (initiative—intention)	1.000	1.000	1.000	Valid and reliable
Moderation #2 (trust—GrSCM)	1.000	1.000	1.000	Valid and reliable

**Table 5. R<sup>2</sup> value**

Latent variables	R <sup>2</sup>	T-stat. (IO/STERR)	P-value
Behavior intention (y1)	0.75	14.584	0.00
GrSCM application (y2)	0.529	5.721	0.00
Performance (y)	0.511	6.782	0.00

From the results, the developed hypotheses can be summarized as follows:

*Hypothesis 1: GrSCM adoption affects positively on organizational performance*

**Table 6. Path coefficient**

Variables	Original sample	Standard error	t <sub>value</sub>	p-value
Trust (x5) <sup>®</sup> performance (y)	0.014	0.088	0.163	0.870
GrSCM application (y2) performance (y)	0.695	0.067	10.393	0.000
Moderation #1 (behavior intention—GrSCM application)	0.050	0.096	0.517	0.605
Moderation #2 (trust—performance)	0.117	0.066	10,769	0.077
Intention (y1) <sup>®</sup> GrSCM application (y2)	0.134	0.107	1.245	0.213
Initiative (x1) <sup>®</sup> GrSCM application (y2)	0.659	0.105	6.276	0.000
Behavior control (x4) <sup>®</sup> intention (y1)	0.576	0.177	3.252	0.001
Subjective norm (x3) <sup>®</sup> intention (y1)	0.132	0.168	0.785	0.433
Attitude (x2) <sup>®</sup> intention (y1)	0.209	0.151	1.383	0.167

The values of the results support the hypothesis that the influence of GrSCM practice is positive and significant to organization performance. It is shown by  $t_{value} 10.393 > t_{table} = 1.96$  and  $P 0.000 < sig. (\alpha = 0.05)$ . These results are relevant to prior studies that environmental management could positively improve organization’s operational performance (Tooru, 2001). It is also related to the studies by Hanna et al. (2000) and King, Lenox, and Terlaak (2005) who found that a successful program in handling environmental issues could improve organization’s economic performance.

The relation of the implementation of GrSCM practice with organizational performance in this study gives  $t = 10.393$ , the biggest value among  $t$  values from other hypotheses. This provides information that manufacturing industry actors in East Java Province, Indonesia are aware of improving organizational performance. The awareness can be started from the green activities within the organization, which are related to the seven elements of the GrSCM activities: reduce, reuse, re-work, refurbish, reclaim, recycle, remanufacture, and reverse logistics (Srivastava, 2007). One of the GrSCM elements is a reverse logistics process that can be used as a strategy to reduce potential environmental impacts and social responsibility performance (Sarkis, Helms, & Hervani, 2010).

*Hypothesis 2: External trust on organization positively supports GrSCM application on GrSCM performance improvement*

External trusts positively affect the organization in adopting GrSCM for company performance improvement. It shows that the moderation variable (inter-organization trusts) supports the practice of GrSCM for organization’s performance have  $P = 0.077 > sig. (\alpha = 0.05)$  but  $< sig. (\alpha = 0.10)$  with  $t_{value} 1.769 < t_{table} = 1.96 (\alpha = 0.05)$  but  $> t_{table} = 1.65 (\alpha = 0.10)$ . These results give messages to top organization’s management to aware of environmental issues in using material or components of the products in their operational processes. The top organization’s management should mind this awareness along their supply chain channels includes their supplier or their third-party logistics through a workshop and other information/knowledge transfers about sustainable processes (Cheng et al., 2008). The implementation to socialize these activities with external stakeholders of the organization could not be done without any trusts between organizations and their external stakeholders along the supply chain (Dyer & Singh, 1998; Spekman, Kamauff, & Myhr, 1998; Zhu & Cote, 2004).

### *Hypothesis 3: Trust affects positively on organizational performance*

In terms of the relationship between inter-organizational trusts and organization's performance, the results of this study show that organization's performance is not influenced by inter-organization trusts. The conclusion is based on the value of  $t_{\text{value}} 0.163 < t_{\text{table}} = 1.96$  and  $P = 0.870 > \text{sig. } (\alpha = 0.05)$ . Even though this is not relevant to some previous studies that information sharing and knowledge sharing between departments in an organization could enhance innovations that lead performance improvement (Dyer & Nobeoka, 2000; Möller & Svahn, 2004; Morgan & Hunt, 1994; Soekijad & Andriessen, 2003), but some collaborative works among departments in the organizations in GrSCM adoption is required to develop inter-organization trusts that finally could improve organization's performance.

The different results of previous studies are due to some reasons. For instance, trust (information sharing between inter-organizations) is sometimes ignored because competition in business is still seen as a common thing, so when a provider has an information, there is a negative relationship between accuracy of information and competitive pressure (Cho & Jun, 2013). Communication is still limited to product specifications, arrival schedules, and price agreements without adding to things related to "green" practices. To achieve effective sharing of knowledge, stakeholders never reinforce collaborative behavior and activities related to factors that will enhance trust-based relationships. In addition, the large number of suppliers can be an option for the industry will depend on the needs of a material from a supplier (Li & Lin, 2006). This is shown in the results of the questionnaire, where almost 75% of them have the number of suppliers of more than 100 suppliers. This condition causes the manufacturing industries in Indonesia less likely to build relationships to enhance cooperation in the supply chain context.

### *Hypothesis 4: Intention behavior has a positive impact on GrSCM application*

Organization intention has a significant impact on the application of GrSCM (i.e.,  $H_0$  is accepted). The results indicates that the  $P = 0.213 > \text{sig. } (\alpha = 0.05)$  and  $t_{\text{value}} = 1.245 < t_{\text{table}} = 1.96$ . It is relevant to the study by Zhang et al. (2013) that the organization staff intention involved in the green processes in the firm is influenced by the involvement of middle and top management on green policy on the firm.

Continuing from the value of  $t$ , the  $p$ -value helps to evaluate the probability of path coefficients (Hair Jr et al., 2016; Hair et al., 2011; Wetzels, Odekerken-Schröder, & Van Oppen, 2009). The value of  $p = 0.213$  indicates that the relationship between intention behavior and GrSCM practice is not significant in the probability of 5% error. This suggests that there is no relationship between intentional behavior and GrSCM practice. This result is reasonable because in hypotheses H4A, H4B, and H4C in detail are explained about each behavioral reflective behavior variable and only behavior control variable that gives the resulting support. This context is relevant to the Gollwitzer and Brandstätter (1997) statement. They state that the implementation intentions not only promote the initiation of immediate action but also help the organization to fulfill its stated objectives (i.e., come up with convincing counter-arguments). Only organizations that have a high interest in the GrSCM issues will benefit from establishing the implementation of intention, whereas the participants who have a low interest in the GrSCM issues will make the real problem a burden.

### *Hypothesis 4A: An organization behavior on GrSCM adoption positively influences organizational intention to adopt GrSCM.*

Organization behavior on GrSCM application positively influences organization intention. This hypotheses is made possible considering  $P = 0.167 > \text{sig. } (\alpha = 0.05)$  and  $t_{\text{value}} 1.383 < t_{\text{table}} = 1.96$ ,

i.e.,  $H_0$  is acceptable. This result is different from the previous study by Zhang et al. (2013) that found managers' attitude is the key point of cleaner production technology adoption. This indicates that managerial levels in Indonesian manufacturer still concern on the economic impact on their internal performance rather than other aspects.

The lack of government control in terms of monitoring the environmental effects continues to be used by industry players to violate with the assumption that the environmental effects they produce are not too dangerous and have no long-term effects. In addition, the data of manager level collected in this study show that more than 49% of the managers work more than 15 years. It is used as an excuse for working to not add a job that is directly unrelated to his job responsibilities

*Hypothesis 4B: Subjective norm on GrSCM adoption positively influences on organizational intention to adopt GrSCM.*

The influence of subjective norm to adopt GrSCM is not significant with the value of  $P = 0.433 > \text{sig.}$  ( $\alpha = 0.05$ ) and  $t_{\text{value}} = 0.785 < t_{\text{table}} = 1.96$ . These results are not relevant to the study of Zhang et al. (2013) who found that subjective norm or community pressure is the strongest aspect of the willingness to adopt cleaner production. However, the results of this study are relevant to the finding of Montalivo (2003), who showed similar results indicate that subjective norm (community pressures) is not strong enough to promote sustainable organizational innovation.

This can be explained from the perspective of the company size and firms' maturity. The size of the company will provide bargaining power for the industry to face the pressure. The larger firms are more resistant to external pressures (Min & Galle, 2001; Pedersen & Gwozdz, 2014). Based on the documented samples in this study, more than 37% of the company has more than 100 employees, which is classified as a large firm and it is found from the questionnaire data that there is 50% of their companies have been operating over 15 years, where the 15-year period is the phase of growth toward the maturity phase of the industry life cycle that gives the profit value close to the maximum.

*Hypothesis 4C: Intention control on the application of GrSCM positively impacts on organizational intention to adopt GrSCM*

The influence of behavior control on organizational intention for GrSCM adoption is positive ( $P = 0.001 < \text{sig.}$  with  $\alpha = 0.05$  and  $t_{\text{value}} = 3.252 > t_{\text{table}} = 1.96$ , i.e.,  $H_0$  is rejected. This result is relevant to the results of Zhang et al. (2013), Shi et al. (2008), and Montalvo (2003). They found that the decisions made in GrSCM adoption by the organization are influenced by internal resources such as technology and financial resources.

*Hypothesis 5: Initiative has a positive impact on GrSCM application*

The initiative has a positive and significant impact on the application of GrSCM ( $P = 0.000 < \text{sig.}$  ( $\alpha = 0.05$ ) and  $t_{\text{value}} = 6.276 > t_{\text{table}} (1.96)$ . Both internal and external initiatives as from stakeholders, government, investors, customers, suppliers, society, and staff are the sources that impact significantly on the GrSCM application. This is relevant to the previous study of Hsu, Choon Tan, Suhaiza, and Jayaraman (2013) who stated that regulations, competitors, customers, social responsibility are the significant factors affecting staff's initiative in green purchasing and reverse logistic applications.

In principle, the initiative driver comes from outside of the organization as motivators that encourage organizations to adopt green supply chain initiatives (Hoffman, 2001; Sarkis, Zhu, & Lai, 2011),



whereas within intentional behavior there are reflective variables in the form of subjective norms. Both of these variables in the data retrieval tend to have a similarity. For the subjective norm variable, the form of individual assessment or perceptions is governed by components of normative belief or agreement that is perceived by others and agreed by individuals who perform tasks.

In this study, 82% more respondents of the medium and large category of manufacturing industries in East Java Province, Indonesia have equipped themselves with environmental related certificates. This certificate is considered that the company has engaged in environmental activities that have been independently audited by outside vendors. The encouragement that comes to influence behavioral attitudes simultaneously and systematically has been manifested in a certificate, so the behavior of the intention to implement the adoption of GrSCM practice remains limited to initiation without real activity.

*Hypothesis 6: The external initiative to organization positively supports organizational behavior intention to adopt GrSCM.*

The other result says that initiative does not positively influence the organization to intend the GrSCM adoption. This can be traced to the moderative value (initiative  $\times$  behavior intention)  $P = 0.605 > \text{sig.}$  ( $\alpha = 0.05$ ) and  $t_{\text{value}} 0.517 < t_{\text{table}} = 1.96$ , i.e.,  $H_0$  is accepted. These results are relevant to several studies that show initiative sourced from outside the organization as motivation for adopting GrSCM (Hoffman, 2001), although previous studies have also found that internal organizational factors such as financial and technological factors are more influential factors than external factors (Montalvo, 2003; Shi et al., 2008; Zhang et al., 2013)

## 5. Conclusion

The discussion about GrSCM practice is numerous in terms of its implications on the performance of the organization. The controversy of negative and positive impacts on GrSCM adoption on previous studies has led this article to investigate the effects of some internal and external factors on GrSCM adoption which is related to manufacturing industry performance. The study that has been taken in Indonesian manufacturing industry shows that the relationship between intention, initiative behavior and trust to GrSCM performance exists in various ways.

The initiative encouragement given to the organization has a positive and significant impact on the adoption of GrSCM practice. Organizational relationships with stakeholders in the organization will indirectly influence the decision of the organization to take action in accordance with the willingness of stakeholders which is expected to lead to customer satisfaction. Meanwhile, intention behavior toward organizational actors has a positive but not significant effect on adoption of GrSCM practice. Behavior intentions are not only initiated actions but also meet the organizational goals set previously. Manufacturing companies in East Java-Indonesia still have not placed the issue of GrSCM as an interest in the form of organizational vision and mission. GrSCM practice in organizations can improve an organization's performance, as there is a positive and significant influence on GrSCM practice on performance. Moreover, the initiative variable is not able to moderate GSCM application, while external trust is able to moderate the influence of GSCM adoption to organization performance.

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