

Green Supply Chain as an Antecedent of Sustainable Performance in the Crude Oil Industry of Kazakhstan: Does Green Accounting Matter in the Relationship between Green Investment Recovery and Sustainable Performance?

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The current study has examined the impact of green supply chain on the sustainable performance of the crude oil industry of Kazakhstan. In addition to that the study has also examined the moderating role of green accounting in the relationship between investment recovery and sustainable performance components namely economic performance, environmental performance and social performance. Considering the above-mentioned shortcomings, nine dimensions of GSCM practices were identified in this paper i.e. green manufacturing, green purchasing, green marketing, internal-environmental management, environmental management, investment recovery, green packaging, green accounting and green distribution, which were analysed to determine the impact of these GSCM practices on environmental, social and economic performance. This paper conducted a survey of 281 Indonesian manufacturing firms with the purpose to achieve the underlying goal of this study. Employing survey-based methodology, the SEM-PLS as a statistical tool is used to test the hypothesized relationships and answer the research questions raised and research objectives envisaged in the current study. The findings of the study provide support to the theoretical foundation and proposed hypothesis.

Key words: *Green Supply Chain, Green Accounting, Kazakhstan.*

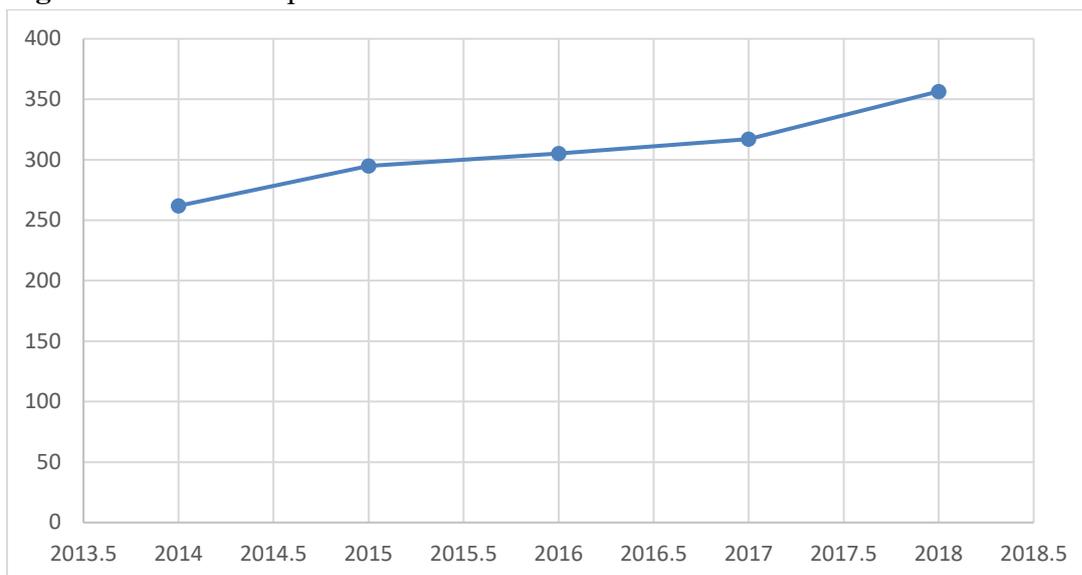
Background

Ecological disturbance in communities usually occurs due to certain environmental problems, for instance, environmental pollution, depletion of resources, biological diversity reduction and global warming. Rapid increase in these ecological problems has been receiving considerable attention by companies, individuals, communities and governments to take steps and precautionary measures for environmental protection (Whay & Shearer, 2017). Governments and communities are persuading companies to review supply chain and production processes, particularly those companies that are largely contributing to environmental pollution. Further to accepting company responsibility to undertake supply chain activities, green supply chain management has been started to emerge as a prominent solution (Jermisittiparsert, Namdej, & Sriyakul, 2019; Jermisittiparsert, Siriattakul, & Sangperm, 2019). Green supply chain management emerges as a multi-disciplinary phenomena to develop environment-friendly supply chain management practices (Eltayeb, Zailani, & Ramayah, 2011) as reflect in Table 1 and Figure 1 below.

Table 1: Oil production of Kazakhstan in BBL/D/1K

<i>Year</i>	<i>BBL/D/1K</i>
2014	1344.849
2015	1321.622
2016	1295.000
2017	1466.822
2018	1547.159

Figure 1. Oil consumption of Kazakhstan in BBL/D/1K



Source: Energy Information Administration USA

In view of Srivastava (2007), GSCM has developed to add environmental thinking to the supply chain process. This involves material selection and sourcing, product design stages, manufacturing process, product delivery and managing product end-of-life process. The definition of GSCM indicates its wide application. However, most prior studies have studied GSCM as a single dimension, i.e. reverse logistics or green purchasing. Subsequently, further studies (Schmidt, Le Roux, & Bach, 2017; Younis, Sundarakani, & Vel, 2016) then used environmentalist perspective to examine different phases of SC. Regardless of a number of studies conducted to investigate different GSCM dimensions, due to its wide application, it is somewhat difficult to develop an extensive framework which could incorporate all GSCM dimensions. A few authors (Laosirihongthong, Adebajo, & Choon Tan, 2013; Murphy & Poist, 2003) have also mentioned that there is lack of a comprehensive framework to measure different GSCM dimensions. However, the publication of the Brundtland (1987) Report has drawn considerable attention to the concept of sustainable development. The report described sustainable development as a concept to satisfy present needs without sacrificing the future generation's ability to meet their future needs and requirements (WCED, 1987). Literature has presented three sustainable development dimensions, such as economic, social and environmental sustainability.

For sustainability, achieving balance in economic, environmental and social processes is essential. However, the complexity in relationships within these dimensions could make it difficult to achieve success and balance. According to Diabat and Govindan (2011) balancing economic, environmental and social advantages can successfully be achieved through GSCM practices. While achieving sustainable development, several authors have considered the significance of green supply chain practices. For instance, using natural resource-based view (NRBV), enterprises receive substantial gains through environmental practices (Hart, 1995). Such practices positively influence sustainable performance through minimizing material usage and energy consumption, improving product quality and stakeholder engagement and reducing costs (Jermittiparsert, Namdej, & Somjai, 2019). However, limited number of studies are available which have attempted to analyze the GSCM effects of the sustainability dimensions. Literature review has highlighted various studies that analyzed the GSCM effects on the environmental (Eltayeb et al., 2011; Younis et al., 2016), social (Younis et al., 2016) and economic performance (Eltayeb et al., 2011; Schmidt et al., 2017; Younis et al., 2016). These studies comprehensively examined the impact of GSCM on the environmental and economic performance but not an in-depth analysis of the social sustainability dimension. A gap also exists among the developing economies, since majority of the studies, concerning the relation among performance and GSCM were mainly performed in developed economies.

Considering the above-mentioned shortcomings, nine dimensions of GSCM practices were identified in this paper i.e. green manufacturing, green purchasing, green marketing, internal-environmental management, environmental management, investment recovery, green packaging, green accounting and green distribution to analyze the impact of these GSCM practices on the environmental, social and economic performance. This paper conducted a survey from 281 Indonesian manufacturing firms the purpose to achieve the underlying goal of this study. The paper is further organized as:

Firstly, the study proposes a research model and hypotheses on the basis of the literature. In the next section, research methodology is presented, involving survey procedure, developing measures and instruments, validity and reliability tests and sample selection procedure, followed by the presentation of outcomes of the structural model. The last section includes re-evaluation of the outcomes validity and discussion about the future implications for practitioners and researchers. In conclusion the paper presents results and future implications.

Literature review and hypothesis development

Green Supply Chain Management practices

Green supply chain management encompasses green purchasing, green design, green distribution, logistics, reverse logistics and marketing (Srivastava, 2007; Somjai & Jermittiparsert, 2019). Walker et al. (2008) stated that GSCM comprises of all phases of product life cycle, i.e. from identifying raw materials through the phases of production, distribution and design, to the product consumption and its disposal. Therefore, GSCM practices are wide-ranging and its boundary depends largely on the researchers' goals and objectives (Srivastava, 2007). The empirical studies on GSCM have discovered ten different GSCM dimensions. Therefore, on the basis of these studies and expert opinions, the present study incorporated eight dimensions in the survey, which are briefly discussed in subsequent sections.

Green Purchasing

The first GSCM dimension included in this paper is green purchasing. It is the initial step to value chain. Successful purchasing function depends on the purchasing activities, firms' environmental objectives and integrating environmental efforts. Therefore, green purchasing function is an essential GSCM component, which refers to the integration of environmental concerns and problems in a process of procurement (Cousins, Lawson, Petersen, & Fugate, 2019). However, selection of the right supplier plays a significant role in achieving the environmental goals of an organization but it is not enough for environmental performance. After the selection of a suitable supplier, a company's supply process must be carefully handled using collaborative and strategic understanding among the company's suppliers. As well as

supplier management and selection, assessing whether the chosen suppliers are capable of satisfying the environmental criteria for the company is also important (Paulraj, 2011).

Green Manufacturing

In GSCM activities, green manufacturing is considered as a most important step. According to Gao, Alemany, Ci and Ajayan (2009) green manufacturing is the planning and adoption of those activities which involve less use of resources and energy in the production process, thereby leading to minimum contribution to environmental pollution. The aim of incorporating green manufacturing is to prevent air, water and soil pollution through the continuous improvement of products and industrial processes. Briefly, the purpose of green manufacturing is to create environment-friendly products, with minimum usage of resources such as, energy, water and materials and disposal of minimum waste material.

Green Packaging

Another important element of GSCM practices is green packaging as it directly influences the environment and has close association with other value chain components. These practices include, using wrapping papers, simple packaging and packaging materials, eliminating excessive packaging, biodegradability, minimizing the amount of polystyrene and easing disassembly.

Green Distribution

According to Gao et al. (2009) green distributional activities are the ones which are carried out to eliminate or reduce environmental wastes and damages that occur during product shipment. The process of green distribution can be affected with the frequency of transportation, quantity of fuel consumed while transporting, packaging features (shape, material, or weight) and distance to the customers.

Green Marketing

Green marketing is the process of satisfying human needs without affecting the natural environment situation. According to Ferrell and Pride (1993), green marketing refers to the efforts of designing, pricing, promoting and product distribution without causing negative impact to the environment. The present study assumed green marketing as product promotion.

Investment Recovery

Investment recovery is one of the important GSCM dimension, which has been frequently investigated in prior researches. A traditionally used business practice, investment recovery is

the reselling of excess material, inventories an used or scrap material (Dubey, Gunasekaran, & Ali, 2015). Retrieving highest value from the end-of-life, surplus and outdated products is the purpose of carrying out investment recovery. Briefly, it is the process of adding such items through reverse logistics for proper recovery or disposal of these items.

Internal Environmental Management

Developing a company's own environmental targets and protection policies for ensuring environmental protection is referred as internal environmental management. It covers activities such as, inter-departmental cooperation to improve environment, support of mid-level and upper-level managers in environmental practices and establishing environmental management systems.

Environmental Education

Environmental education, an important human resource development tool, to pave the way towards achieving sustainable society. The significance of environmental education to achieve green management has been emphasized in several recent empirical researches (Sammalisto, Sundström, & Holm, 2015). In addition, environmental education perform two functions: i.e. teaching corporations' environmental policies to the personnel and changing individual personnel behavior to develop a responsible and permanent relationship with environment.

Green Accounting

Green accounting refers to the accounting which add environmental costs to financial outcomes of all other operations. Researchers have argued that policymakers should revise gross domestic product (GDP), as it ignores the environmental factor and it should also be added into the revised model. Green accounting, primarily aims to facilitate businesses in managing and understanding the potential trade-off among environmental and traditional economic goals. In addition, green accounting also increases the amount of existing information needed for assessing policy issues, particularly when these kind of crucial information are neglected. Green accounting is assumed to assure weak sustainability, thus leading to the next step of achieving strong sustainability.

Green manufacturing is somehow a controversial practice, as it has already factored depletion of extraction industries into accounting, however, in case of externalities, it can be unpredictable. Therefore, establishing a typical GSCM practice is necessary for its utilization and credibility. Depletion is not the only factor that comes under environmental accounting. Julian Lincoln Simon, a business administration professor, argues that natural resource utilization brings greater wealth, which is confirmed by the persistent fall in nearly all non-

renewable resources.

Corporate Sustainability and GSCM practices: A stakeholder theory and NRBV perspective

In order to explain how GSCM influence organizational performance, the resource-based view (RBV) can be used, as it has been widely used in several prior researches. According to Barney (1991) indispensable, non-substitutable and rare internal capabilities and resources result in sustainable competitive advantage. These internal resources could be intangible and tangible, such as market agility, human resources, leadership and positive social reputation. However, tangible resources help firm to achieve competitive advantage only for a short period of time, since they are easy to imitate by competing firms. Whereas, intangible resources cannot be imitated easily, as they are achieved through learning and experience (Hart, 1995). Furthermore, the limitations of natural environment, i.e. degradation of ecosystem and resource depletion, jeopardize the existing capabilities and resources of the firms.

Hart (1995) broadened the scope of RBV and existing limitations and opportunities in the natural environment. According to Hart (1995) typology, also known as NRBV, implementation of strategies, like product stewardship, sustainable development and pollution prevention help firms to achieve competitive advantage. According to scholar environmental applications are assumed as a strategic resource which help a firm in improving its performance. These GSCM practices cannot be imitated by competing firms. For instance, GSCM practices that help in building positive reputation is the resource which can be imitated easily by competitors. Meanwhile, this could help green practice-oriented firms to distinguish themselves through improving their sales with greater social approval and market legitimacy.

Therefore, corporate sustainability performance can be positively affected by green practices through cost advantages, increased capabilities, environmental performance, increased production, improvement in process and quality, waste reduction and creating new capabilities (Wijethilake, 2017). Furthermore, the stakeholder theory can also be used for explaining the GSCM effects. Since the industrial revolution, businesses have greatly emphasized towards profit-based activities. Although, damaged environment, increased competition and importance given to quality of life have significantly increased the significance of social responsibility, this increased importance has brought the stakeholder to the leading position.

The term stakeholder refers to any person or group who affects or get affected in the process of goal achievement (Freeman, 1994). The stakeholders have been classified into two groups, i.e. external stakeholders and internal stakeholders (Freeman, 1994). Where external stakeholders include customers, suppliers, society, competitors, government, etc. and internal stakeholders include managers, owners and employees. The stronger the nature of these relations among the societal parties the greater the ease to meet their goals. Generally,

stakeholder theory proclaims that firms need to manage and meet the stakeholders' requirements in the best possible way.

Environmental performance and GSCM practices

Firms are required to explore the means of environmental problems by looking into the scope of organization such as, transportation, production, the product and the procurement for better understanding of these environmental problems and for the identification of effective solutions. Environmental performance determines a firm's ability of reducing waste, pollution, environmental accidents and avoid using hazardous materials. GSCM practices encompass all efforts that can be taken to minimize any adverse effects on the environment, caused by the product or service of an organization. A case study regarding small and medium enterprises use of green practices have shown that these GSCM practices have significantly reduced the waste production, water pollution and material consumption. Briefly, several studies have shown that environmental performance is positively influenced by green activities through minimizing material and energy usage and waste production. Therefore, following hypotheses are proposed on the basis of above studies:

- H1a: The green purchase has significant impact on the environmental performance.
- H1b: The green manufacturing has significant impact on the environmental performance.
- H1c: The green distribution has significant impact on the environmental performance.
- H1d: The internal environmental management has significant impact on the environmental performance.
- H1f: The environmental education has significant impact on the environmental performance.
- H1g: The green marketing has significant impact on the environmental performance.
- H1h: Investment recovery has significant impact on the environmental performance.
- H1i: The green accounting has significant impact on the environmental performance.
- H1j: Green accounting moderates the relationship between investment recovery and environmental performance

Economic performance and GSCM practices

Economic performance is concerned with the ability of a manufacturing unit to minimize cost that is related to energy consumption, purchased materials, fines in case of environmental accidents, waste discharge and treatment. It was initially assumed that GSCM brings cost to firm. For instance a firm's short-term sales performance and profitability is not affected by GSCM activities, whereas, another study suggested that green purchasing negatively affects the company's financial performance by inflating the total costs of business. There is another view which states that economic performance of a firm positively influences by the GSCM practices. Such as, the natural resource-based view points out that businesses get significant

benefits by incorporating environmental practices. Thus, literature shows two ways through which these GSCM practices can improve the economic performance of an organization (Hart, 1995). Some research also concluded that economic performance is positively affected by GSCM practices.

H2a: The green purchase has significant impact on the economic performance.

H2b: The green manufacturing has significant impact on the economic performance.

H2c: The green distribution has significant impact on the economic performance.

H2d: The internal environmental management has significant impact on the economic performance.

H2f: The environmental education has significant impact on the economic performance.

H2g: The green marketing has significant impact on the economic performance.

H2h: Investment recovery has significant impact on the economic performance.

H2i: The green accounting has significant impact on the economic performance.

H2j: Green accounting moderates the relationship between investment recovery and economic performance.

Social performance and GSCM practices

The recent global changes and movements have been pressurizing all the enterprises to take measures concerning social responsibility. In addition, communities are also required to approve and keep an eye on the business activities of these enterprises. The above mentioned studies have attempted to examine the GSCM effects on the environmental and economic performance of an organization. However, the impact of GSCM practices on social performance was generally overlooked in past (Eltayeb et al., 2011). Integrating green supply chain practices into business and causing less damage to the environment create their positive image among the society, stakeholders, customers, the government and personnel. Firm creation and management of positive image is essential for personnel satisfaction and customer loyalty. Integrating GSCM practices lead to improved relation with the stakeholder, enhanced personnel motivation and brand image (Xie & Breen, 2012). Thus the conclusion is that successful implementation of environmental practices improves the relationship between stakeholders and firms. Thus, the hypotheses are stated as:

H3a: The green purchase has significant impact on the social performance.

H3b: The green manufacturing has significant impact on the social performance

H3c: The green distribution has significant impact on the social performance

H3d: The internal environmental management has significant impact on the social performance

H3f: The environmental education has significant impact on the social performance.

H3g: The green marketing has significant impact on the social performance.

H3h: Investment recovery has significant impact on the social performance

H3i: The green accounting has significant impact on the social performance

H3j: Green accounting moderates the relationship between investment recovery and social performance

Methodology and Measurements

Using a plant-level survey, the study attempted to examine the relation among corporate sustainability performance and GSCM practices. The study obtained data from Kazakhstani manufacturers through conducting a survey. The survey for this study mainly concerned with the electronics, automotive and chemical manufacturers of Kazakhstan, assuming that waste generation, environmental management activities and resource consumption are usually associated with production. The targeted sample are the Kazakhstani manufacturer (electronics, automotive and chemical) who have a minimum of 50 employees. The companies were identified using two different sources. The study obtained 159 survey responses using face-to-face interviews and 281 surveys were received from the distributed surveys, thus indicating a 27% response rate. Under SCM research, a 20% response rate is recommended. The senior in-charge or plant level managers from each company were selected and interviewed. From all the surveyed people there were 59 plant managers, 74 operational managers, 47 assistant managers, 43 supply chain managers, 26 purchasing managers and 32 logistics managers.

Measurements

From the study, nearly all scales for green purchasing were adopted. One supplier selection related item of scale was extracted from another study. The scale items of green packaging, green distribution and green manufacturing were obtained from previous researches, Perotti, Zorzini, Cagno and Micheli (2012), , González-Benito and González-Benito (2006) and Lieb and Lieb (2010). Whereas, studies, such as Zhu, Neale, Miedaner and Frank (2007) were considered to adopt scale items for internal environmental management. In addition, scale items for environmental education and green marketing were extracted from the study. Study was also considered to employ investment recovery scale. The study identified three measures of performance, i.e. economic, social and environmental performance. The scales for economic, social and environmental performance were extracted from Zhu et al. (2007), Paulraj (2011) and Zailani, Jeyaraman, Vengadasan and Premkumar (2012). The scale used in this study is shown in appendix a

Regression results

Regression explain how much of the variation in the dependent variable of export performance was caused by the independent variables of export marketing adaptation strategies. In other words, it established the predictive ability of different export marketing adaptation strategies as the set of independent variables, on export performance which is the dependent variable.

This was performed by including all the independent variables into the analysis through a simultaneous or standard multiple regression. The analysis indicated the statistical significance of the individual independent variables as well as the overall model.

The SEM is one of the most appropriate methodologies for a number of reasons, it is best among existing techniques as it is quite advanced and provides a more robust solution of researcher problems which simply can not be attained from multiple regression. According to Hair, Hult, Ringle and Sarstedt (2016) PLS approach is useful especially when the sole purpose of using structural modelling is to obtain explanation and prediction about the constructs. For current study, PLS-SEM technique is employed assuming it to be more flexible, demands less in terms of sample size and have an ability to handle multiple structural modelling. Moreover, the model is constituted of reflective and formative constructs. The study aims to reflect prediction between the constructs. Hair et al. (2016) further supported the reasoning for employing Partial Least Square method. SEM-PLS approach involves two models i.e. structural model and measurement model.

The measurement model shows the relation among the observed and the latent variables. In estimating the measurement model, changes occurred in all items of the model. Therefore, strong correlation is expected to exist between variables and these are combined to form a construct. In order to confirm the validation of measurement model i.e. how well the observed variables represent the constructs, Confirmatory Factor Analysis is done. Under CFA, first and second order constructs are estimated. During estimation of the measurement model, all elements are separately analyzed using reflective, formative and structural modelling. The measurement model of the current study is mapped in Figure 1 and Tables 1, 2 and 3 below.

Figure 1. Measurement Model

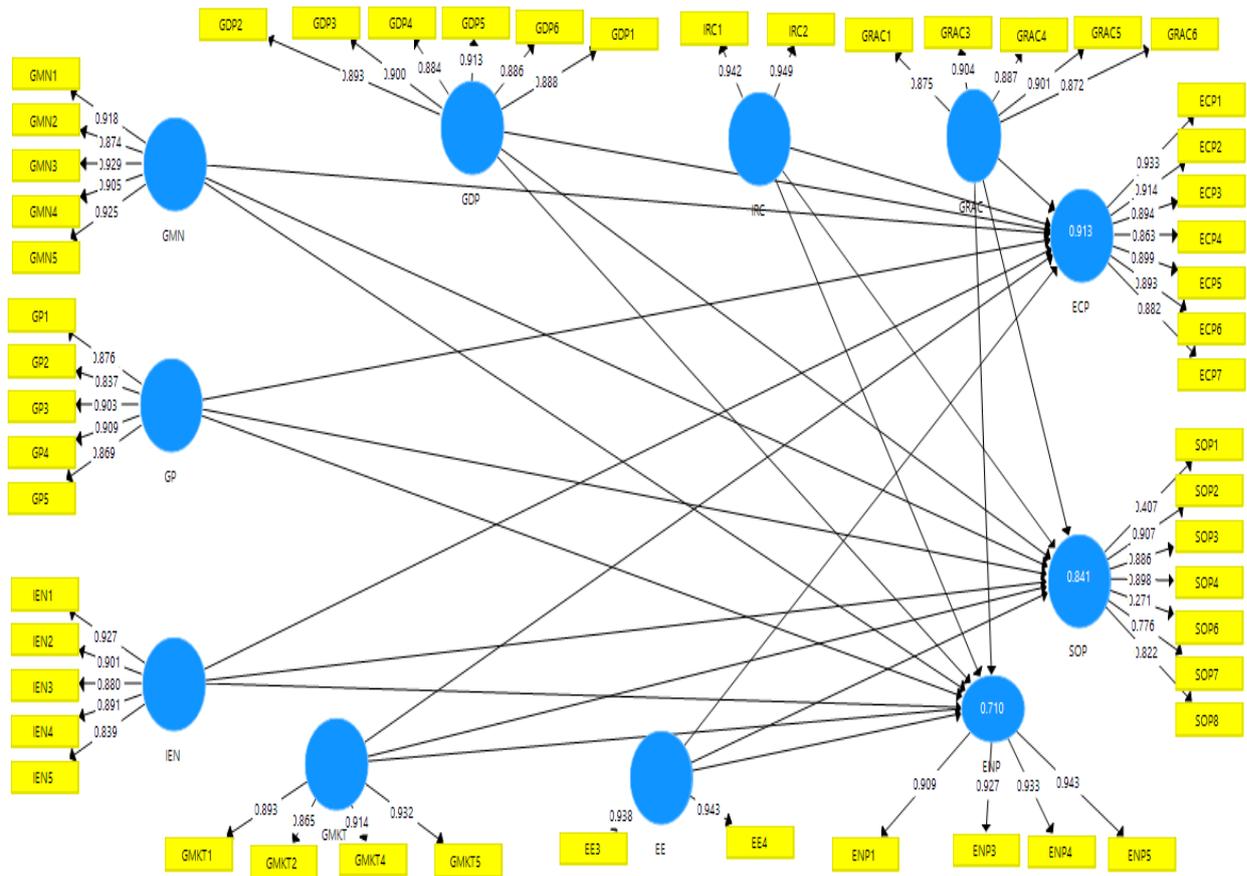


Table 1: Outer loadings

	ECP	EE	ENP	GDP	GMKT	GMN	GP	GRAC	IEN	IRC	SOP
ECP1	0.933										
ECP2	0.914										
ECP3	0.894										
ECP4	0.863										
ECP5	0.899										
ECP6	0.893										
ECP7	0.882										
EE3		0.938									
EE4		0.943									
ENP1			0.909								
ENP3			0.927								
ENP4			0.933								
ENP5			0.943								
GDP2				0.893							

GDP3				0.900							
GDP4				0.884							
GDP5				0.913							
GDP6				0.886							
GMKT1					0.893						
GMKT2					0.865						
GMKT4					0.914						
GMKT5					0.932						
GMN1						0.918					
GMN2						0.874					
GMN3						0.929					
GMN4						0.905					
GMN5						0.925					
GP1							0.876				
GP2							0.837				
GP3							0.903				
GP4							0.909				
GP5							0.869				
GRAC1								0.875			
GRAC3								0.904			
GRAC4								0.887			
GRAC5								0.901			
GRAC6								0.872			
IEN1									0.927		
IEN2									0.901		
IEN3									0.880		
IEN4									0.891		
IEN5									0.839		
IRC1										0.942	
IRC2										0.949	
SOP1											0.880
SOP2											0.907
SOP3											0.886
SOP4											0.898
SOP6											0.776
SOP7											0.776
SOP8											0.822
GDP1				0.888							

Construct validation deals with inferences of validity regarding unobserved variables in the form of the construct; having its basis on the observed variables which are presumed indicators. Construct validity was carried out by tackling the following questions: whether the correct constructs have been chosen for the purpose of phenomenal explanation and whether the constructs have been suitably operationalized to represent the constructs. These particular questions are impossible to be wholly determined and will not substantiate the notion that constructs are valid and have been properly operationalized. A number of different procedures can be carried out to study construct validity comprising discriminant and convergent validities despite the above dilemma. Support for construct validity is manifested only during that time when high correlations are exhibited between the same construct's measures making use of different methods (convergent validity) and when low correlations between different constructs' measures are displayed. In line with the notion, the following sections investigate construct validity through convergent as well as discriminant validity

Table 2: Reliability and convergent validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ECP	0.959	0.960	0.966	0.805
EE	0.869	0.870	0.939	0.885
ENP	0.946	0.947	0.961	0.862
GDP	0.950	0.950	0.960	0.799
GMKT	0.923	0.926	0.945	0.813
GMN	0.948	0.949	0.960	0.829
GP	0.926	0.928	0.944	0.773
GRAC	0.933	0.935	0.949	0.788
IEN	0.933	0.936	0.949	0.789
IRC	0.882	0.883	0.944	0.894
SOP	0.854	0.923	0.889	0.562

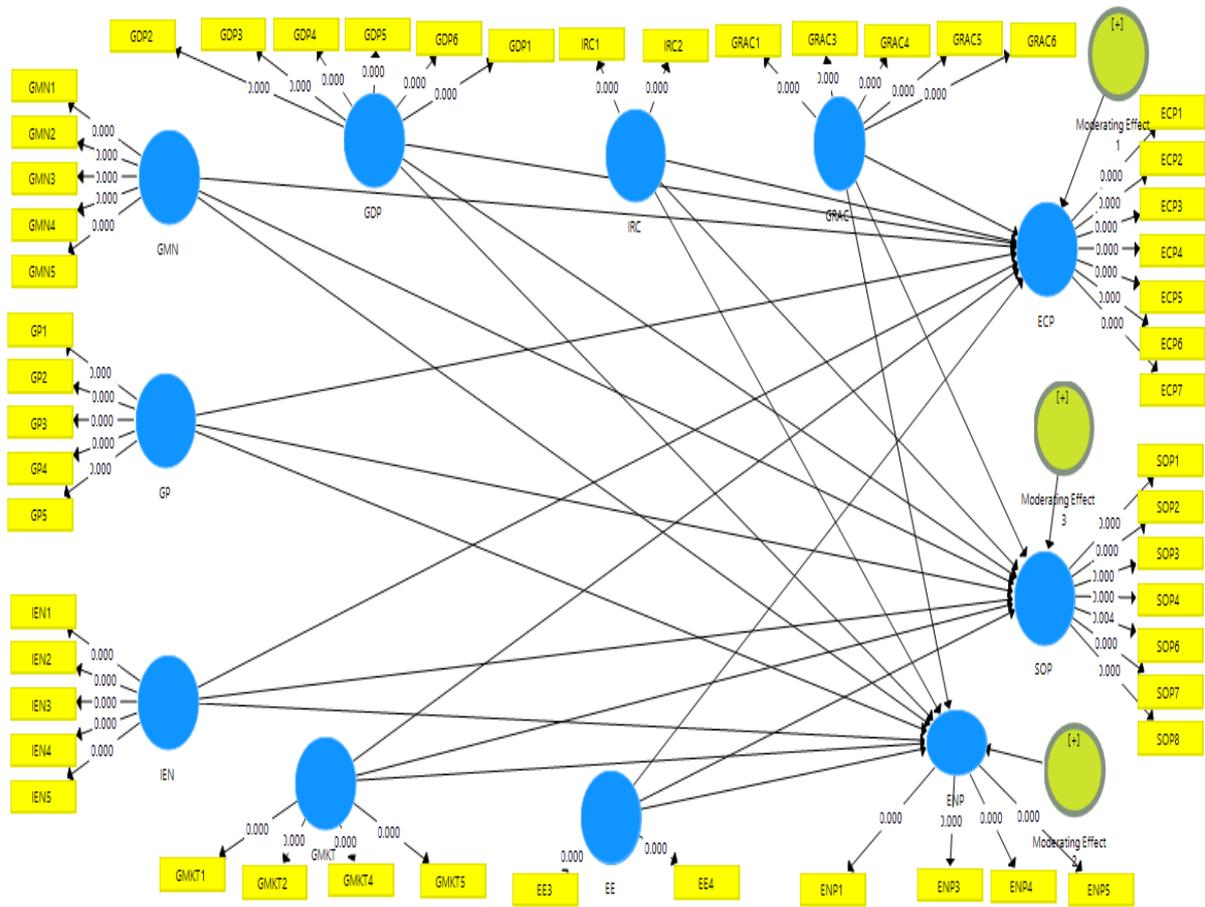
Fornell and Larcker's (1981) criterion of discriminant validity is a powerful measure and has been widely used by the researchers in studies. Discriminant validity measures the association between reflective variables and their constructs. Generally, it operationalizes the variables that are involved in the model. Thus, the current study incorporated this as a threshold for assessing discriminant validity. Value for reliability index is expected to be 0.70 or above. Thus, the value for outer-loadings and cross-loadings turned out to be the same. Since cross loadings analyse the presence of correlation among the constructs, therefore, current study has examined the discriminant validity between the variables and constructs, as shown in table 3 below.

Table 3: Discriminant Validity

	ECP	EE	ENP	GDP	GMKT	GMN	GP	GRAC	IEN	IRC	SOP
ECP	0.997										
EE	0.654	0.940									
ENP	0.717	0.620	0.928								
GDP	0.687	0.626	0.801	0.894							
GMKT	0.721	0.827	0.655	0.673	0.901						
GMN	0.698	0.671	0.799	0.892	0.670	0.911					
GP	0.719	0.667	0.797	0.910	0.725	0.916	0.879				
GRAC	0.941	0.608	0.648	0.615	0.676	0.613	0.653	0.888			
IEN	0.685	0.817	0.634	0.690	0.921	0.649	0.695	0.650	0.888		
IRC	0.697	0.871	0.647	0.660	0.881	0.641	0.701	0.655	0.853	0.946	
SOP	0.918	0.674	0.822	0.743	0.713	0.739	0.756	0.871	0.690	0.715	0.749

The next step after checking the validity and reliability of instruments, is the estimation of structured relationship between the variables. Unlike other techniques, the SEM-PLS method observes the simultaneous examination of all the constructed variables. Therefore, in the case of the structural model it analyses the direct and indirect effects of variables. The structural model is also shown below in Figure 2.

Figure 2. Structural model



Bootstrapping procedure was employed to check the direct and moderating role of green supply chain components on substantiality. Except for one hypothesis explaining the relationship between green manufacturing and social performance, all hypotheses of the study are accepted significantly.

Table 4: Regression results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
EE -> ECP	0.002	0.000	0.044	3.056	0.001
EE -> ENP	0.000	0.007	0.109	3.002	0.000
EE -> SOP	0.035	0.038	0.077	3.451	0.001
GDP -> ECP	0.051	0.048	0.068	4.757	0.000
GDP -> ENP	0.332	0.317	0.103	3.221	0.000
GDP -> SOP	0.194	0.188	0.101	3.929	0.000
GMKT -> ECP	0.094	0.092	0.070	3.349	0.000

GMKT -> ENP	0.043	0.053	0.105	3.410	0.000
GMKT -> SOP	0.006	0.008	0.099	3.059	0.000
GMN -> ECP	0.137	0.128	0.068	3.004	0.045
GMN -> ENP	0.256	0.259	0.151	1.693	0.090
GMN -> SOP	0.136	0.134	0.095	3.431	0.000
GP -> ECP	0.027	0.015	0.085	3.316	0.000
GP -> ENP	0.085	0.085	0.141	3.602	0.000
GP -> SOP	0.021	0.014	0.134	3.155	0.000
GRAC -> ECP	0.788	0.780	0.056	4.065	0.000
GRAC -> ENP	0.171	0.165	0.075	2.276	0.023
GRAC -> SOP	0.611	0.600	0.059	4.303	0.000
IEN -> ECP	0.050	0.045	0.066	2.768	0.000
IEN -> ENP	0.051	0.055	0.112	2.460	0.000
IEN -> SOP	0.047	0.033	0.113	3.419	0.000
IRC -> ECP	0.050	0.052	0.066	3.753	0.000
IRC -> ENP	0.122	0.136	0.107	3.137	0.000
IRC -> SOP	0.140	0.136	0.095	3.471	0.000
Moderating Effect 1 -> ECP	0.022	0.024	0.020	4.140	0.000
Moderating Effect 2 -> ENP	0.055	0.052	0.035	4.545	0.000
Moderating Effect 3 -> SOP	0.027	0.025	0.023	3.191	0.000

In structural modelling, coefficient of determination or R^2 explains the predictive power of endogenous variables. Closer to 0 value for path coefficients indicate insignificance of coefficients. Value for R^2 also lies between 0-1, value closer to 1 indicate greater predictive accuracy and vice versa. The value of 0.75 indicates substantial predictive power, 0.50 indicates moderate predictive power, while 0.25 indicates weak predictive power. The value for R^2 came out to be 91.3 percent, 71 percent and 84.1 percent in ECP, ENP and SOP respectively as reflected in Table 5 below.

Table 5: R^2

	R Square
ECP	0.913
ENP	0.710
SOP	0.841

Discussion, conclusions and implications of study

The present study contributes to the literature of GSCM development by exploring the association among corporate sustainability performance and GSCM practices. The study attempted to examine the impact of GSCM practices on the three sustainability performance dimensions, i.e. economic, social and environmental performance. Thus, this study will help managers i.e. which GSCM practices which are appropriate for strengthening the performance of identified improvement areas. It has been argued that the sustainability performance of GSCM activities are positively affected by NRBV framework. This argument is also supported by several studies. For instance, a positive relation was reported by Schmidt et al. (2017) between financial and market performance and GSCM practices. This research also found positive association among environmental strategies and economic and environmental performance.

A review of the literature has shown that the image and reputation of a business improves with green marketing practices, which improve sales and positively influences the economic performance of an organization. However, the present study failed to find any significant association between economic performance and green marketing. According to some authors, this could occur because green manufacturing initially incurs additional costs to the business (Welling & Chavan, 2010). The findings of research conducted on green manufacturing suggest that the concept of green manufacturing in Indonesia is still at its early stage (Aslan & Çınar, 2015) trying to create a balance among financial concerns and environmental protection.

The results have shown that except for tone specified GSCM dimensions, all other dimensions provided significant financial returns in Indonesia. However, Bowen, Cousins, Lamming and Farukt (2001) mentioned that GSCM practices do not give short-run economic benefits but provide long-term economic benefits. Therefore, it can be stated that Indonesia is in its early stages of developing GSCM phenomenon. Other Indonesian based studies (Altuntaş & Türker, 2012; Atrek & Özdağoğlu, 2014) also confirmed the findings of the present study. Green accounting appeared as a significant direct and moderating green determinant of sustainable performance

Managerial Implications

The present study suggests practical implications in the context of manufacturing, for both policy makers and practitioners. The majority of developing economies' producers prefer to avoid potential economic risks and improve economic situation of their country, such as Indonesia. However, businesses that earn short-term profits can not possibly gain long-term profits without taking into account environmental pollution (Hart, 1995). Thus, the present study explained the significance of win-win principle, signifying that profit objectives



converge to achieve both profit maximization and social benefits. This study will also allow managers to gain information regarding relative benefits for each GSCM practice. Implementing GSCM strategies is not simple as integration of some green practices increases the cost of some items and decreases other items, such as operational cost, investment cost, procurement cost and or training cost. Therefore, a cost-benefit analysis must be carried out correctly by the managers.

The findings of this study indicate that businesses can be successful in gaining economic benefits particularly through the practices of green distribution-packaging and green production. However, Indonesia has neglected the element of green purchasing practices, which can be implemented to minimize the environmental impact, throughout the life of that product. It is essential for Indonesian businesses to develop closer relationships with their suppliers and provide support to them in environmental matters. Indonesian businesses have not adequately addressed the concept of environmental education although environmental education plays a crucial role in achieving green practices, along with supply chain (Stone, 2000). Implementing environmental education can develop effective cooperation among the suppliers, distribution partners and customers on the issues related to environmental matters (Teixeira, Mateus, & de Freitas, 2016). Thus, more investment is needed to implement green education and in addition, Indonesian businesses must be obligated to implement effective ways for assessing the existing needs and gaps in this area.

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Appendix A

Green purchasing

GP1. Providing design specification to suppliers that include environmental requirements for purchased item

GP2. Cooperation with suppliers for environmental objectives

GP3. Choice of suppliers by environmental criteria

GP4. Suppliers' ISO14000 certification

GP5. Environmental audit for suppliers' internal management

Green manufacturing

GMN1. The manufacturing process will reduce the noise pollution to the minimum

GMM2. Substitution of polluting and hazardous materials/parts

GMN3. Filters and controls on emissions and discharges

GMN4. Production planning and control focused on reducing waste and optimizing materials exploitation

GMN5. Process design focused on reducing energy and natural resources consumption in operations

Green distribution and packaging

GDP1. Reduction of packaging materials

GDP2. Ecological materials for primary packaging

GDP3. Recyclable or reusable packaging/containers in logistics

GDP4. Selection of cleaner transportation methods

GDP5. Effective shipment consolidation and full vehicle loading

GDP6. Routing systems to minimize travel distances

Internal environmental management

IEN1. Cross-functional cooperation for environmental improvements

IEN2. Established an environmental protection index of recycling, gaseous reduction and energy conservation

IEN3. Environmental management system exists

IEN4. Support for environmental practices from senior managers and mid-level managers

IEN5. The company's efforts in relation to environmental matters have exceeded the requirements of the relevant regulations

Green marketing

GMKT1. Supply to customers and institutions of regular voluntary information about environmental management

GMKT2. Sponsoring of environmental events/collaboration with ecological organizations

GMKT3. Use of natural environmental arguments in marketing

GMKT4. Periodic updating of the website on environmental issues

GMKT5. Material packages will be labeled for retrieval purposes

GMKT6. Considered that Eco Products boost the consumers' purchasing willingness

Environmental education

EE1. Holding awareness seminars for suppliers/contractors

EE2. Natural environmental seminars for executives

EE3. Natural environment training programs for managers and employees

EE4. Participation in government-subsidized natural environmental programs

Investment recovery

IRC1. Investment recovery (sale) of excess inventories/materials

IRC2. Establishing a recycling system for used and defective products.

Economic performance

ECP1. Decrease in cost of materials purchased

ECP2. Decrease in cost of energy consumption

ECP3. Decrease in fee for waste discharge

ECP4. Improvement in earnings per share

ECP5. Improvement in return on investment

ECP6. Sales growth

ECP7. Profits growth

Social performance

SOP1. Improvement in customer satisfaction 0.81

SOP2. Improvement in its image in the eyes of its customers 0.74

SOP3. Improvement in investments on social projects (education, culture, sports)

SOP4. Improvement in relations with community stakeholders, e.g., nongovernmental organizations (NGOs) and community activists

SOP5. Improved awareness and protection of the claims and rights of people in community served

SOP6. Improvement in employee training and education

SOP7. Improvement in occupational health and safety of employees

SOP8. Improvement in overall stakeholder welfare or betterment

Environmental performance

ENP1. Improvement of an enterprise's environmental situation

ENP2. Reduction in waste (water and/or solid)

ENP3. Reduction in air emission

ENP4. Decrease of consumption for hazardous/harmful/toxic materials



ENP5. Decrease of frequency for environmental accidents.

Green accounting

GRAC1. Costs incurred to prevent air and water pollution along with water treatment facilities and other activities.

GRAC2. Costs of energy saving measures as well as costs of global warming reduction measures.

GRAC3. Costs incurred for waste reduction and disposal as well as for water conservation, rainwater usage and other measures aimed at efficient resources usage.

GRAC4. Cost of environmental restoration operations (eliminating soil and ground water contamination, environmental compensation, etc.)

GRAC5. Environmental protection costs stemming from participation in social activities such as participation in organizations concerning with environmental preservation etc.