

## **Effects of Normative Pressures to Implement External Green Supply Chain Management Practices and Their Impact on Economic Performance**

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### **Abstract**

*Companies are becoming aware that the implementation of green practices can help them to establish a green image, win more customers and positively influence their economic performance. This paper empirically tests a theoretical model that explores normative pressures, external green supply chain management practices (green purchasing, cooperation with customers and investment recovery) and economic performance of manufacturing companies in Peru. The data was collected from 176 companies and it was analyzed using partial least squares structural equation modeling (PLS-SEM). The results provide evidence of the positive influence of normative pressures on the implementation of external green practices, except for investment recovery. Economic performance is positively related to green purchasing and investment recovery but it is negatively related with cooperation with customers. This research contributes to the literature of green supply chain management and provides managerial implications for Peruvian companies on the improvement of economic performance through the adoption of green practices.*

**Keywords:** Normative pressures, Green purchasing, Cooperation with customers, Investment recovery, Economic performance, Peruvian manufacturing companies

### **1. Introduction**

The tendency towards consumerism has led to a rise in global demand for all kind of products. An increasing number of firms try to make a profit satisfying different types of demand some of which have inflicted environmental damage through the excessive use of natural resources and the pollution generated by manufacturers processes. Companies usually compete to have more customers; consequently, they must be aware of the contemporary requirements, in which customers are becoming more concerned about preserving the environment. Customers pressures and expectations for ecological products are effective motivations for manufacturers to implement innovative environmental practices (Anbumozhi & Kanda, 2005). Institutional theory poses that firms will yield to pressures modifying their actions to adopt environment friendly practices in order to obtain legitimacy or acceptance within the community (Zhu & Sarkis, 2007). The pressures exerted by customers, market, exports, public, environmental organizations and the media are defined as normative pressures (Ball & Craig, 2010; Barber & Odean, 2007). It is expected that in the future all companies will need to implement environmental friendly practices to decrease the negative impact of their products and services on the environment (Lewis & Gertsaklis, 2001). Green purchasing, cooperation with customers and investment recovery are green practices that are classified as external Green Supply Chain Management (GSCM) practices because they require the cooperation of external supply chain partners (Zhu, Sarkis, & Lai, 2013). (Preuss, 2002) identified that when companies implement GSCM practices, the whole supply chain downstream and upstream benefited because of a green multiplier effect that results from the collaboration of supply chain partners in environmental issues. The implementation of GSCM helps organizations to generate win-win strategies that will increase companies' profits and improve their economic performance (Van Hock, 2000).

For instance, one approach of green purchasing is to buy the materials that are required and reduce the environmental cost and the unnecessary waste (Tsoulfas & Pappis, 2006). Cooperation with customers, in which companies cooperate with their customers for green production and packaging (Wu, Ding, & Chen, 2012). A good relationship with customers allows the supply chain to reduce costs and maintain the accuracy of operations, increasing quality and customer satisfaction (Won Lee, Kwon, & Severance, 2007). Investment recovery is a critical phase in GSCM. It usually occurs at the end of the supply chain cycle and refers to the return of capital to the company when selling the surplus inventories, scrap or used materials. This way companies can earn extra income (Wu et al., 2012; Zhu, Sarkis, & Geng, 2005). Zhu and Sarkis (2007) state that economic performance has always been a priority for manufacturing companies in developing countries and GSCM practices can help to achieve this objective. Previous research has studied the link between GSCM practices and economic performance. Some investigations found a positive relationship (Azevedo, Carvalho, & Cruz Machado, 2011; Hong, Zhang, & Ding, 2018) while others show negative results (Cordeiro & Sarkis, 1997; Esfahbodi, Zhang, Watson, & Zhang, 2017). Economic performance refers to the profitability of the companies that can be achieved by increasing the profits or reducing the costs. The aim of this paper is to study the link between normative pressures and the implementation of external GSCM practices- green purchasing, cooperation with customers and investment recovery- and the effect of these practices in the economic performance of Peruvian manufacturing companies.

## **2. Theoretical background and hypotheses**

### **2.1 Normative Pressures**

In institutional theory, pressures are divided into coercive, normative and mimetic. These three different type of pressures have the ability to influence the willingness of a company to implement GSCM practices (Zhu & Sarkis, 2007). However, many authors have argued that normative pressures are the main motivation for manufacturers to adopt sustainable production practices (Zhu, 2016). Normative pressures are usually exerted by customers, market, exports, public, environmental organizations, and the media (Zhu, 2016; Zhu, Sarkis, & Lai, 2012). For the firms, the customers are the principal financial stakeholders. Therefore, they can exert pressures that can generate new strategies and practices to improve environmental efficiency within the companies (Carter & Ellram, 1998; Rao & Holt, 2005). Sales to foreign customers or exports from environmentally conscious markets which put a green barrier to trade, lead manufacturers to use environmental management strategies to overcome adversities. To support a positive relationship between normative pressures and external GSCM practices within manufacturing companies in Peru, the following hypotheses are proposed:

**H1a:** Normative pressures positively influence manufacturing companies within Peru to adopt green purchasing

**H1b:** Normative pressures positively influence manufacturing companies within Peru to adopt cooperation with customers

**H1c:** Normative pressures positively influence manufacturing companies within Peru to adopt investment recovery

### **2.2 Green Purchasing**

Green purchasing is an environmental practice in the supply chain that refers to the purchase of materials that are recyclable or reusable or that have already been recycled. This practice provides the company with the requirements necessary for green design and cooperation for environmental objectives, internal environmental audits to suppliers, and ISO 14000 certification (Chien & Shih, 2007; Zsidisin & Hendrick, 1998). The environmental collaboration with suppliers refers to the cooperation with organizations in the supply chain to share environmental knowledge and plan strategically for environmental purpose (Vachon & Klassen, 2008). The advantages of coordinating with suppliers for green efficiency increase customer satisfaction while reducing business waste in the supply chain and environmental cost (Vachon & Klassen, 2008). In supplier selection, the ability to produce green products and to use environmental practices represents a differentiation factor to attract the attention of supply chain partners that are environmentally responsible.

### **2.3 Cooperation with customers**

Cooperation with customers for environmental objectives can help in different stages of the supply chain. Many companies consider customers because they are aware of environmental change and know their needs. In addition, a good relationship can make customers more proactive to cooperate in the reverse logistics to maximize the return volumes while reducing waste and increasing customer satisfaction.

The cooperation with customers makes the companies more environmentally aware and customers become partners (Tsoulfas & Pappis, 2006). The cooperation with customers to modify product specifications, increases process efficiency and input substitution while respecting company specifications and product durability (Vachon & Klassen, 2008). It also enhance the customer satisfaction and reduces customer rejection rates (Azevedo et al., 2011).

## **2.4 Investment recovery**

Investment recovery is considered a green practice because it reduces the waste that otherwise would be disposed off (Zhu & Sarkis, 2004). Manufacturing companies can sell the excess of inventories, scrap or use materials, and excess of capital equipment to obtain additional income. Reverse logistics is a practice that enhances investment recovery. It is defined as the process of returning products to the original manufacturer for recycling or remanufacturing (Carter & Ellram, 1998). The first step in reverse logistics is to collect the products in recovery process, the products then selected before being transported to the factory for re-manufacturing (Srivastava, 2007). Reverse logistics is beneficial for the environment because there is a better management of business waste. However there are some factors to take into consideration to make this practice really effective. Collaboration between partners in the supply chain is fundamental otherwise issues such as accumulated inventories from returns arriving faster than the processing time or disposal can generate environmental cost for the organization (Azevedo et al., 2011).

## **2.5 Economic Performance**

The strategic choice theory poses that the performance of a company will depend on its strategy. Therefore companies will choose strategies where the gain is higher than the cost (Starik & Marcus, 2000). For instance, the purchase of green material has a cost, but when compared with the normal purchase activity in a traditional supply chain, green purchasing can offer companies the creation of value because the disposal costs can be reduced and at the same time the resource conservation and green image can be improved (Min & Galle, 2001). Cooperation with customers can help companies to design products which are more adapted to customer's environmental requirements and, sales can be increased. A company can further increase gains through investment recovery by selling material or inventories in excess. The literature suggests that external GSCM practices can enhance manufacturing companies' economic performance. However, even previous empirical studies are not explicit about this positive relationship. This study tries to identify the effect of external GSCM practices on economic performance for Peruvian manufacturing companies. Therefore the following hypotheses are presented:

**H2:** Green purchasing influence positively and directly the economic performance of manufacturing companies in Peru.

**H3:** Cooperation with customers influence positively and directly the economic performance of manufacturing companies in Peru.

**H4:** Investment recovery influence positively and directly the economic performance of manufacturing companies in Peru.

## **3. Research Design**

A questionnaire-based survey was conducted to collect the data. The respondents were the managers of manufacturing companies in Peru covering the sectors of textile, leather, metals, furniture, electronics, plastics and food industry. The questionnaire included questions investigating the influence of normative pressures in the implementation of external GSCM practices, the level of implementation of green purchasing, cooperation with customers and investment recovery and the impact of those adopted practices on the improvement of economic performance of the responding manufacturing companies. In total 198 questionnaires were obtained but 22 were discarded due to inconsistencies and uncompleted answers. The questionnaire was designed using validated scale that was originally assessed by Zhu et al. (2008) using a sample of Chinese manufacturers and validated in different countries and industries. For normative pressures, four items taken from Zhu et al. (2013) were considered, a five-point Likert scale was used (1=Unimportant to 5=Very Important). To measure external GSCM practices fourteen items were adopted from (Zhu, Sarkis, & Lai, 2008; Zhu et al., 2013). Respondents were also requested to answer questions using five-point Likert scale (1=not considering it to 5=implemented successfully). Economic performance is measured through 5 items taken from (Zhu et al., 2013), and also uses five-point Likert scale (1=not at all to 5= significant). The data were analyzed using partial least square structural equation modeling and with the help of SmartPLS3.2.7 software (Ringle, Wende, & Becker, 2015).

#### **4. Model Assessment Through PLS**

A two-step approach is followed while assessing a model using PLS which involves the assessment of measurement model first and then structural model (Hair, Ringle, & Sarstedt, 2011). Measurement model assessment includes reliability and validity testing of the relationships between constructs and their associated items. After confirming the reliability and validity of the constructs the relationships between the constructs are confirmed through structural model (Chin, 2010; Hair et al., 2011).

##### **4.1 Measurement Model Assessment**

The model being used for this study consists of five reflective constructs and they were evaluated together first as part of measurement model assessment. Indicator reliability requires the item loading of 0.6 or above for each item on its associated constructs (Hair et al., 2011). All item loadings were above the required threshold value except NPr1 and EconPerf1, which were dropped. Construct reliability is confirmed through composite reliability (CR) and Cronbach's alpha coefficient, where both require the value of 0.7 or above (Chin, 2010; Hair et al., 2011). Table 1 shows that all the values of CR and alpha are higher than 0.7 and fulfills the requirement of internal consistency and reliability. Average variance extracted (AVE) is a measure of convergent validity and requires a value of 0.5 or above. Convergent validity is also achieved as table 1 presents all the values of AVE are exceeding 0.5. Another required validity dimension is the discriminant validity, which confirms the distinctiveness of a construct from other constructs of the study. It requires the AVE of any construct should be more than the highest squared correlation of that construct with any other construct (Fornell & Larcker, 1981). Values in Table 1 confirm the discriminant validity as well.

**Table 1. Statistical Quality Indicators**

	<b>AVE</b>	<b>CR</b>	<b>Alpha</b>	<b>R<sup>2</sup></b>		<b>CC</b>	EconPerf	<b>GP</b>	<b>IR</b>	<b>NPr</b>
<b>CC</b>	0.610	0.861	0.784	0.331	<b>CC</b>	<b>0.781</b>				
<b>EconPerf</b>	0.550	0.824	0.733	0.244	<b>EconPerf</b>	0.125	<b>0.742</b>			
<b>GP</b>	0.544	0.852	0.776	0.413	<b>GP</b>	0.573	0.437	<b>0.738</b>		
<b>IR</b>	0.523	0.842	0.774	0.015	<b>IR</b>	0.185	0.288	0.348	<b>0.723</b>	
<b>NPr</b>	0.596	0.854	0.779	-	<b>NPr</b>	0.576	0.208	0.646	0.149	<b>0.772</b>

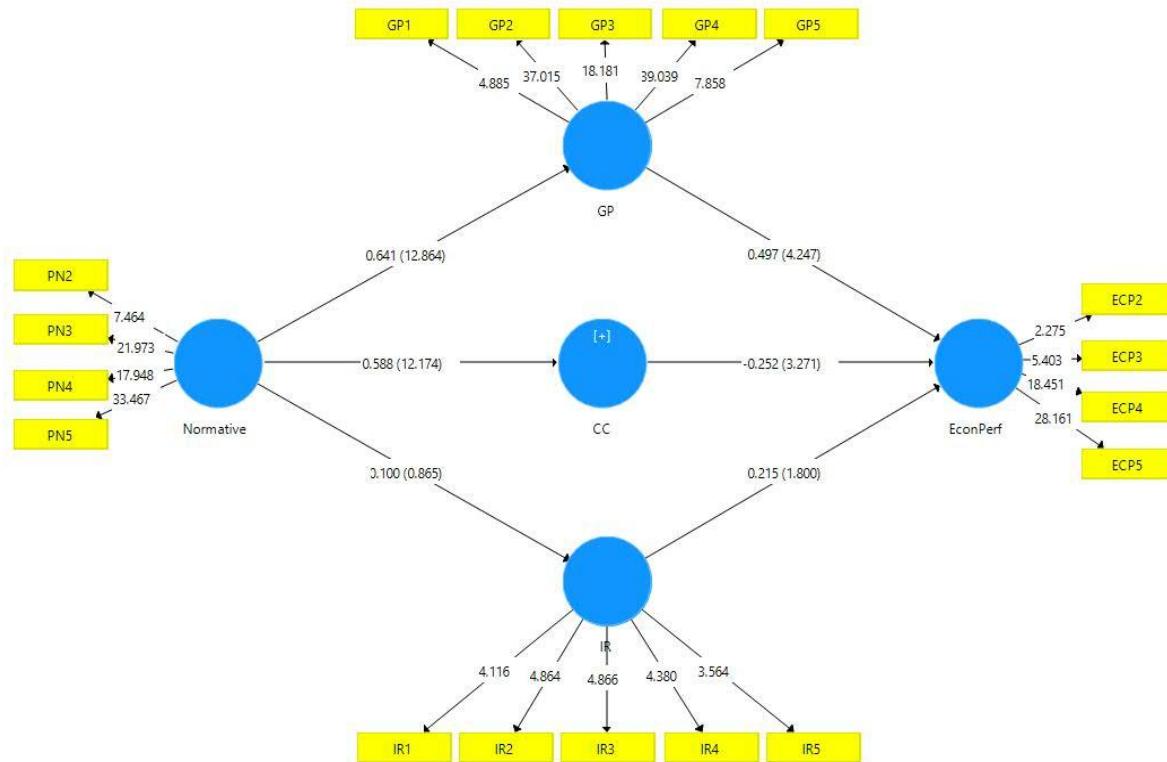
Here CC= Cooperation with Customers; EconPerf= Economic Performance; GP= Green Purchasing; IR= Investment Recovery; NPr= Normative Pressures

Bold values in diagonal are the square root of AVE of respective constructs

##### **4.2 Structural Model Assessment**

To verify the conceptual model through structural model assessment R-square of the endogenous constructs should be at least 0.19 for social sciences to be considered acceptable, and similarly path coefficients of 0.20 and above are treated as appropriate along with their direction (Chin, 2010; Hair et al., 2011). To test the structural model a bootstrapping procedure was performed which is recommended to have at least 5000 subsamples at a significance level of 0.05 and option of one-tailed test was selected. Table 1 shows that R<sup>2</sup> value of final endogenous construct of EconPerf is 0.244 which is above the threshold value. Figure 1 depicts the path coefficient ( $\beta$ ) values along with their t-values (in parentheses), while t-values of all individual items are also visible to confirm their significance.

Results indicate that four out of six hypotheses are accepted. Figure 1 depicts the beta value of Normative to GP is 0.641 (t-value 12.864; p <0.001); Normative to CC is 0.588 (t-value 12.174; p <0.001); Normative to IR is 0.100 (t-value 0.865; p >0.05); GP to EconPerf is 0.497 (t-value 4.247; p <0.001); CC to EconPerf is -0.252 (t-value 3.271; p <0.001); and IR to EconPerf is 0.215 (t-value 1.800; p <0.05). It is visible through results that H1c is rejected because of nonsignificant beta value while H3 is rejected due to its opposite direction although it has a significant beta value.



**Figure 1 Structural model**

## 5. Conclusions

This study has made clear the importance of the manufacturing sector activities in environmental conservation. Developing countries facing the challenge to correct and improve their manufacturing process for the creation of a sustainable economy with less damage to the environment (Zhu & Sarkis, 2006). This paper presents the results of the investigation of manufacturing companies in Peru on normative pressures, external GSCM practices and economic performance. The analysis of the data in this study through PLS-SEM confirmed that normative pressures influence positively manufacturers in Peru to implement green purchasing and cooperation with customers. However, the relationship between normative pressures and investment recovery could not be proved. The positive stimulation of normative pressures for the adoption of green practices was also confirmed by (Zhu et al., 2013). Regarding the relationship between external GSCM practices, and economic performance, two of three practices are positively related to economic performance, green purchasing, and investment recovery. On the contrary, cooperation with customers negatively influences economic performance. This mixed positive and negative results of green practices on economic performance is also confirmed by other studies suggesting that the reason is the adoption of heterogeneous green practices by manufacturing firms. It may also be related to the fact that different companies face different pressures (González-Benito & González-Benito, 2006; Zhu, Sarkis, & Lai, 2007). Another factor is that economic performance is achieved in long term because at the beginning companies need to invest money in the implementation process of green practices, in consequences the profit will decrease (Zhu et al., 2013).

This research has managerial and theoretical implications. Managers can understand more about the relationship between external GSCM practices implementation and how these practices can enhance the company's economic performance. Therefore management can modify the company strategies to improve economic results. This study is also contributing to the literature of GSCM. The results provide further opportunities for future research. For example, further studies could explore different ways to enhance the effect of normative pressures on investment recovery because suitable regulations can impact the adoption of GSCM. More studies about the economic performance at different stage of the green practices are also recommended in order to obtain a clearer picture and possibly avoid mix results.

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