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## Article

# The key role of institution pressure on green supply chain practice and the firm's performance

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## The Key Role of Institution Pressure on Green Supply Chain Practice and the Firm's Performance

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### Abstract:

**Purpose:** This study was conducted to investigate the influence of isomorphism institutional theory on green supply chain management (GSCM) and firm performance by using the structural equation model (SEM).

**Design/methodology/approach:** The study used structural equation model (SEM) to explain the driving factors of reducing the impact of environmental processes on the firm.

**Findings:** Isomorphism institutional factors showed a statistically significant positive effect on GSCM practices. Moreover, GSCM practices showed a statistically significant positive effect on firm performance. Under the literature review, customer pressure and top management support are primary factors to achieve GSCM practices and potential to establish firm performance.

**Research limitations/implications:** First, the common hypotheses do not provide insight into all the relationships that warrant additional inspection. Second, Thailand manufacturers have experiences pressures from foreign customers and competitors but they have opportunities to learn from them to better improvement GSCM practices.

**Practical implications:** Results may highlight pressure for greening and which more efforts are needed for GSCM practices. GSCM practices generally require more effort due to need for collaborating with customer and competitor. Thailand manufacturers are increasingly confronted with isomorphism institutional pressure to implement GSCM practices.

**Social implications:** It is useful the Thailand government promotes GSCM by creating an awareness of the benefits. GSCM can help to alleviate the question of the followers about implementing GSCM and decrease their risk association with the environmental adoption.

**Originality/value:** Research creates clarity of the relationship between isomorphism institutional pressures, top management support, and performance in Thailand, which is a developing country with environmental investment concerns that affect profits from the operations of the firm.

**Keywords:** isomorphism institutional theory, institutional theory, green supply chain management, GSCM practices, performance

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## 1. Introduction

Environmental management (EM) that begins from the initial product planning contributes to improving the manufacturing process to minimize the environmental impact and enhance productivity. Moreover, EM has become more prevalent with an expanded scope and when used in combination with supply chain management, referred to as green supply chain management (GSCM) (Delmas, 2002). GSCM has led to environmental sustainability, as well as business sustainability, by changing the way a business operates in compliance with the principles of EM. Changes include waste reduction in the industry, reducing energy use, reducing the use of natural resources, using resources that are environmentally friendly, knowledge creation, and training employees in management (Green, Whitten & Inman, 2012; Ahi & Searcy, 2013; Zhu, Sarkis & Lai, 2007; Sheu & Talley, 2011)

Many factors have placed pressure on green supply chain management to influence a change in the organization. Isomorphism institutional theory, which explains the pressure in green supply chain management include two factors: customer pressure and competitor pressure (Seuring & Müller, 2008; Zhu, Sarkis & Lai, 2008). Moreover, according to the resource base view theory, an organization has important resources, including features that are valuable, rare, difficult to imitate, and not easily replaced. These resources provide a competitive advantage for the organization. A factor that interests scholars in the study of environmental management is top manager support, which affects the performance of the business. However, leading up to green supply chain management practices, effective management must have a clear way to practice and be measurable, resulting in the expansion of the body of knowledge (Delmas & Montiel, 2009; Zhu et al., 2007).

GSCM practices comprise 5 factors, internal environmental management (Klassen & Johnson, 2004; Sarkis, Zhu & Lai, 2011; Yu, Chavez, Feng & Wiengarten, 2014), green purchasing, green manufacturing, green transportation (de Sousa Jabbour, Jabbour, Latan, Teixeira & de Oliveira 2014; Klassen & Johnson, 2004; Zhu et al., 2008b), and environmental design (Green Jr, Zelbst, Meacham & Bhadauria., 2012; Zhu et al., 2008b). Zhu, Sarkis and Lai, (2013) found that GSCM practices affect a firm's performance. They also have a comparative advantage, which is consistent with the studies of de Sousa Jabbour et al. (2014), Zhan, Tan, Ji, Chung and Chiu (2018) and Choi and Hwang (2015), which show that GSCM practices play a key role in the green and positive influences on performance.

We aimed to study the influence of isomorphism institutional factors affecting GSCM practices and firm performance in firms that have been certified ISO 14000. This study has led to the elucidation and improvement of the knowledge of GSCM to benefit industries, firms and governments and to the use of their knowledge to advance green supply chain management in Thailand.

## 2. Literature Review

### 2.1. Isomorphism Institutional Theory

Isomorphism institutional theory explains the pressures that affect a firm to make changes. It can be applied to understand how a firm can develop implementation strategies for success. In the context of green supply chain management, members of a supply chain must perform to meet customer requirements and regulations set by the government (Zailani, Eltayeb, Hsu & Choon Tan, 2012; Carter, Kale & Grimm 2000; Rivera, 2004), implying that firms are pressured by both internal and external factors. Founders of the theory, DiMaggio and Powell (1983), describe the three forms of institutional pressure (Sarkis, Zhu & Lai, 2011; Lai, Wong & Cheng, 2006) as follows.

**Coercive:** Coercive pressure may be either intrinsic or extrinsic and comes from an agency that has the power to enforce. Coercive pressure tends to begin in laws, regulations, and practices. A firm that does not follow may be punished, possibly forced to undergo the harshest disciplinary action (Rivera, 2004).

**Mimetic:** Mimetic pressures result from the unpredictability of the situation and uncertainty of management. In response to environmental pressures externally, firms benchmark their own progress relative to their competitors, leading to imitation, especially of the more successful ones. This approach trends with similar practices across firms. The results of imitation can be recognized in the form of spreading similarities between firms (Aerts, Cormier & Magnan, 2006).

Normative: Firms are under pressure to define or form their own operations to achieve competitiveness and remain in the industry. Firms must have internal pressure to adjust to rules and regulations so that they run their business according to best practices, building standards in environmental management. Firm training consultation or associations of specialists build legitimacy and standards to establish understanding based on common interests and values within the firm (Ball & Craig, 2010).

Isomorphism institutional theory describes the changes that appears within a firm because of circumstantial pressures. Given a firm that is effective, isomorphism institutional theory provides a description of 3 factors, top management support, competitor pressure, and customer support, to study.

## **2.2. Top Management Support**

A firm that is well equipped to handle a green supply chain requires the understanding and knowledge of personnel within the firm itself. A lack of professional environmental knowledge and lack of capacity in environmental management at the professional level are common in organizations that strive to manage green supply chains (Ehrhart, 2004). For a firm to implement GSCM, it must overcome obstacles, such as a lack of professional knowledge of the environment within the organization, any lack of support from senior management, a lack of information, or a lack of financial or human resources (González-Torre, Álvarez, Sarkis & Adenso-Díaz, 2010). The support of senior management is especially important because it is associated with strategic planning of the organization, a critical factor in many green supply chains (Zhu, Sarkis, Cordeiro, & Lai, 2008a; Walker, Sisto & McBain, 2008).

Top management's handling of their organization's policy and strategic management determines firm guidelines for operating in various fields to achieve goals. In addition to management's support expressed through policies, regulations, and the direction they take with the organization, the resources they make available to support operational activities are also important, including funds, manpower, and time. The management's support to make the supply chain green is critical to the success of GSCM (Dubey, Gunasekaran, Papadopoulos & Childe, 2015; Luthra, Garg & Haleem, 2015; Zhu et al., 2008a).

## **2.3. Competitor Pressure**

A competitor is a business in the same target market. Industry competition creates pressure to improve process efficiency and product quality due to pressures from competition and the company's learning and ability to mimic competitors with better performance (Zsidisin, Melnyk & Ragatz, 2005; O'Cass & Weerawardena, 2010; Carter & Carter, 1998; Christmann & Taylor, 2001; Hsu, Tan, Zailani & Jayaraman., 2013). GSCM is the integration of environmental management into the components of an organization. Firms need to stimulate changes in attitude and process management in the workplace to meet the goals of the firm and manage the green supply chain. This is a change from traditional supply chain management, which focuses on quality, cost savings, and the creation of added value. Thus, creating a corporate culture that focuses on the environment is very important to the success of GSCM and commits a competitive advantage (Harris & Crane, 2002; Zhan et al., 2018).

## **2.4. Customer Pressure**

Customer demand has been a major factor in pushing awareness of the impact of consumption on the environment to the global level and has contributed to the creation of requirements for environmental management. Customer relationships have involved collaboration in the design of products and processes, leading to the reduction of environmental impacts and eco-friendly product packaging. Partnering with clients can include publishing information on the firm's practices, on how products are designed to be environmentally friendly, and on waste management strategies (Zhu et al., 2008a; Vachon & Klassen, 2006; Lo & Leung, 2000). Thus, customers play a key role in the strategic decisions of a firm (Delmas & Montiel, 2009).

Customer demand is an issue that is critical to strategic decision making of the firm. Responding to and meeting customer satisfaction are the driving factors affecting the business of GSCM (Dubey et al., 2015; de Sousa Jabbour, de Oliveira Frascareli & Jabbour, 2015; de Sousa Jabbour et al., 2014; Jayaram & Avittathur, 2015).

### **3. Green Supply Chain Management Practices (GSCM practices)**

Because of increasing environmental awareness worldwide, environmental requirements have been implemented widely. There is pressure on firms to create environmental practices as part of their core competencies to gain a competitive advantage and avoid violating regulations (Delmas & Toffel, 2004). GSCM is associated with the production process, from raw material procurement to production to the recycling process (Green et al., 2012; Ahi & Searcy, 2013; Zhu et al., 2007), and members of the supply chain must cooperate in managing the green supply chain (Eksoz, Mansouri & Bourlakis, 2014).

The supply chain involves participation from several parties to meet the needs of customers, whether they are suppliers, transporters, warehouses, wholesalers, retailers, or the customers themselves (Eltayeb, Zailani & Ramayah, 2011). The major focus of GSCM practices is to evaluate environmental performance according to set standards, gauge product quality and environmental impact, and estimate the costs of waste from the production process (Ferrón-Vilchez & Darnall, 2016). Meanwhile, GSCM also integrates customer cooperation into environmental management. These activities help to reduce both direct and indirect impacts of products on the environment (Zhu et al., 2007; Sarkis et al., 2011).

GSCM is the integration of activities along the supply chain with environmental management. Implementation of GSCM is recognized as causing the expansion of management practices and operations. GSCM practices have 5 dimensions, internal environmental management (Klassen & Johnson, 2004; Sarkis et al., 2011; Yu et al., 2014), green purchasing, green manufacturing, green transportation (de Sousa Jabbour et al., 2014; Klassen & Johnson, 2004; Zhu et al., 2008a, 2008b), and environmental design (Green Jr et al., 2012; Zhu et al., 2008a, 2008b). A description of each element follows.

#### **3.1. Environmental Design**

Environmental design is the design of products to reduce the use of raw materials and energy throughout the supply chain. The product is designed with parts or components that can be reused, recycled, and recovered and is designed to avoid the use of hazardous materials and dangerous manufacturing processes (de Sousa Jabbour et al., 2014). Environmental design is the creation of products that are environmentally friendly by incorporating environmental considerations into the lifecycle of the product, from the purchasing of raw materials to the product's final form (Leal, Casadesús & Pasola, 2003). If customers participate in a design review, this is beneficial because the products will be recognized by even more customers (Zhu et al., 2008a, 2008b; Spicer & Johnson, 2004; Toffel, 2004; Petersen & Kumar 2009).

#### **3.2. Internal Environmental Management**

Internal environmental management is a system comprising a series of environmental policies within a firm and is meant to evaluate the impact of the firm on the environment. There is targeted planning, operations, and a review of the firm's activities, making it accountable to its environmental responsibilities to pass monitoring by auditors (Darnall, Jolley & Handfield, 2008). When GSCM is introduced into the company, the firm will perform environmentally friendly management of the business to support a green supply chain, total quality environmental management, a process of review and evaluation of environmental outcomes, as well as systemic environmental management within the firm. This can lead to the firm receiving ISO 14001 certification (Aravind & Christmann, 2011).

#### **3.3. Green Purchasing**

Green purchasing is the supply of raw materials to produce the firm's products. Green purchasing considers environmental impact (Carter et al., 2000) by using life cycle assessment when selecting products and packaging. This encourages partners to participate in product design and packaging to reduce waste in the supply chain and in product design to facilitate reusing and recycling without sacrificing the features or quality of raw materials. Green purchasing includes collaboration with, as well as assessment, auditing, and certification of, partners to achieve success in GSCM (Min & Galle, 2001; Zsidisin & Siferd, 2001).

### 3.4. Green Manufacturing

Green manufacturing refers to the process that seeks to bring the outdated and surplus assets into the reverse logistics process to restore these assets or distributor by selling materials and materials already in use, such as the sales of machines with more demanding applications, enabling firms to save costs and restore the value of the product (Green Jr et al., 2012). Moreover, this element includes cooperation in the design of the product that is environmentally friendly, clean production and environmentally friendly packaging (de Sousa Jabbour et al., 2014; Klassen & Johnson, 2004; Zhu et al., 2008a, 2008b).

### 3.5. Green Transportation

Green transportation is not only oriented to reducing environmental impact, but it also a driver in firm performance. Particularly, green transportation is related to biological, monitoring, ICT and other specific technologies that can be applied to green transportation (Jumadi & Zailani, 2010). In GSCM, green transportation is the set of actions taken and the relationship formed respond to environmental concerns regarding the distribution and transportation of the firm's good and services (Truffer & Coenen, 2012). Consequently, the importance category of transportation defined to better respond to environmental regulation is the improvement of productivity based on the efficient use of resources (Porter & Van der Linde, 1995). Nidumolu, Prahalad and Rangaswami. (2009) found that the growing importance of environmental concerns have influenced industry competitiveness, driving firms to change the way they view their activity, generally oriented to gain energy efficiency, reduce company dependence on fuels, and introduce renewable and green sources of energy (Archibugi & Iammarino, 2002; Chen, 2008).

## 4. Research Framework and Hypothesis

A review of the literature shows that factors supporting a firm's green supply chain practices and affecting performance include internal and external pressures. The factors influencing GSCM practices include top management support, competitor pressure, and customer pressure. Institutional theory expounds on changes that can occur due to pressures. That is, a firm tends to adopt green training to improve GSCM practices and firm performance, as well as to improve the influence of market scope on the relationship between GSCM practices and firm performance. Therefore, GSCM practices and green training may have an impact on firm performance.

Top management support, competitor pressure, and customer pressure play important roles in pushing traditional management practices towards environmental management practices, as well as in promoting improved efficiency in management. Zhu et al., (2013) found that top management support, competitor pressure, and customer pressure lead to positive GSCM practices and improvements in the firm's performance. This is consistent with findings by Green et al. (2012), who showed that top management support, competitor pressure, and customer pressure are critical to the success of GSCM practices (Darnall, et al., 2008; Testa & Iraldo, 2010). Zhu, Sarkis and Lai (2012) found that competitor pressure and customer pressure contribute to improving GSCM practices and firm performance.

*Hypothesis 1: There is a positive relationship between top management support and green supply chain management practices.*

*Hypothesis 2: There is a positive relationship between competitor pressure and green supply chain management practices*

*Hypothesis 3: There is a positive relationship between customer pressure support and green supply chain management practices.*

*Hypothesis 4: There is a positive relationship between green supply chain management practices and firm performance.*

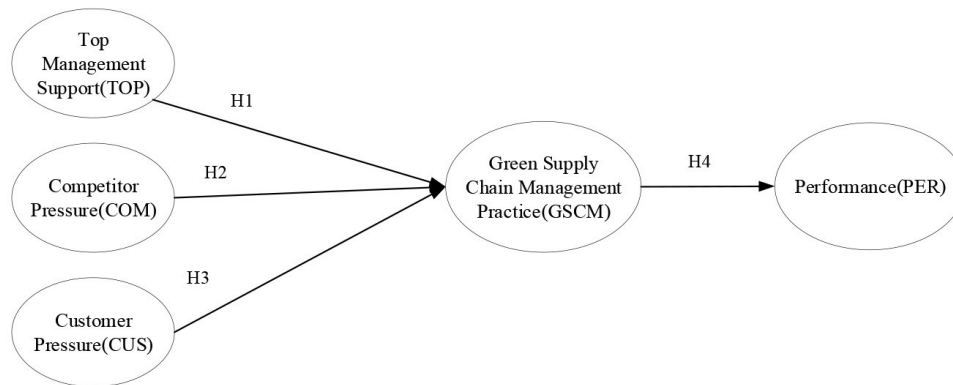


Figure 1. Conceptual Framework

## 5. Research Methods

The research population for this study are industrial firms in Thailand that have been certified with the ISO 14000 standard. The sample in this study comprises 286 firms. The response bias was checked; none was detected. Next, missing values were checked; no missing value was greater than 5%, and 286 questionnaires could be used for data analysis in the next step (Lam, Kraus & Ahearne, 2010; Homburg, Artz & Wieseke, 2012; King, Lenox & Terlaak, 2005).

## 6. Measurement

A measurement model and a structural model were used in this study. The measurement model assessed the relationship between observed variables and latent variables. However, the structural model assessed the relationship among latent variables. The variables comprised top management support (TOP), competitor pressure (COM), customer support (CUS), and firm performance (PER). All five variables were measured using the five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Green supply chain management (GSCM) practices has 5 dimensions, internal environmental management (Klassen & Johnson, 2004; Sarkis et al., 2011; Yu et al., 2014), green purchasing, green manufacturing, green transportation (de Sousa Jabbour et al., 2014; Klassen & Johnson, 2004; Zhu et al., 2008a, 2008b), and environmental design (Green Jr et al., 2012). All five variables were measured using the five-points Likert scale (1 = strongly disagree, 5 = strongly agree).

## 7. Data analysis

### 7.1. Assessment of the Measurement Models

To assess the measurement model, the reliability and validity of the construct were appraised. The indicators were used in industries; however, this study focused on firms in Thailand that have been certified with the ISO 14000 standard. Next, a repeated indicators approach was used for assessment, individual indicators alongside outer model loading, composite reliability (CR), and average variance extract (AVE). Hair et al., (2010) recommended a rule of outer loading relevance testing. For outer loading greater than 0.70, the indicator should be retained. If the loading is greater than 0.40 but less than 0.70, the impact of indicator deletion on the value of CR and AVE of the construct should be analyzed. If deletion does not increase CR or AVE, the indicator should be retained on the other site. If deletion increased CR or AVE, it should be deleted from the measurement model.

## 8. Results

### 8.1. Multicollinearity Analysis

Multicollinearity analysis using Pearson's product moment correlation was used to measure the correlation between variables. Variables should not be too closely related with other to avoid errors in the analysis. The correlation coefficient should not exceed 0.8, and a VIF value less than 5 represents an exceptional value (Hair, Black, Babin & Anderson, 2010). The results showed no exceeded value of the correlation. The data showed no multicollinearity according to Table 1.

	top	com	cus	gop	ine	gpu	gma	gtr	per
top	1								
com	.746**	1							
cus	.685**	.765**	1						
gop	.740**	.748**	.707**	1					
ine	.767**	.705**	.699**	.726**	1				
gpu	.712**	.736**	.717**	.757**	.702**	1			
gma	.685**	.712**	.662**	.751**	.722**	.695**	1		
gtr	.698**	.732**	.700**	.722**	.735**	.698**	.734**	1	
gta	.652**	.701**	.628**	.720**	.690**	.667**	.721**	.673**	
per	.626**	.634**	.619**	.661**	.635**	.638**	.604**	.715**	1
ma	.692**	.692**	.669**	.697**	.721**	.638**	.702**	.670**	.704**
VIF	3.384	3.784	3.078	3.745	3.559	3.174	3.277	3.170	-
Mean	6.184	6.013	6.014	6.098	6.097	6.048	6.003	6.028	5.869
SD	0.842	.943	.950	.940	.906	.929	.943	.876	.860
CR	0.892	.900	.877	.897	.907	.835	.893	.866	.837
AVE	.626	.618	.641	.635	.710	.627	.624	.620	.633

\*\* Correlation is significant at the 0.01 level (2-tailed).

Table 1. Correlations of the Variable and Descriptive Validity

## 8.2. Assessment of the Structure Equation Model

The aim of structural model analysis is to confirm that the conceptual framework aligns well with empirical analysis. The researcher analyzes the structural model to determine the model's consistency with empirical data and performs the model improvement using the MI (Modification index). The appropriate model comprises  $\chi^2 = 2191.379$ ,  $df = 1202.073$ ,  $p\text{-value} = 0.000$ ,  $GFI = 0.921$ ,  $AGFI = 0.923$ ,  $CFI = 0.930$ ,  $NFI = 0.926$ ,  $TLI = 0.926$ ,  $RMSEA = 0.048$ ,  $SRMR = 0.046$ . By the model fit, indices meeting the criteria that  $GFI$ ,  $AGFI$ ,  $CFI$ ,  $NFI$ ,  $TLI$  should exceed 0.90, and  $RMSEA$  and  $SRMR$  should be less than 0.05.

The results indicate a positive relationship between top management support and green supply chain management practices ( $\beta = 0.840$ ,  $p < .01$ ), a positive relationship between competitor pressure and green supply chain management practices ( $\beta = 0.862$ ,  $p < 0.01$ ), and a positive relationship between customer pressure support and green supply chain management practices ( $\beta = 0.933$ ,  $p < 0.01$ ). The results also demonstrate a positive relationship between green supply chain management practices and firm performance ( $\beta = 0.842$ ,  $p < 0.05$ ).

To sum the results of the hypothesis, the total effect, direct effect, and indirect effect are considered. Hair et al. (2010) recommend that, if the indirect effect is less than 0.08, it is not mostly of interest. The total effect in the model is displayed in Table 2.

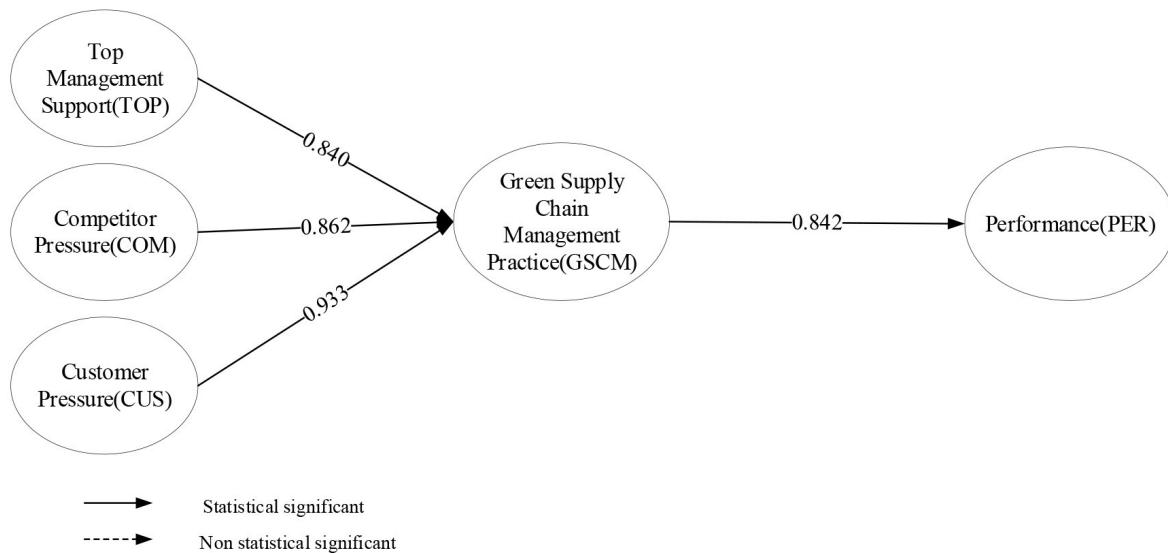
Hypothesis	Hypothesized Relationship	Estimate	Std. Error	t-value	Pr(> t )	R2	Result
H1	TOP -> GSCM	.840	.071	11.902	.000	.778	Supported
H2	COM -> GSCM	.862	.069	12.403	.000	.817	Supported
H3	CUS -> GSCM	.933	.075	12.418	.000	.757	Supported
H4	GSCM -> PER	.842	.113	7.467	.000	.730	Supported

Table 2. Result of Hypotheses



	GSCM			PER		
	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect
TOP	.840	-	.840	-	.708	.708
COM	.862	-	.862	-	.726	.726
CUS	.933	-	.933	-	.785	.785
GTA	.902	-	.902	.029	.760	.789

Table 3. Direct Effect, Indirec



In this study, the impact of the variables was examined. Figure 2. explains that, in a particular path relationship, top management support (TOP), competitor pressure (COM), and customer pressure (CUS) have positive effects on green supply chain management practices (GSCM). In turn, green supply chain management (GSCM) practices have a positive effect on firm performance.

Accordingly, the loading of the latent variable green supply chain management (GSCM) practices is obtained from the 3 observed variables. Customer pressure (CUS) is the most important, followed by competitor pressure (COM) and top management support (TOP). Performance (PER) is obtained from green supply chain management (GSCM) practices.

The hypothesized and non-hypothesized relationships explain the best model for the present study. Figure 2 shows the suitable model that contributed to the present research. Isomorphism institutional theory is influentially and dominantly discussed to understand green supply chain management (Sarkis et al., 2011; Lai et al., 2006). Isomorphism institutional theory describes the pressures that influence a firm to make changes. The theory can be applied to understand how firms can develop implementation strategies for success. In the context of GSCM, members of a supply chain must operate to meet customer requirements and regulations set by the government (Zailani et al., 2012; Carter et al., 2000; Rivera, 2004), implying that firms are pressured both internally and externally. Founders of the theory, DiMaggio and Powell (1983), explained the three forms of institutional pressure (Sarkis et al., 2011; Lai et al., 2006): coercive pressure, mimetic pressures, and normative pressure.

Different transformative pressures can lead to a firm coping in various ways. Those within an organization may be reluctant to transform, but the firm will inevitably need to follow rules and regulations. Most firms become imitators by introducing practices similar to other firms, as this method has the advantage of not requiring a long learning period if the practices are suitable and transferable. However, a limitation of this approach is that each firm has a different culture. There is a need for improved methods of operation that are appropriate to each

specific culture, and such methods cannot be solely imitated. When changing from the norm, if a practice cannot be adapted to the culture of the firm appropriately, the change may not succeed. Compliance practices or membership in professional societies that have been created out of compliance will be accepted in professional circles and associations. However, if conditions are not traditional or sufficiently flexible or if there is a lack of development opportunities, development of the firm in the future and GSCM as a result of all three forms of pressure may be hindered.

## 9. Discussion

For most manufacturers, particularly for those in developing countries such as Thailand, a major objective is to avert economic risk due to punishment from any environmentally oriented misconduct. Alternatively, proactive firms tend to seek improvement in economic performance through environmental practice such as GSCM practices. Overall, the empirical results show the relationship between top management support (TOP), competitor pressure (COM), customer pressure (CUS), GSCM practices (GSCM), to firm's performance (PER) exist, supporting development of a proactive stance on GSCM practices of firm.

### 9.1. Isomorphism institutional pressure and GSCM practices

This study shows that isomorphism institutional pressure and top management support generally relate to GSCM practices. Such results may highlight pressure for greening and which more efforts are needed for GSCM practices. GSCM practices generally require more effort due to need for collaborating with customer and competitor. Thailand manufacturers are increasingly confronted with isomorphism institutional pressure to implement GSCM practices (Zhu et al., 2013).

The findings indicate that top management support relates to GSCM practices. This result is not surprising since, the product life cycle, most of the environmental impact of product and processes are locked into the product at product design stage when product materials are selected and performance is largely determined (Lewis & Harvey, 2001). Top management is a helpful, emerging tool to improve environmental performance by addressing function of product while minimizing life cycle environmental impacts. Emission reduction and energy saving has become an international strategy to achieve sustainable development. To decrease energy consumption, government has organized energy audits for manufacturers consuming excessive energy, and forced them to re-design their technologies and products (Zhu et al., 2008b). The success of GSCM practices requires top management support as well as isomorphism institutional pressure in the supply chain as a whole (Lewis & Harvey, 2001). The finding (see Figure 2) shows that top management support may affect firm's performance through GSCM practices. This result implies product designers and developers are playing an important role, where cross-functional collaboration and green supply chain relationships should be encouraged.

The results show further that environmental management usually requires greater organizational efforts for improvement since firms need to cooperate and develop relationships with their suppliers and customers. Due to these requirements, top management must be committed and supported (Bansal, 2003). Support from top management is key to successful improvement of environmental practices (Carter & Carter, 1998). Positive relationship between top management support and GSCM practices were found. Communication between top management and partners is also important in developing a successful firm and environment relationship (Apsan, 2000).

To promote cooperation for addressing regulatory among Thailand manufacturers, the Thailand government may establish supporting systems explaining how collaborations actually aid them in meeting regulation.

### 9.2. GSCM and performance

GSCM practices can lead to performance from relationship between GSCM practices and performance. The empirical results that positive relationship between GSCM practices and performance (González-Benito & González-Benito, 2006). Isomorphism institutional pressure and top management support have indirect affect with performance. Top management requires capital investment while environmental operation such as decreases in expenses for energy

consumption, and waste treatment. It is necessary to encourage its improvement by firms due to the major role of top management support in decreasing environmental burdens over the product life cycle (Zhu et al., 2008a, 2008b).

Customer pressure and competitor pressure have indirect affect with performance. The possible relationships exist for performance improvement through customer collaboration and competitive drivers. Performance is being reaped in long term profitability and sale performance (Bowen et al., 2006). Performance may be achieved after environmental improvements have occurred. Thus, a potential indirect path to achieve performance for Thailand manufacturers can be originated through isomorphism institutional pressure such as customer pressure and competitor pressure. With improving environmental image and operational performance, Thailand manufacturers can gain performance improvement in the longer term.

## 10. Conclusions and future research

In general, structural relationships exist among isomorphism institutional pressure, top management support, GSCM practices, and performance. The isomorphism institutional pressure for environmental concern has driven Thailand manufacturers to implement GSCM practices. The results suggest that GSCM practices do significantly affect performance by improved environmental practices. The isomorphism institutional pressure related to GSCM practices. Though top management may require increased environmental investment, it can be a resource for firms to gain economic benefit. Further, top management brings collaboration with customers and suppliers which can indirectly increase performance through environmental improvement.

Due to the requirement from customer pressure and competitor pressure, Thailand manufacturers have implemented GSCM practices. Such practices have directly brought performance improvement.

This study provides implication for both policy makers and manufacturers. It also opens research avenues for GSCM, environmental management, and isomorphism institutional theory. For implications, firms are given some insights into how they can improve performance from implementing GSCM. For example, firms need to understand relationship between isomorphism institutional pressure, top management support, GSCM practices, and performance and ensure that coordination of their activities to arrive at better environmental improvement for performance gain to be achieved. Policy makers and regulators can understand how to motivate firms to implement GSCM. Particularly, isomorphism institutional pressure is affecting improvement of GSCM in manufacturing. It is useful the Thailand government promotes GSCM by creating an awareness of the benefits. GSCM can help to alleviate the question of the followers about implementing GSCM and decrease their risk association with the environmental adoption.

## 11. Limitations and Future Research Directions

Limitation in the research exist, but limitations also provide directions and opportunities for future research

First, the common hypothesizes do not provide insight into all the relationships that warrant additional inspection. For example, one relationship is that government support encourages GSCM practices and firm performance. Second, Thailand manufacturers have experiences pressures from foreign customers and competitors but they have opportunities to learn from them to better improvement GSCM practices. The diffusion of environmental management from developed countries to developing countries such as Thailand should receive investigation and attention. It is worthwhile to explore the diffusion covering the green supply chain in related factor as international companies (Wong, Lai, Lun & Cheng, 2012).

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