Green Supply Chain Practices on Corporate Sustainability Performance: An Empirical Study

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ABSTRACT
The purpose of this paper is to validate the direct and intervening effects of internal and external Green Supply Chain Practices on Corporate Sustainability Performance. Further, the study tests for the moderating effect of Institutional pressures. The study uses multivariate casual modeling approach named Structural Equation Modeling, in order to validate the linkages among the latent constructs. Top and Middle level managerial workforce of the select Indian pharmaceutical companies are considered as the respondents for this empirical investigation, using simple random sampling method. The study uses adapted scales from the past researchers and with a response rate of 72.61 %, the author's tested the formulated hypotheses and validate the proposed research framework. The study reveals that both the internal and external Green Supply Chain Practices significantly influences the Corporate Sustainability Performance with respect to the Pharmaceutical companies in India. Furthermore, Institutional Pressures such as coercive, normative and mimetic positively moderates the direct relationship between the two central latent constructs. The study offers implications for both practitioners and academicians. Given the complex regulatory and competitive norms, which are enveloping the firm's business environment, Green Supply Chain Practices evolved as a significant predictor of Corporate Sustainability. Cross sectional research design, simple random sampling and select Indian Pharmaceutical companies are few of the limitations of the current study. Very few studies have focused on the importance of Green Supply Chain Practices with respect to the Indian Pharmaceutical companies and its managerial workforce and also the moderating variable considered as part of the study has significantly contributed to the academic literature of Environmental Management and Supply Chain Management.

Keywords: Green Supply Chain Practices, Structural Equation Modeling, Indian Pharmaceutical Companies, Corporate Sustainability Performance, Institutional Pressures

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1.0 INTRODUCTION

Modern day manufacturers are adopting various environmental practices as there are strict environmental regulations and for attaining competitive gains, manufacturers are focusing towards these environmental practices. Manufacturers in collaboration with their supply chain partners, suppliers and customers can be into a superior competitive place and can be into a better position if they execute environmental management in a cost effective manner (Vachon and Klassen, 2006).

If organizations collaboratively work and function so it will help in reducing environmental pressures and it will lead in reducing wastes and will help in improving supply chain functions (Seuring and Muller, 2008). Green supply chain management (GSCM) can be seen as a popular prospect for manufacturers in supply chain management as an approach towards reducing their environmental damages and for environmental management, and can also be seen for achieving operational (Zhu *et al.*,2008,2012a,2012b; Svensson,2007).Enterprises these days are required to promote green supply chain management (GSCM) practices ,as stakeholders and institutional pressures are compelling enterprises to pursue green supply chain management(Tata *et al.*, 2010).Government and regulatory institutional factors are key factors for motivating the execution of external GSCM practices (Gonzalez-Benito and Gonzalez-Benito, 2006).Commercial competitive pressures are important for organizations to pursue in-house eco-design (Chung and Wee, 2008).Other studies have examined relationships of institutional pressure, mainly regulatory pressure along with environmental management practices such as internal GSCM practice on ISO14001 certification (Quazi *et al.*, 2001) and external GSCM practice on investment recovery (Mitra, 2009).This kind of institution investigation is a systematic analysis and approach towards promoting proactive environmental management practices such as green supply chain management (Beskovnik and Jakomin, 2010).

2.0 LITERATURE REVIEW

2.1 Internal and External Green Supply Chain Practices

GSCM can be broadly classified as internal and external practices and institutional pressures including the normative, coercive and mimetic practices can drive practice of both. In this paper, internal GSCM practices are the ones that can be implemented and managed independently by individual manufacturers. For external GSCM, such as supplier's co-ordination is required with external stakeholders or partners i.e. suppliers and customers. Environmental, operational and economic performance improvements can be seen in both internal and external GSCM practice. (Seuring and Muller, 2008).Waste reduction and resources conservation can result in environmental performance which will result in improvement in economic performance. Decreased inventory levels and improved product quality in environmentally based supply chain can also contribute in economic performance improvement (Zhu *et al.,* 2005).This paper introduces to the different myriad relationship and elements for internal and external GSCM and the performance outcomes by manufacturing enterprises.

2.2 Institutional Pressures

In recent years institutional theory's role can be prominently seen the fields of OM and SCM (kauppi, 2013). According to Scott (2008), institutional theories suggest that external forces are important for encouraging enterprises for practicing similar strategic practices. According to institutional theory organizations are not only making profits but they also realize the importance of social authority (Suchman, 1995). Economic variant and social variant are the two main forms of institutional theory (Ketokivi and Schroeder, 2004). Mechanisms, which lead towards institutional isomorphism, are coercive, mimetic and normative (DiMaggio and Powell, 1983). The coercive mechanism includes of formal and informal pressures, which are created on the firm by other firms, and also the pressure, which is created by societal expectations (Kauppi, 2013; DiMaggio and Powell, 1983).

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Here, coercive pressure, normative pressure and mimetic pressure are the three dimensions shaping institutional theory (DiMaggio and Powell, 1983). Normative isomorphism is a result of professionalization. "Members of particular profession define the pressures, challenges and struggle of that specific occupation and give a guideline to the future professionals through legality" (Liang *et al.*, 2007). Mimetic isomorphism takes place when one organization tries to mimic the other organization and tries following the other organization, this could only happen when one organization is not sure about its goals, vision, environmental uncertainty or technology is not well understood (Di Maggio and Powell,1983; Liang *et al.*, 2007).

Coercive Isomorphism takes place when there is external pressure by stakeholders (e.g. buyers, government agencies, regulatory norms etc.) and it also takes place when there are varied expectations from society (DiMaggio and Powell, 1983).

2.3 Corporate Sustainability Performance

The concept of corporate sustainability performance can be understood rationally as it is difficult to express it in operational terms (Labuschagne *et al.,* 2005). Understanding the goals of CSP, companies need to understand the sustainability of their present practices that how their current practices and their direction will help them in achieving their goals. There have been various analysis regarding CSP i.e. Porter (1985) analyzed the importance of financial aspects in terms of profitability and economic growth, Peteraf (1993) analyzed economic performance, growth and long-term profitability in terms of CSP and other works i.e. Chan (2005) and Christmann (2000) analyzed CSP through impact of environmental management on corporate and Brown and Dacin (1997) studied in depth the effect of social responsibility on enterprises focused more on the ethical aspects of CSP.

3. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

3.1 Internal and External Green Supply Chain Practices and Corporate Sustainability Performance

New environmental practices help in exploring new opportunities for enterprises as that helps competition for adding new values and core values to business programs (Hansmann and Krogger, 2001; Wagner and Schaltegger, 2006; Lai *et al.*, 2010).Internal and external GSCM has a positive relationship with an organization's economic performance and this relationship is beneficial for both. (Gil *et al.*, 2001; Montabon *et al.*, 2007 ; Rao and Holt, 2005; Wong *et al.*, 2012b). Sustainable management practices will bring significant growth in sales, return on assets, profit before taxation and cash flows from operations (Ameer and Othman, 2012). Environmental performance can be improved with internal and external GSCM (Frosch, 1994). Close bonds such as suppliers and customers and close relationships between suppliers and customers contribute in management strategies and all these factors help in contributing in improving environmental performance(Florida,1996;Gunasekaran *et al.*, 2008). UK researchers, Haji-Gazali and Simula (1994), portrayed that on average consumers paid approximately 13% more for green products (Varangis *et al.*, 1995). Economic performance can be improved with customer satisfaction and corporate reputation by practicing environmental management (Tang *et al.*, 2012). We posit that "Internal Supply Chain practices have a positive influence on Corporate Sustainability Performance."

3.2 Internal and External Green Supply Chain Practices and Institutional Pressures

There are many external and internal pressures on manufacturers for adopting environmental management practices and literature has also identified many groups which exert pressure for adoption of Internal and external GSCM and other environmental management practices. Chinese consumers especially youngsters have developed awareness about green products (Liu *et al.*, 2009; Lo and Leung, 2000). According to Institutional theory, a firm will always observe the actions of other firm. For environmental protection and in view of regulating, corporate social responsibility is

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necessary for legitimacy (Boiral, 2007). There can be situations when there could be positive, negative or no relationship may exist between various pressures and in adoption of specific GSCM practices. We posit that "External Supply Chain practices have a positive influence on Corporate Sustainability Performance."

3.3 Internal and External Green Supply Chain Practices, Institutional Pressures and Corporate Sustainability Performance
In Normative Isomorphic pressures, for example, it is perceived that manufactures should take organizational routines which result to organizational legitimacy. Coercive institutional drivers may force manufacturers to adopt GSCM practices. Multi institutional isomorphic pressures may encourage competitors to adopt GSCM practices for improving competitiveness.

Environmental pressures help in adopting GSCM practices. Market regulations, environment pressures help an organization to adopt environmental practices. These practices help in growth of the firm. However, according to institutional theory perspective institutional pressures help in the growth of the firm and help in adopting environmental practices. We posit that "Institutional Pressures act as a moderator between Green Supply Chain practices and Corporate Sustainability Performance."

Fig. 1: Conceptual Framwork
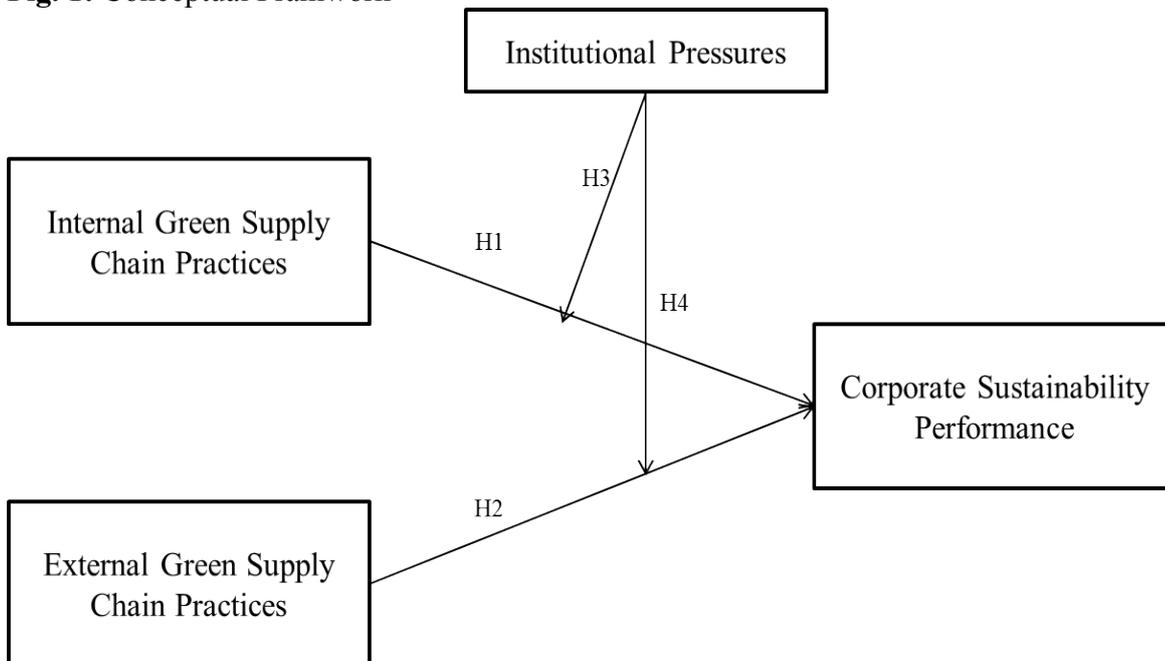
Survey approach was used for the data collection and is also the most favored tool among the quantitative researchers (Fowler, 2009; Amayah, 2013). Survey research is most relevant to the unit of analysis if the study, which is the managerial workforce among the select pharmaceutical companies in India (Dwivedi, 2005). Random sampling technique from the class of probabilistic sampling techniques is used to identity the respondents. After data screening procedure, a total of 342 responses with the response rate of 64.75% were considered for subsequent analysis. At the outset of analysis, the sample's demographic profile was calculated. It comprised of gender, age and education, job profile in the organization and tenure in the current organization. The demographic profile of samples helps to understand that respondents are appropriate for the study as per their job profile, experience and education. It also reveals that data is normally distributed as per respondents' age, gender, job profile, experience and education. Further, it highlights that samples do not take account of high level of polarization. The tools used in exploring the sample's

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demographic profile are tables for tabulated description of profile, charts and graphs for graphical description and discussions for the basis for a clearer picture.

Descriptive statistics were computed to examine demographic and professional characteristics of the 342 respondents. Their managers' characteristics were examined as well. The statistical software SPSS 20.0 was used for the descriptive statistics. Demographic characteristics of the respondents are presented in Table 1.

Table 1: Summary of Demographic Characteristics

Demographics	Employees' details $n = 342$	Frequencies	Percentages (%)
Gender	Male	197	57.60%
	Female	145	42.39%
Age	Less than 25 years	59	17.25%
	25-30 years	102	29.82%
	31-35 years	82	23.97%
	36-40 years	56	16.37%
	41-45 years	29	8.4%
	Above 45 years	14	4.09%
Experience	1-5 years	91	26.60%
	6-10	84	24.56%
	11-15	88	25.73%
	16-20	69	20.17%
	More than 20 years	10	2.92%
Education	Graduate	182	53.21%
	Post graduate	129	37.71%
	Any other	31	9.06%

Table 1 shows the gender wise distribution of respondents. Overall, the final sample comprised slightly more male 254 (63.98%), than females 143 (36.02%). With this information, it is presumed that, lower percentage of female employees than male employees is representative of Indian managerial representation (Baral & Bhargava, 2010).

The present study uses the widely acknowledged multivariate causal modeling technique named as two stage approach, suggested by Anderson and Gerbing (1998). The two stages are Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) respectively. CFA confirms the extracted relationships by comparing the variance co variance matrix from both the sample and model. It just validates the model's measurement. Both the structure model and measurement model are used to build the second stage SEM, which is a combination of CFA, multiple regression and Path Analysis (Hussey & Eagan, 2007). Hierarchical Multiple Regression Analysis was used to test the moderating effects of the latent construct Institutional Pressures.

Common Method Bias (CMB) is the degree to which the systematic error variance influences the study variables (Richardson *et al.,* 2009). CMB is also termed as Common Method Variance, which is measured by Harman's single factor approach (Podsakoff and Organ, 1986). Principal Component Analysis was used on all the items from the four latent constructs and resulted a unrotated factor structure with 4 distinct factors that cumulative variance accounted for 66.42% of the total variance. The first factor enveloped mere 21% of the total variance, which lead to the confirmation regarding the absence of CMB in the response set.

Table 2: Descriptive Statistics

S.no	Constructs	Mean	S.D.	1	2	3	4
1	Internal Green Supply Chain Practices	5.27	0.742	*0.75*			
2	External Green Supply Chain Practices	5.84	0.864	.422**	*0.79*		
3	Corporate Sustainability Performance	5.61	0.911	.367**	.513**	*0.83*	
4	Institutional Pressures	5.92	0.528	.521**	.615**	.351*	*0.88*

Note: * $p<0.05$ and ** $p<0.01$

4.0 FINDINGS

A well-established multiple-item seven-point Likert scale spanning from 1 ("strongly disagree") to 7 ("strongly agree") was used to measure the variables of the study. The descriptive statistics for all measurements are shown in Table 1. Four items of Internal Supply Chain practices and three items of External Supply Chain practices were adapted based on existing literature on GSCM (Zhu and Cote, 2002; Zhu and Sarkis, 2004; Zsidisin and Hendrick, 1998). Six items of Institutional pressures were adopted from DiMaggio and Powell (1983), Zhu and Sarkis (2007) and Kauppi (2013). Six items of Corporate Sustainability Performance was adapted from the study conducted by Zhu *et al.*, (2005).

4.1 Measurement Model Results

Measurement model is the initial step to perform multivariate causal modeling of the two-stage approach. Reliability, discriminant validity and convergent validity are the key parameters, which complete a measurement model (Hair et al., 2006). Reliability is a measure of consistency in the responses given by the respondents with the acceptable limit ranging from 0.7 to 1 (Hair et al., 2006). Reliability values of all the four latent constructs were measured by Cronbach's alpha by benchmarking the loading (greater than or equal to 0.7) of each item with the respective construct. It was found that all the four latent constructs exhibited a reliability of more than or equal to 0.7 by meeting the acceptance limit (Hair et al. 2006) and the corresponding values are represented in Table 2. Discriminant validity is the degree of the distinctiveness between the constructs, which is measured by the parameters (Hulland, 1999, Fornell and Larcker 1981) of cross loadings, and Average Variance Extracted (AVE). Each item of a respective construct is needed to have a greater loading compared to the other constructs and the square root of the AVE values ought to be larger than the inter construct correlations (Fornell and Larcker, 1981). Convergent validity is the second type of testing for the construct validity, which is measured solely by the Average Variance Extracted (AVE) values. An AVE value above or equal to 0.5 indicates that the items of a construct are converged, i.e. on an average all the constructs in the proposed research model at least explain more than or equal to 50% of its items (Hair et al., 2006). By comparing table 2 and 3, it can be observed that that the values of Average Variance Extracted (AVE) are more than or equal to 0.5 for all the four corresponding latent constructs. Thus, the measurement has adequate convergent validity. Furthermore, the square root of the AVE values of all constructs is found to be more than 0.8, which indicates that the measurement has good discriminant validity. Table 3 represents the summary of the results obtained from the Confirmatory Factor Analysis (CFA). Thus the response set of the present study shows good reliability and validity characteristics.

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Table 3: Results of CFA

Latent Constructs	Indicators	Loadings	Reliability	AVE	AVE Square Root
Internal Green Supply Chain Practices	IGSCP1	0.76	0.84	0.57	0.75
	IGSCP2	0.82			
	IGSCP3	0.84			
	IGSCP4	0.71			
External Green Supply Chain Practices	EGSCP1	0.77	0.78	0.63	0.79
	EGSCP2	0.84			
	EGSCP3	0.75			
Institutional Pressures	MP1	0.78	0.88	0.54	0.73
	MP2	0.85			
	RP1	0.94			
	RP2	0.91			
	CP1	0.82			
	CP2	0.72			
Corporate Social Performance	FP1	0.74	0.81	0.59	0.76
	FP2	0.87			
	FP3	0.91			
	FP4	0.89			
	SP1	0.82			
	SP2	0.83			
	SP3	0.71			
	SP4	0.76			
	EP1	0.85			
	EP2	0.89			
	EP3	0.92			
	EP4	0.95			
	EP5	0.86			

4.2 Structural Model Results

The structural mediated model and the respective fit indices are represented as part of table 4 and Fig 2. The GFI, NFI, NNFI, AGFI and RMR are 0.91, 0.85, 0.82, 0.73 and 0.072 respectively. All the fit indices and the $\chi2$/df values are in the acceptable range as given by Hair et al., (2006).

Table 4: Fit Indices of Structural

Structure Model	$\chi2$	df	p	$\chi2$/ df	NFI	CFI	GFI	AGFI	RMR
Hypothesized Model	716.74	238	<0.01	3.01	0.85	0.91	0.91	0.73	0.072

The moderating effect of institutional pressures on the relation between Green Supply Chain practices and Corporate Sustainability Performance is conducted using Hierarchical Regression Analysis (Hair *et al*., 2006). The analyses were performed individually to both internal and external

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green supply chain practices and are mentioned as part of Table 5 and 6. The results of the analysis indicate that institutional pressures act as a sign cant moderator.

Table 5: Moderating effect of IP on IGSCP and CSP

Variables	B	SE	CSP			
	B	SE	Change in R^2	R^2	df1,df2	F
Step1: Controls				0.06	6, 192	1.853**
Age	0.07	0.12				
Gender	0.28	0.15				
Step2: Main Effects			0.48**	0.53	11, 194	42.29**
IGSCP	0.42	0.13**				
IP	0.27	0.09**				
Step3: Interaction			0.05	0.56	13, 196	38. 15**
EGSCP * IP	0.13	0.07*				

Note: * $p<0.05$ and ** $p<0.01$

Table 6: Moderating effect of IP on EGSCP and CSP

Variables	B	SE	CSP			
	B	SE	Change in R^2	R^2	df1,df2	F
Step1: Controls				0.06	6, 192	1.853**
Age	0.07	0.12				
Gender	0.28	0.15				
Step2: Main Effects			0.42**	0.48	8, 190	36.57**
EGSCP	0.28	0.08**				
IP	0.26	0.06**				
Step3: Interaction			0.02	0.51	9, 189	33. 41**
EGSCP * IP	0.07	0.05*				

Note: * $p<0.05$ and ** $p<0.01$

The summary results of the hypotheses are mentioned as part of Table 7 along with the p-value, standard error, standardized estimate and the regression coefficient.

Table 7: Results of Hypotheses

S.no	Hypothesis	Independent Variable	Dependent Variable	Standardized Estimate	S.E.	t-value	p-value	Result
1	H1	IGSCP	CSP	0.32	0.248	4.392	0.002	Supported
2	H2	EGSCP	CSP	0.28	0.174	3.165	0.000	Supported
3	H3a	IGSCP*IP	CSP	0.11	0.07	2.114	0.000	Supported
4	H3b	EGSCP*IP	CSP	0.07	0.05	2.326	0.000	Supported

4.3 Discussion
The key concern for most of the pharmaceutical companies in the developing economy context like India is to minimize the economic risk due to environmentally oriented penalties. In order to achieve this, proactive strategies are to be formulated through Green Supply Chain Management Practices. Above all, the empirical results shown by the study validates the linkage between Internal

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and External Green Supply Chain practices, Corporate Sustainability Performance and Institutional Pressures. The results of the study underline that Internal and External Green Supply Chain practices significantly influence the Corporate Sustainability Performance of a firm and this effect was found to be more in the presence of Institutional Pressures, which is acting as a moderator. The moderating effect of Institutional Pressures was found out be more on Internal Supply Chain practices than External. As external supply chain factors require more time and effort to deal with several customers and suppliers. Zhu et al., (2010) proposed that, most of the companies in developed economic context, have implemented internal green supply chain practices than external, in order to meet the regulations of their respective country. The normative, coercive and mimetic pressures are anchoring the growth story of many pharmaceutical companies (Zhu et al., 2012b). The study considered Corporate Sustainability Performance as a three pronged construct such as economic performance, societal performance and environmental performance (Lewis and Harvey, 2001). The results showcased that both internal and external green supply chain practices have significant impact on the three sustainability performance indicators of the firm. Out of the three performances, environmental performance is observed to be crucial and requires great efforts to achieve, because of the dependency on manufacturers, suppliers and customers. Furthermore, the commitment and support of top and middle level management make it easy to maintain the environmental values (Bansal, 2003; Carter et al., 1998) and is empirically validated by Bowen et al., (2001). The communication between the three levels of management in the process achieving environmental excellence is further highlighted in the study conducted by (Apsan, 2000). It is observed both from the study and literature that few of the regulatory pressures more externally oriented, for instance customer collaboration and can be very much new to the organization. In that case, firms tend to focus on internal activities till completely understand the regulatory policy and then try to sort the external issues. Green supply chain practices impact the economic performance of a firm in two broad ways. One relationship is the direct one and the second is through environmental and operational performance. Further, it is empirically verified that proactive environmental management would drive economic performance of firm by compromising the other societal and operational performance (Gonzalez-Benito and Gonzalez-Benito, 2005). Inline, Bowen *et al.*, (2001) also stated that economic performance couldn't be reaped short term and it takes own course to achieve the mark by balancing on the other two indicators.

5.0 CONCLUSION

The study explained the structural relationships that exist between Green Internal and External Supply Chain Practices with Corporate Sustainability Performance. The study also validates that institutional pressures play a vital role in this relationship and have driven the Indian pharmaceutical setups to practice Green supply chain practices. The study suggests practical implication for the academicians and practitioners and especially to manufactures and policy makers. It further creates a niche for the future research on green supply chain practices, environmental management and organizational theory. The key managerial implication from the current study is the ways in which economic performance of the firm could be improved by channelizing the green supply chain practices and the corresponding balancing between environmental and operational performance. Policy makers could find ways to motivate the manufacturers with respect to mimetic and normative forces in order to implement green supply chain practices. As every research suffers from few limitations, this study is no exception to it. The authors believe that the limitations of this study give away various opportunities and future research avenues. The hypotheses presented in this study do not capture the nuanced relationships and insight. Secondly, there is less discussion on the relationship between each of the dimension of the latent construct towards the other. For instance, the effect of coercive pressure on the economic or environmental performance is very less explained. Future studies could replicate this linkage by choosing different sectors like shipping and transport logistics (Wong *et al.*, 2012a) with different culture and large samples. A more dynamic longitudinal study with the existing linkage rather than

the cross sectional design and comparison of the results could also be made. The idea of sustainability needs to be inflicted gradually through the departments and employees rather than a sudden enforcement. The sustainability strategy should be aligned with core business strategy, in order to build effective and efficient organizations. Inline to this, future researchers could study the concept of Green Supply Chain practices from the perspective of organizational overall growth story.

REFERENCE

Ameer, R., Othman, R. (2012). "Sustainability practices and corporate financial performance: a study based on the top global corporations." *Journal of Business Ethics* **108** (1), 61–79.

Beškovnik, B., & Jakomin, L. (2010). "Challenges of green logistics in Southeast Europe." *PROMET-Traffic&Transportation*, **22**(2), 147-155.

Brown, T. J., & Dacin, P. A. (1997). The company and the product: Corporate associations and consumer product responses. *The Journal of Marketing*, 68-84.

Chan, R. Y. (2005)." Does the natural-resource-based view of the firm apply in an emerging economy? A survey of foreign invested enterprises in China." *Journal of Management Studies*, **42**(3), 625-672.

Christmann, P. (2000). "Effects of "best practices" of environmental management on cost advantage: The role of complementary assets." *Academy of Management Journal*, **43**(4), 663-680.

Chung, C. J., & Wee, H. M. (2008). "Green-component life-cycle value on design and reverse manufacturing in semi-closed supply chain." *International Journal of Production Economics*, **113**(2), 528-545.

DiMaggio, P., & Powell, W. W. (1983). "The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields." *American Sociological Review*, **48**(2), 147-160.

Fornell, C., & Larcker, D. F. (1981). "Structural equation models with unobservable variables and measurement error: Algebra and statistics." *Journal of Marketing Research*, 382-388.

González-Benito, J., & González-Benito, Ó. (2006). "The role of stakeholder pressure and managerial values in the implementation of environmental logistics practices." *International Journal of Production Research*, **44**(7), 1353-1373.

Hair Jr, J. F. (2006). Black, W.C. Babin, B.J.Anderson, RE & Tatham, RL (2006): Multivariate Data Analysis. *Auflage, Upper Saddle River*.

Hansmann, K.W., Kroger, C., 2001. Environmental management policies. In: Sarkis, J. (Ed.), Green Manufacturing and Operations: From Design to Delivery and Back. Greenleaf Publishing. Sheffield, UK, pp. 192–204.

Hulland, J. (1999). "Use of partial least squares (PLS) in strategic management research: A review of four recent studies." *Strategic Management Journal*, 195-204.

Kauppi, K. (2013). "Extending the use of institutional theory in operations and supply chain management research: Review and research suggestions." *International Journal of Operations & Production Management*, **33**(10), 1318-1345.

Kauppi, K. (2013). Extending the use of institutional theory in operations and supply chain management research: Review and research suggestions. *International Journal of Operations & Production Management*, *33*(10), 1318-1345.

Ketokivi, M. A., & Schroeder, R. G. (2004). "Strategic, structural contingency and institutional explanations in the adoption of innovative manufacturing practices." *Journal of Operations Management*, **22**(1), 63-89.

Labuschagne, C., Brent, A. C., & Van Erck, R. P. (2005). "Assessing the sustainability performances of industries." *Journal of Cleaner Production*, **13**(4), 373-385.

Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). "Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management." *MIS Quarterly*, 59-87.

Mitra, S., 2009. "Analysis of a two-echelon inventory system with returns." Omega—International. *Journal of Management Science* **37** (1), 106–115.

Peteraf, M. A. (1993). "The cornerstones of competitive advantage: a resource-based view." *Strategic Management Journal*, **14**(3), 179-191.

Podsakoff, P. M., & Organ, D. W. (1986). "Self-reports in organizational research: Problems and prospects." *Journal of Management*, **12**(4), 531-544.

Quazi, H.A., Khoo, Y.K., Tan, C.M., Wong, P.S., 2001. "Motivation for ISO 14000 certification: development of a predictive model." *Omega—International Journal of Management Science* **29**(6), 525–542.

Rao, P., & Holt, D. (2005). "Do green supply chains lead to competitiveness and economic performance?" *International Journal of Operations & Production Management*, **25**(9), 898-916.

Richardson, H. A., Simmering, M. J., & Sturman, M. C. (2009). "A tale of three perspectives: Examining post hoc statistical techniques for detection and correction of common method variance." *Organizational Research Methods*.

Scott, W. R. (2008). "Approaching adulthood: the maturing of institutional theory." *Theory and Society*, *37*(5), 427.

Seuring, S., & Müller, M. (2008). "From a literature review to a conceptual framework for sustainable supply chain management." *Journal of Cleaner Production*, **16**(15), 1699-1710.

Suchman, M. C. (1995). "Managing legitimacy: Strategic and institutional approaches." *Academy of Management Review*, **20**(3), 571-610.

Svensson, G. (2007). "Aspects of sustainable supply chain management (SSCM): conceptual framework and empirical example." *Supply Chain Management: An International Journal*, **12**(4), 262-266.

Titi Amayah, A. (2013). "Determinants of knowledge sharing in a public sector organization." *Journal of Knowledge Management*, **17**(3), 454-471.

Vachon, S., & Klassen, R. D. (2006). Green project partnership in the supply chain: the case of the package printing industry. *Journal of Cleaner Production*, **14**(6), 661-671.

Zhu, Q., & Cote, R. P. (2004). "Integrating green supply chain management into an embryonic eco-industrial development: a case study of the Guitang Group." *Journal of Cleaner Production*, **12**(8), 1025-1035.

Zhu, Q., & Sarkis, J. (2004). "Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises." *Journal of Operations Management*, **22**(3), 265-289.

Zhu, Q., Sarkis, J., & Lai, K. H. (2007). "Green supply chain management: pressures, practices and performance within the Chinese automobile industry." *Journal of Cleaner Production*, **15**(11), 1041-1052.

Zhu, Q., Sarkis, J., & Lai, K. H. (2012). "Examining the effects of green supply chain management practices and their mediations on performance improvements." *International journal of production research*, **50**(5), 1377-1394.

Zhu, Q., Sarkis, J., & Lai, K. H. (2012). "Green supply chain management innovation diffusion and its relationship to organizational improvement: An ecological modernization perspective." *Journal of Engineering and Technology Management*, **29**(1), 168-185.

Zhu, X., Hill, R. A., & Nishiyama, A. (2008). "NG2 cells generate oligodendrocytes and gray matter astrocytes in the spinal cord." *Neuron Glia biology*, **4**(01), 19-26.

Zsidisin, G. A., & Hendrick, T. E. (1998). "Purchasing's involvement in environmental issues: a multi-country perspective." *Industrial Management & Data Systems*, **98**(7), 313-320.