
**THE IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT
PRACTICES ON PERFORMANCE:
MODERATING ROLE OF INSTITUTIONAL PRESSURE WITH
MEDIATING EFFECT OF GREEN INNOVATION**

**Muhammad Nouman SHAFIQUE¹,
Muhammad Shahid ASGHAR², Haji RAHMAN³**

¹*Department of Business Management, Dongbei University of Finance and Economics,
217 Jianshan St., 116025, Sha He Kou Dist. Dalian, China*

²*School of Management, Shandong University, 27 Shanda Nanlu, 250100, Jinan, China*

³*Department of Management Sciences, Preston University, St. 3, Sector H – 8/ 1,
44000, Islamabad, Pakistan*

E-mails: ¹shafique.nouman@gmail.com (corresponding author);

²shahidasghar90@gmail.com; ³haji616@yahoo.com

Received 12 February 2017; accepted 04 April 2017

Abstract. Green supply chain management (GSCM), a cross-disciplinary field has grown during recent years with increasing interest from both academia and industry. GSCM considers emphasizing environmental issues in Traditional Supply Chain Management (TSCM). Due to the new trends in global warming, environmental sustainability has become a greater concern among the organizations and enterprises globally. This study will focus on green supply chain management practices in the presence of green innovation. Green innovation will improve organizational processes as well as products, which lead to economic and environmental performance. Different institutional actors are putting pressures to implement Green supply chain management practices. Population of this study is electronics industry in Pakistan. Sample size is 500 with cluster sampling technique. Data has been collected through a survey method based on the adopted questionnaire. The collected data will be tested through Cronbach Alpha, Descriptive Statistics, Pearson Correlation, Linear Regression, Moderated Regression, Multiple Logistic Regression and Hayes's statistical tests to analyse the suggested research model. This study will enable organizations to implement green supply chain management practices to bear institutional pressure and move towards green innovation to enhance their economic and environmental performance that were never possible before this study.

Keywords: green supply chain management, GSCM practices, environmental performance, economic performance, green innovation, institutional pressure.

JEL Classification: R41, Q52, Q53, Q55, Q56.

1. Introduction

Balancing between environmental and economic performance getting the boost in organizations. Today, every organization is trying to fulfill their corporate social responsibilities. Protection of environment became the demand of every customer and regulatory authorities in every country that's why environmental protection became the main concern of organizations (Zhu *et al.* 2005; Jabbour *et al.* 2014). Furthermore, every organization is getting competitive and regulatory pressure to reduce their wastage's pressures (Shultz, Holbrook 1999; Delmas, Toffel 2003). This environmental pressure become increasing day by day and demand for organizations to make their strategies to make reduce the negative impact of their products and services on environment (Chan *et al.* 2016; Lewis, Gretsakis 2001).

Globalization changed organizational traditional processes and activities to green or environmental policies. Now, organizations trying to establish their green image through the implementations of green strategies and practices (Chen 2008; Hick 2000). Green practices will result as the competitive advantage (Hansmann, Claudia 2001). Confederation of British Industries (CBI) had identified the main environmental factors should be implemented in marketing to reduce risks, regulatory pressures and organizational and environmental performance in 1994. The main regulatory issues, competitive pressure, marketing strategies, business performance, environmental protection and operational excellence can be achieved only the implementation of green supply chain management practices (Hutchison 1998).

Green supply chain management is full-fledged covered the stages of the product life cycle especially focusing on green purchasing, green manufacturing, green logistics, investment recovery and cooperation with customers. Through implementation of green supply chain management practices, organizations can achieve organizational performance focusing on environmental, social, economic and operational performance (Albort-Morant *et al.* 2016). Now, organizations are mature enough, they make strategies to reduce their manufacturing cost through the reduction of wastage, and it is the only solution to compete in the market. That is the main motivational concept for organizations to move towards green supply chain management practices to enhance their performance (Jabbour *et al.* 2014; van Hock, Erasmus 2000).

The cost saving nature of environmental performance should lead to improved economic performance, and both environmental performance and economic performance should yield to improve operational efficiency. Environmental, economic, and operational performance generates cost savings and reflects an organization's ability to satisfy changing customer demands for environmentally sustainable products and services (Green Jr *et al.* 2012). The cost and marketing implications of environmental, economic, and operational performance should lead to improvement in the overall financial and marketing performance within the organization (Lee, Min 2015).

Continuous and endless innovation is the only option for organizations to invent, adopt and implement new procedures. Innovation can reduce institutional pressure, es-

pecially customers and competitor's pressure to enhance organizational performance (Porter van der Linde 1995). Therefore, it is very important for organizations to adopt green innovations in green supply chain management to enhance their value chain. Green innovation will be caused to reduce institutional pressure and enhance environmental and economic performance (Lee, Min 2015). Green innovation has distributed into many types three of them are very famous. First, is product innovation, second is process innovation and third is managerial innovation. All of them have same importance, and all are interlinked with each other in every organization (Li *et al.* 2017).

Institutional pressure is the external forces to do something or to avoid doing specific actions by external environment customers, supplier, competitors and regulatory bodies are the major players to insert pressure on organizations. The institutional pressure is actually the pressure, restrictions and expectations of these bodies towards organizations (Fikru 2016). This led three strategic isomorphisms – coercive, normative and mimetic – to formulate the rules, norms and values in the institutional environment. This is only the institutional environment, which will help the organizations to build or choose effective strategies to gain competitive advantage. It may be individual strategies or set of strategies, which will be formulated by regulatory bodies to set their bench marks to achieve highest standards, which will lead to organizational performance (Weerakkody *et al.* 2016).

Traditional supply chain management is the only concern in the delivery of products from buyer to customer. It does not concern with society. Traditional supply chain management did not focus on the environment. Most of the time damaged and outdated vehicle used to supply the products. These vehicles spoiled out carbon gas as waste from their silencers, which will cause to air pollution. In many countries, air pollution became a very serious issue. The main causes of air pollution are outdated vehicles and factories. This air pollution will cause to damage society and become the cause of many diseases and deaths for humans and animals (Lee, Min 2015).

The second main problem in traditional supply chain management is high cost because damaged vehicles need more maintenance charges. They use more fuel because these vehicles have not been modern fuel saving technology. This fuel and maintenance cost will increase the overall expenses of organization, which will be the resultant as to increase the product cost. Traditional supply chain management is the main cause of high prices. In this era, every organization is fighting with their competitors based on their cost. So, if organization faces high costs, then it is impossible to compete based on price (Chiou *et al.* 2011).

Globalization created the awareness among customers, NGO's (Non – governmental organizations) and in government organizations to protect environment. Therefore, everyone is putting pressure on organizations to reduce their wastages and protect the society. At the international level, different organizations have started to protect the environment. International standard organization set standards for organizations to clean and protect the environment. At the same time, one organization is competing with other organizations based on corporate social responsibilities. In addition, organizations have

realized that to protect the environment through fewer wastage, it is their corporate social responsibility. So, that's why in recent days' organizations facing a lot of pressure to protect the environment (Delmas, Toffel 2003).

In this era, information communication technologies boost up in every field of life. These technologies provide the knowledge from all over the world. Every individual, organization and government is using this knowledge to increase their performance (Geffen, Rothenberg 2000). Now organizations feel that their traditional methods, processes and products cannot survive them in this hyper competitive market. Therefore, they need to change their processes according to rest of the world. Because if they do not change themselves, then their competitors will win the war. Therefore, every organization must have to be focused on the latest technologies to change their traditional processes to more innovative and effective one. So, every organization is struggling to implement new and innovative ideas, activities and processes in their organizations to achieve high performance (Green Jr *et al.* 2012).

This study will focus to reduce all these problems. In this study green supply chain, management practices will effect on organizational performance. When organizations implement green supply chain management practices, it will reduce organizational costs and protect the environment to protect the environment and enhance organizational performance. The main problem statement of this study is to fine "The effect of green supply chain management practices on performance; Moderating role of institutional pressure with mediating role of green innovation".

Every researcher tries to find the gap in previous knowledge and try his level best to minimize the gap. To minimize this knowledge gap will enable a researcher for analytical thinking and find unknown dimensions of work, which was not explored and addressed until now. In the same manner, this study also found the gap from previous knowledge and filled this gap in new dimensions. In this study, different types of the gap have been addressed. The first gap of this study is based on variable. In most of the previous study, the relationship of green supply chain management practices and performance was analyzed and ignored the other external factors associated with this relationship. In this study, these external factors have been considered.

The second major big gap is based on geographical area. The studies have been analyzed in different developed countries and ignored this phenomenon in developing countries while this study is more needed in developing countries because they have fewer strict rules regarding the environmental concerns. Therefore, this study was conducted in Pakistan, which is a developing country. Third, this study was focused in different industries in different parts around the world. In Pakistan, most grooming industry is the electronic industry, especially computer and mobile industry. Therefore, this study will be focused on computer industry segmented laptops. Fourth, the other studies regarding green supply chain management practices and performance is based on either qualitative or economic or mathematical modeling while this study will be

focused on quantitative methodology based on the statistical test. Therefore, this study also filled the methodological gap, which is very less addressed in previous studies.

In this study, following research questions should be addressed.

- RQ1: What are green supply chain management practices?
- RQ2: How green supply chain management practices will effect on organizational performance?
- RQ3: What is the relationship between green supply chain management practices, institutional pressure and organizational performance?
- RQ4: How green innovation plays its role between green supply chain management practices and organizational performance?

This study is significant for both academicians and managers at the same time. In the academic point of view, this study will fill the gap found in previous studies. Furthermore, this study will also open the new horizons for the upcoming researchers to think about organizational performance in a new perspective. This study has developed the direct relationship between organizational performance and green supply chain management practices. This study is developing the indirect relationship between green supply chain management practices and organizational performance in the presence of green innovation and institutional pressure. These direct and indirect relationships in the same study had not been studied previously.

This study has been also significant for managers and organizations at the same time. Because if organizations implement this study in their organizations and adopt green supply chain management practices in their processes, then they can enhance environmental and economic performance. The implementation of green supply chain management practices will enable organizations to bear institutional pressures, which enable them to get the competitive advantage through corporate social responsibility of environmental protection. At the same time, organizations will encourage green innovations to enhance organizational performance. Therefore, this study will change traditional supply chain to green supply chain to gain competitive advantage through innovation.

The main objectives of this research are given below.

- To find the effect of green supply chain management practices on organizational performance.
- To explore the relationship between green supply chain management practices, institutional pressure and organizational performance.
- To develop the novelty of effect among green supply chain management practices, green innovation and organizational performance.

2. Literature Review and Theoretical Foundations

Green supply chain management practices impose on organizations to design, implement and produce environmental friendly products those are suitable for environmental sustainability. The green concept is revolved throughout all stages of the product life

cycle. Furthermore, previous study on Xerox Ltd. suggested to develop the matrix for environmental assessment in all product life cycle stages (McIntyre *et al.* 1998). This study suggested to implement environmental practices in the whole process of supply chain and move the traditional supply chain to green supply chain practices because the main focused of this study is environmental sustainability (Jabbour *et al.* 2014).

Previous study suggests in their study that a positive correlation was found between green supply chain management and economic performance as well as environmental performance. They suggest that if organization's moves towards green supply chain practices, then they will gain more profit by reducing their wastages. It is also caused to protect environment because low wastages will cause low damage to environment. So, green supply chain management will cause more environmental and economic performance as compared to traditional supply chain management practices implemented in organizations (Zhu, Sarkis 2004).

If buyer and seller have strong relationship with each other, then it is easy to implement green supply chain management practices in manufacturing organizations (Geffen, Rothenberg 2000). Another study supports this study and enhanced this effect as green multiplier effect encouraged an organization to buy raw material from second or third tie supplier who implemented green practices in their produce design. So, it will motivate organizations towards green purchasing (Preuss 2001).

Green supply chain management policies force the organizations to towards green purchasing. These green purchasing will improve organization's economic performance as well as these policies and green purchasing increase environmental performance (Green *et al.* 1998). If organizations buy green products, then they also produce green products. Furthermore, studies suggest that green supply chain management practices are composed on green purchasing, eco design, cooperation with customers and investment recovery are the major factors to analyze green supply chain management practices in organizations to boost up their performance (Jabbour *et al.* 2014).

Environmental performance can enhance through the implementation of eco design during production (Diabat, Govindan 2011). Eco – design does not mean to reduce the functionality or cost of product. The main purpose of this design is to investment recovery through the reuse of products repeatedly It will directly reduce remanufacturing cost as well as the cause to reduce the wastage. So, eco – design directly effect on economic and environmental performance. Furthermore, eco-friendly designs are more attractive for customers to buy and use product (Miroshnychenko *et al.* 2017).

Economic performance is directly effected through green supply chain practices. Because the concept of green supply chain management is to protect the environment through the reduction of wastages. The reduction in wastages should lead to reduce in cost, and cost is directly interlinked with economic performance. The organizations those can produce at low cost these can enhance their economic performance (Sun *et al.* 2017). It has been developed this positive relationship between organizational performance and green supply chain management practices. Furthermore, they suggest

that organizations can gain competitive advantage through the implementation of green supply chain management practices in organizations (Rao, Holt 2005).

Institutional pressure is the function of institutional actors to moderate organizational characters to develop their strategies to protect environment. The major institutional actors those are customers, competitors, political, social, religious, local communities, international communities, market and regulatory organizations (Wu *et al.* 2012). All organizational stakeholders force the organizations to do coercive actions in specific conditions for environmental sustainability. Organizations perceived that they have to face institutional pressure, which will influence on their strategic decisions (Tingey-Ho-lyoak 2014). Organizations cannot take decisions without considering the institutional pressure. Now, everyone is demanding from organizations to develop their strategies environmental friendly to enhance organizational performance (Seles *et al.* 2016).

Legislation authorities and political parties in every country is putting pressure on organizations to move towards green supply chain management to protect their environment. Every country has developed some rules and regulations for organizations to formulate their environmental policies according to these rules (Li *et al.* 2017). Furthermore, every organization knows that government is the key stakeholder. Therefore, that is why organizations have to obey the rules and regulations of authorized organizations. These national and international organizations use their power to control and correct organizational procedure those will match with already set environmental standards. Legislation and political power are the most important institutional pressures for organizational processes (Majundar, Marcus 2001).

Customers and competitors are the major factor to putting pressure on organizations. Both customers and competitors are considered as institutional pressure. They can demand for organization to go towards green practices and request from political and legislator actors about environmental sustainability. Now, organizations respond according to customers' requirements because they have realized if they did not satisfy customer's requirements, then their competitors get competitive advantage and get their customers (He *et al.* 2016). Therefore, organizations develop their green strategies to fulfill customer's requirements. In most of the organizations, environment management system has adopted. This system gives the guidelines according to ISO 14001 standards for environmental management (Christmann, Taylor 2001). So, if organization did not fulfill these standards, then their competitor will gain ISO 14001 certifications through the adoption of green practices and gain competitive advantage through environmental and economic performance, which will build institutional pressure on organization (Khanna, Anton 2002).

Green innovation is the same as technological innovation like software and hardware innovation. Green innovation is divided into product innovation and process innovation. But the main theme of green innovation is to protect the environment through recycling energy saving, green purchasing, green production, eco design, waste and pollution reduction (Chen *et al.* 2006). Organizations can adopt green innovation through the implementation of new hard ware and software, which will lead to enhance organiza-

tional environmental and economic performance. So every organization tries to adopt green innovation based on green process innovation and green production innovation to enhance their organizational performance (Chiou *et al.* 2011).

Green product innovation is the factor of green innovation. The focus of green product innovation is green purchasing, eco-design and green manufacturing of product. This will lead to reduction in the waste of raw material, environmental protection and saving in energy. The green product innovation can be measured through four factors. The first factor of green product innovation is that organizations develop the strategies for less consumption of raw material during product design and development (Fei *et al.* 2016). The second important factor of green product innovation is that organizations must consider the consumption of energy. The product must consume fewer amounts of energy when it is in working condition. The third important factor of green production innovation is that organizations should make strategy that product must be composed of fewer amounts of material. The fourth and most important factor of product innovation is that product should be recycled (Chiou *et al.* 2011). It means organization can decompose the product easily and then manufactures again by using the same material. The product design should be environment friendly. So organizations should involve in green product innovation to enhance their environmental and economic performance (Sun *et al.* 2017).

Green process innovation is to implement new and innovative processes in organizations to achieve organizational goals. The green process innovation is focused on the processes to save energy during production and other organizational processes (Dai, Zhang 2017). Furthermore, green process innovation also encourages organizations to recycle their waste to prevent environment. The implementation of green process innovation will cause the reduction of toxic materials and reduce the waste. When organizations spoil less waste then it will cause to reduce environmental performance (Geffen, Rothenberg 2000). So, green process innovation is directly the effect on environmental and economic performance because less waste reduces production cost (Jakobsen, Clausen 2016).

Green process innovation effect on organizational performance through four major aspects. The first component of green process innovation that organizations must adopt green process during manufacturing. Organization should focus to reduce the emission of toxic materials during production effectively (Lee, Min 2015). The second major component of green process innovation is that organizations should be focused to reuse and recycle their products to reduce waste and hazard's emissions (Chen *et al.* 2006). Furthermore, third major factor should consider during the process innovation is that organizations should focus to reduce consumption of electricity, water and coal or oil resources during their working (Jakobsen, Clausen 2016). The fourth major factor should consider for green innovation is that organizations should develop their policies to reduce raw material during manufacturing process. So, by the implementation of these four factors organizations should adopt green process innovation to enhance their organizational performance (Zailani *et al.* 2015). Some theories related to this study are summarized and mentioned in the below Table 1.

Table 1. Supportive theories (source: created by authors)

Theory	Description	Link with this study
Transaction-cost economics (TCE)	Transaction cost theory is based on some assumption regarding to governance those describe the effect of internal and external transactions. This theory is advancement of agency theory. Because this theory is different from contractual relationship with shareholders (Kaplan Financial Knowledge Bank 2012; McClelland, O'Brien 2011).	The purpose of innovation reduces cost and time to enhance performance. Therefore, green innovation in this study supported this theory.
Social exchange theory (SET)	Social exchange theory based on the balance between give and take among all relations. Because everyone weights his benefits and costs to maintain their relationship with others. If the cost and benefit are in the equal ratio, then they can sustain their relationship. So, it is the rational choice to develop the relationship (Cropanzano, Mitchell 2005).	In this study, Green supply chain management practices will effect on the relationship between buyer and seller. Both parties gain benefits from each other. Therefore, it will support social exchange theory.
Resource-based view (RBV)	Resource-based view to identify and analyze organizational resources and capabilities to develop their strategies based on their assets to gain competitive advantage. When organizations know their resources and capabilities then they also realize their strengths and weaknesses. When organizations know their capabilities, then they can make good strategy to win competitive advantage (Fikru 2016; Business Dictionary 2017; Rivard <i>et al.</i> 2006).	In this study, Green supply chain management enables organizations to understand and analyze their assets effectively and make their procedure easy to gain competitive advantage. Normally, organizations use software for supply chain management those can provide different required reports.
Systems theory	System theory is actually the interlink among all the set of activities and processes to achieve a common goal. This is also interlinking among internal organizational resources like humans, machine and environment to interact with each other has and enhance organizational performance. Therefore, it starts from the input resources of organization. Then organizations do some processes on these inputs to produce some output under certain environmental conditions (Environment and Ecology 2017; Bronfenbrenner 1992).	In green supply chain management, all activities like inventory, purchasing, suppliers and customers are interlinked with each other to enhance organizational performance in this study.
Network theory	Network theory focuses on the relationship between buyer and seller or direct or indirect relationship between organizations. Furthermore, this theory also engaged different organizational networks to do some specific tasks with the help of each other to transfer and transform their organizational resources (Molitero, Mahony 2011; Chaston 2015).	Green supply chain management practices are not isolated these are interlinked with different network actors like suppliers and customers. Therefore, this study will support network theory.

End of Table 1.

Theory	Description	Link with this study
Contingency theory	Contingency theory suggests becoming flexible according to situation. Because there is no single theory, which is good every time. Therefore, in this technological rapid change environment organization should be flexible enough to design, control and select their systems according to environment. And must be flexible and adopt changes (Stonebraker, Afifi 2004).	Institutional pressure and green innovation are not constant. They are rapidly changing. Therefore, organizations need to align their practices with institutional pressure and innovation to enhance their performance. That is why this study will support contingency theory.
Institutional Theory	The diversity of both the institutions driving environmental pressures, including external and internal pressures to the organization and the corresponding organizational responses developed within each company (He <i>et al.</i> 2016; Wu <i>et al.</i> 2012).	In this study, the moderating variable institutional pressure supported this theory.

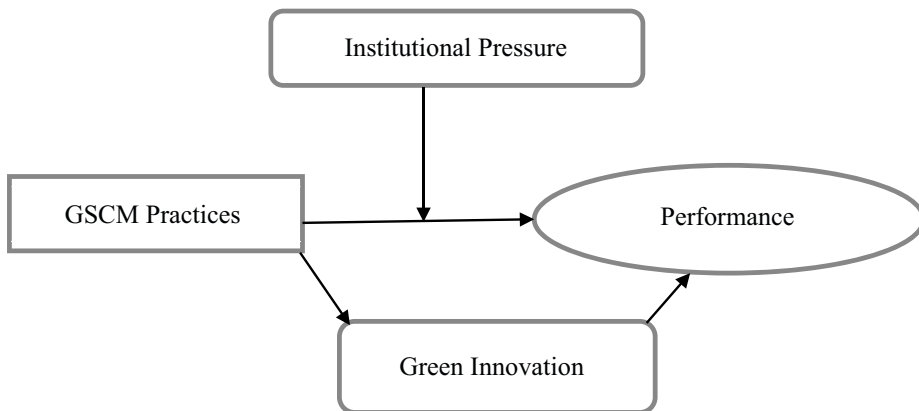


Fig. 1. Conceptual model (created by authors)

Based on literature review and conceptual model mentioned in Figure 1, following hypotheses have been formulated.

- H1: Green supply chain management practices is positively effect on organizational performance.
- H2: Institutional pressure plays the moderated role between green supply chain management practices and organizational performance.
- H3: Green innovation plays the moderated role between green supply chain management practices and organizational performance.

3. Methodology

Methodology is the overall process which is based on the interlinked set of activities to complete any study. The nature of study is quantitative. In this study, deductive research approach is used because in this study, hypotheses have been developed as the basis of literature review and theories. These hypotheses will direct the research model. The conceptual model develops the relationship between variables. This relationship has been tested through data by using different statistical tests. The results of these tests shows prove the relationship and then generalized these results to other industries. In this study, data has been collected through survey method based on the adopted questionnaire. Population of this study is the electronic industry in Pakistan. Sample is the subset of population. In this study cluster, random sampling method have been used to collect data. The first cluster of this study is computer/laptop industry from electronic industry. Both wholesaler and retailer have been taken in this study. The second cluster is that researcher choose five brands, i.e. DELL, Apple, Lenovo, HP and Acer among all brands of laptops. The sampling size is 500.

In this study, researchers find the gap from current situation facing by society. Then download different latest research papers from different data bases. These research papers provide current knowledge around the world. Then researchers find some theories regarding to current research and interlink these theories to current situation. Furthermore, latest research papers have provided directions for the new researchers. So, it will be checked and take a guideline from them. NVIVO 11 is used for qualitative analysis part, especially in literature review part of this study. After that scale, items have been adopted to measure the phenomena. A complete questionnaire is prepared and then distributed among samples and collected responses on Likert scale. Then these results have been coded from 1 to 5 from strongly disagree to strongly agree.

The coded data of each response have been entered in to SPSS 21 software for further analysis. Then different statistical tests have been used through SPSS software. The result from these tests was interpreted in this study. Furthermore, based on these results, the study will be generalized and some conclusions have been drawn. For writing the report MS Word 2016 is used. Furthermore, to check grammatical mistake's white smoke software will be used in this study. Reference is the most technical part of this study. Researchers used Endnote X7 software for automatic references.

4. Results and interpretations

In this study, data has been collected through survey method and analyzed with different statistical tests by using SPSS software. The results from these tests have been mentioned here with their interpretations.

The above-mentioned Table 2 shows mean, standard deviation, correlation and reliability of variable based on survey data. Mean is the central value of respondent or the most favorable trend. The mean value from three shows the neutral view and more than

Table 2. Means, standard deviations, correlations, and reliabilities (N = 433)

Variables	Mean	S.D	GSCM	IP	GI	Perf.
GSCM Practices	3.09	1.024	(.969)			
Institutional Pressure	2.87	.947	.883**	(.926)		
Green Innovation	3.68	1.304	.852**	.861**	(.920)	
Performance	3.04	1.013	.927**	.908**	.894**	(.958)

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

Reliability estimates in parentheses.

shows, the agree with phenomena. In addition, less than three shows disagree behavior. Means values of green supply chain management, green innovation and performance shows agree behavior while the value of institutional pressure shows the tendency towards neutral. The standard deviation value shows the deviation from the mean point all the values are close to zero, which mean very less deviation behavior from the mean point. Moreover, the values of Pearson's correlation are high and significant, which shows each variable has the correlation with other variables. Furthermore, the values of Crona Bech Alpha test showed the reliability of data. All the values are highly reliable and data is acceptable for further analysis.

Table 3. regression between green supply chain management practices and performance (N = 433)

Model	R2	β	t	Sig.
Green Practices	.860	.927	51.437	.000

Dependent variable: performance

The above Table 3 shows the effect of green supply chain management practices on organizational performance through the regression test. The value R2 of shows the effect of independent variable on dependent variable. In the above table, value of R2 is .86. It means that the change in green practices will bring the 86% change in performance. Moreover, the value β of shows the standardized coefficient. It means the effect on dependent variable is only due to the independent variable. The value of β is .927. It means that 92.7% change in performance is only due to green practices. The value of t shows the difference. In the table, value of t is 51.437. The significant or p value is .000. All the values are in the acceptable range at the significant level. Therefore, the result shows green supply chain management practices effecting 86% on performance.

Table 4: Moderated regression among GSCMP, perf. and IP (N = 433)

Model	R2	β	t	Sig.
Green Practices	.860	.927	51.437	.000
Int (Perf. * IP)	.896	.975	29.468	.000

Dependent variable: performance

The above Table 4 shows two regression models. The first model described the direct effect of independent variable of green supply chain management practices on dependent variable of organizational performance. While in the second model, the interaction effect has been analyzed. The interaction term is the combined effect of independent and moderated variable on dependent variable. The change in values of R2 of shows when moderated variable is added then dependent variable is more effected. When only green practices are effected on performance then the value of R2 is .860 after adding moderating variable through the interaction term this value increased up to .896, which showed moderation will enhance the effect on performance. In addition, the value β shows the standardized coefficient. The value β change from .927 to .975. The change in value β of shows when moderated variable is added then de-pendent variable is the only effect due to independent and moderated is increased. The value of t shows the difference; the t value is also changed from 51.437 to 29.468. When moderated variable is effected then difference will be decreased. Both models are at the highly significant level, which is shown by significant, or p value .000. So, these results show moderated variable is effecting positively on dependent variable.

Table 5. Hayes Mediation among GSCMP, Perf. and GI (N = 433)

Model	Coefficient	Standard error	t	Sig.
Green Innovation	.2943	.0227	12.9689	.000
Green Practices	.5979	.0289	20.6798	.000

Dependent variable: performance

The above Table 5 shows the mediation effect of green innovation between independent variable green supply chain management practices and performance. The Hayes model 4 is used to find the mediation effect through Hayes’s plug-in for SPSS. The value of a coefficient shows the effect of independent variable of green practices and mediating variable green innovation. Both variable effects are calculated separately. If it is required to find the combined effect of independent and mediating variable, then just have to sum these values. The standard error shows the value of error, and it is analyzed the mediating variable green innovation has low standard error. The value of t shows difference and the value of t is less for mediating variable. Both values are at the highly significant level. Therefore, these values showed that green innovation plays mediation effect between green supply chain management practices and performance.

5. Conclusions

This study is concluded hypothetically. Because this study has developed a relationship between green supply chain management, institutional pressure, green innovation and organizational performance. This relationship has been analyzed through spearman correlation statistical test. Furthermore, regression test is used to find the effect of green

supply chain management practices on organizational performance. The result of this regression test is in the favor of first hypothesis at the significant level. Therefore, the first hypothesis of this study, “green supply chain management is positively effecting on organizational performance” have been proved and accepted.

Second hypothesis of this study is “Institutional pressure play moderated the effect between green supply chain management and organizational performance” was tested through regression and moderated regression, and it has been proved by results from these tests at the significant level. The third and last hypothesis of this study is “Green innovation plays mediating effect between green supply chain management practices and organizational performance.” This hypothesis was tested through Hayes’s model 4 for mediation, and the direct and indirect effect was analyzed and proved at the significant level. So, this hypothesis is also proved. The overall model of this study is accepted and proved.

Limitations are the restrictions or boundaries faced by a researcher during the whole study. Based on these limitations, researchers recommend some suggestion as future direction for the upcoming researchers in this field. The first limitation is variable based. This study focused only four variable green supply chain management practices, institutional pressure, green innovation and organizational performance while other variables, i.e. decision support system, organizational structure and organizational strategies effecting on performance but these variables had been ignored in this study. The second limitation in this study is based upon geographic location. This study focused only on Pakistan while further studies can be workable on different geographic areas. The third limitation in this study is based on sector or industry based. This study only focused on electronic industries while further studies can do on different sectors like construction and manufacturing sector. The other limitations for data collection respondents are very busy. So, in future research take appointment before to visit to respondent and go in their free schedule.

This study can implement in both academicians and managerial level. In managerial point of view, this study can be implantation in organizations to strengthen their supply chain management channel through new concepts and processes to enhance innovation and performance. This study will be implemented in electronic industry in Pakistan to enhance their performance. Furthermore, this study can implement outside the Pakistan and in different sectors like construction and health sector. In academic point of view, this study can new open doors and dimensions to the field of green supply chain management, institutional pressure, green innovation and performance for the new researchers to do more work. Therefore, this study had practical implementation in both sides.

References

- Albort-Morant, G.; Leal-Millán, A.; Cepeda-Carrión, G. 2016. The antecedents of green innovation performance: a model of learning and capabilities, *Journal of Business Research* 69: 4912–4917. <https://doi.org/10.1016/j.jbusres.2016.04.052>
- Bronfenbrenner, U. 1992. *Ecological systems theory*. Jessica Kingsley Publishers.
- Business Dictionary. 2017. *Resource-based view* [online], [cited 12 January 2017]. Available from Internet: <http://www.businessdictionary.com/definition/resource-based-view.html>
- Chan, H. K.; Yee, R. W. Y.; Dai, J.; Lim, M. K. 2016. The moderating effect of environmental dynamism on green product innovation and performance, *International Journal of Production Economics* 181, Part B: 384–391. <https://doi.org/10.1016/j.ijpe.2015.12.006>
- Chaston, I. 2015. Network theory, in N. Lee, A. M. Farrell. *Wiley encyclopedia of management*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118785317.weom090179>
- Chen, Y.-S. 2008. The driver of green innovation and green image – green core competence, *Journal of Business Ethics* 81: 531–543. <https://doi.org/10.1007/s10551-007-9522-1>
- Chen, Y.-S.; Lai, S.-B.; Wen, C.-T. 2006. The Influence of green innovation performance on corporate advantage in Taiwan, *Journal of Business Ethics* 67: 331–339. <https://doi.org/10.1007/s10551-006-9025-5>
- Chiou, T.-Y.; Chan, H. K.; Lettice, F.; Chung S. H. 2011. The influence of greening the suppliers and green innovation on environmental performance and competitive advantage in Taiwan, *Transportation Research Part E: Logistics and Transportation Review* 47(6): 822–836. <https://doi.org/10.1016/j.tre.2011.05.016>
- Christmann, P.; Taylor, G. 2001. Globalization and the environment: determinants of firm self-regulation in China, *Journal of International Business Studies* 32: 439–458. <https://doi.org/10.1057/palgrave.jibs.8490976>
- Cropanzano, R.; Mitchell, M. S. 2005. Social exchange theory: an interdisciplinary review, *Journal of Management* 31: 874–900. <https://doi.org/10.1177/0149206305279602>
- Dai, R.; Zhang, J. 2017. Green process innovation and differentiated pricing strategies with environmental concerns of South-North markets, *Transportation Research Part E: Logistics and Transportation Review* 98: 132–150. <https://doi.org/10.1016/j.tre.2016.12.009>
- Delmas, M. A.; Toffel, M. W. 2003. Institutional pressure and environmental management practices, in *11th International Conference of the Greening of Industry Network*, 12–15 October 2011, San Francisco, 1–28.
- Diabat, A.; Govindan, K. 2011. An analysis of the drivers affecting the implementation of green supply chain management, *Resources, Conservation and Recycling* 55: 659–667. <https://doi.org/10.1016/j.resconrec.2010.12.002>
- Environment and Ecology. 2017. *What is systems theory?* [online], [cited 12 January 2017]. Available from Internet: <http://environment-ecology.com/general-systems-theory/137-what-is-systems-theory.html>
- Fei, J.; Wang, Y.; Yang, Y.; Chen, S.; Zhi, Q. 2016. Towards eco-city: the role of green innovation, *Energy Procedia* 104: 165–170. <https://doi.org/10.1016/j.egypro.2016.12.029>
- Fikru, M. G. 2016. Determinants of international standards in sub-Saharan Africa: the role of institutional pressure from different stakeholders, *Ecological Economics* 130: 296–307. <https://doi.org/10.1016/j.ecolecon.2016.08.007>

- Geffen, C.; Rothenberg, S. 2000. Suppliers and environmental innovation: the automotive paint process, *International Journal of Operations & Production Management* 20: 166–186. <https://doi.org/10.1108/01443570010304242>
- Green, K.; Morton, B.; New, S. 1998. Green purchasing and supply policies: do they improve companies' environmental performance?, *Supply Chain Management: An International Journal* 3: 89–95. <https://doi.org/10.1108/13598549810215405>
- Green Jr, K. W.; Zelbst, P. J.; Meacham, J.; Bhadauria, V. S. 2012. Green supply chain management practices: impact on performance, *Supply Chain Management: An International Journal* 17: 290–305.
- Hansmann, K. W.; Claudia, K. 2001. Environmental management policies, in J. Sarkis (Ed.). *Green manufacturing and operations: from design to delivery and back*. Sheffield, UK: Greenleaf Publishing. https://doi.org/10.9774/GLEAF.978-1-909493-22-3_15
- He, Q.; Dong, S.; Rose, T.; Li, H.; Yin, Q.; Cao, D. 2016. Systematic impact of institutional pressures on safety climate in the construction industry, *Accident Analysis & Prevention* 93: 230–239. <https://doi.org/10.1016/j.aap.2015.11.034>
- Hick, S. 2000. Morals make the money, *Austrian CPA* 70: 72–73.
- van Hock, R. I.; Erasmus 2000. From reversed logistics to green supply chains, *Logistics Solutions* 2: 28–33.
- Hutchison, J. 1998. Integrating environmental criteria into purchasing decision: value added?, in T. Russel (Ed.). *Greener Purchasing: opportunities and innovations*. Sheffield: Greenleaf Publishing. https://doi.org/10.9774/GLEAF.978-1-909493-03-2_14
- Jabbour, A. B. L. de Sousa; Jabbour, C. J. C.; Latan, H.; Teixeira, A. A.; de Oliveira, J. H. C. 2014. Reprint of “Quality management, environmental management maturity, green supply chain practices and green performance of Brazilian companies with ISO 14001 certification: direct and indirect effects”, *Transportation Research Part E: Logistics and Transportation Review* 67: 139–151. <https://doi.org/10.1016/j.tre.2014.03.005>
- Jakobsen, S.; Clausen, T. H. 2016. Innovating for a greener future: the direct and indirect effects of firms' environmental objectives on the innovation process, *Journal of Cleaner Production* 128: 131–141. <https://doi.org/10.1016/j.jclepro.2015.06.023>
- Kaplan Financial Knowledge Bank. 2012. *Transaction cost theory* [online], [cited 12 January 2017]. Available from Internet: [http://kfkknowledgebank.kaplan.co.uk/KFKB/Wiki/Pages/Transaction cost theory.aspx](http://kfkknowledgebank.kaplan.co.uk/KFKB/Wiki/Pages/Transaction%20cost%20theory.aspx)
- Khanna, M.; Anton, W. Q. 2002. Corporate environmental management: regulatory and market-based pressures, *Land Economics* 78(4): 539–558. <https://doi.org/10.2307/3146852>
- Lee, K.-H.; Min, B. 2015. Green R&D for eco-innovation and its impact on carbon emissions and firm performance, *Journal of Cleaner Production* 108, Part A: 534–542. <https://doi.org/10.1016/j.jclepro.2015.05.114>
- Lewis, H.; Gretskakis, J. 2001. *Design + environment: a global guide to designing greener goods*. Sheffield: Greenleaf Publishing.
- Li, D.; Zheng, M.; Cao, C.; Chen, X.; Ren, S.; Huang, M. 2017. The impact of legitimacy pressure and corporate profitability on green innovation: evidence from China top 100, *Journal of Cleaner Production* 141: 41–49. <https://doi.org/10.1016/j.jclepro.2016.08.123>
- Majundar, S. K.; Marcus, A. A. 2001. Rules versus discretion: the productivity consequences of flexible regulations, *Academy of Management Journal* 44: 170–179. <https://doi.org/10.2307/3069344>
- McClelland, P. L.; O'Brien, J. P. 2011. Transaction cost economics and corporate governance: the case of CEO age and financial stake, *Managerial and Decision Economics* 32: 141–158. <https://doi.org/10.1002/mde.1520>

- McIntyre, K.; Smith, H.; Henham, A.; Pretlove, J. 1998. Environmental performance indicators for integrated supply chains: the case of Xerox Ltd, *Supply Chain Management: An International Journal* 3: 149–156.
- Miroshnychenko, I.; Barontini, R.; Testa, F. 2017. Green practices and financial performance: a global outlook, *Journal of Cleaner Production* 147: 340–351. <https://doi.org/10.1016/j.jclepro.2017.01.058>
- Moliterno, T. P.; Mahony, D. M. 2011. Network theory of organization: a multilevel approach, *Journal of Management* 37: 443–467. <https://doi.org/10.1177/0149206310371692>
- Porter van der Linde, M. E. 1995. Green and competitive, *Harvard Business Review* 73: 120–134.
- Preuss, L. 2001. In dirty chains? Purchasing and greener manufacturing, *Journal of Business Ethics* 34: 345–359. <https://doi.org/10.1023/A:1012549318786>
- Rao, P.; Holt, D. 2005. Do green supply chains lead to competitiveness and economic performance?, *International Journal of Operations & Production Managements* 25: 898–916. <https://doi.org/10.1108/01443570510613956>
- Rivard, S.; Raymond, L.; Verreault, D. 2006. Resource-based view and competitive strategy: an integrated model of the contribution of information technology to firm performance, *Journal of Strategic Information Systems* 15: 29–50. <https://doi.org/10.1016/j.jsis.2005.06.003>
- Seles, B. M. R. P.; de Sousa Jabbour, A. B. L.; Jabbour, C. J. C.; Dangelico, R. M. 2016. The green bullwhip effect, the diffusion of green supply chain practices, and institutional pressures: evidence from the automotive sector, *International Journal of Production Economics* 182: 342–355. <https://doi.org/10.1016/j.ijpe.2016.08.033>
- Shultz, C. J. I. I.; Holbrook, M. B. 1999. Marketing and tragedy of the commons: a synthesis, commentary and analysis for action, *Journal of Public Policy and Marketing* 18: 218–229.
- Stonebraker, P. W.; Afifi, R. 2004. Toward a contingency theory of supply chains, *Management Decision* 42: 1131–1144. <https://doi.org/10.1108/00251740410565163>
- Sun, L.; Miao, C.; Yang, L. 2017. Ecological-economic efficiency evaluation of green technology innovation in strategic emerging industries based on entropy weighted TOPSIS method, *Ecological Indicators* 73: 554–558. <https://doi.org/10.1016/j.ecolind.2016.10.018>
- Tingey-Holyoak, J. 2014. Sustainable water storage by agricultural businesses: strategic responses to institutional pressures, *Journal of Business Research* 67: 2590–2602. <https://doi.org/10.1016/j.jbusres.2014.03.018>
- Weerakkody, V.; Omar, A.; El-Haddadeh, R.; Al-Busaidy, M. 2016. Digitally-enabled service transformation in the public sector: the lure of institutional pressure and strategic response towards change, *Government Information Quarterly* 33: 658–668. <https://doi.org/10.1016/j.giq.2016.06.006>
- Wu, G.-C.; Ding, J.-H.; Chen, P.-Sh. 2012. The effects of GSCM drivers and institutional pressures on GSCM practices in Taiwan's textile and apparel industry, *International Journal of Production Economics* 135: 618–636.
- Zailani, S.; Govindan, K.; Iranmanesh, M.; Shaharudin, M. R.; Sia Chong, Y. 2015. Green innovation adoption in automotive supply chain: the Malaysian case, *Journal of Cleaner Production* 108, Part A: 1115–1122. <https://doi.org/10.1016/j.jclepro.2015.06.039>
- 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: 265–289. <https://doi.org/10.1016/j.jom.2004.01.005>
- Zhu, Q.; Sarkis, J.; Geng, Y. 2005. Green supply chain management in China: pressures, practices and performance, *International Journal of Operations & Production Management* 25: 449–468. <https://doi.org/10.1108/01443570510593148>

Muhammad Nouman SHAFIQUE is doing his Doctor of Philosophy (PhD) in Business Administration from Dongbei University of Finance and Economics, China. Previously, he did his Master of Philosophy (M.Phil) in Business Administration from Pakistan. He achieved distinctive accomplishments from different international institutes. Furthermore, he has published many research papers in different international journals. He also participated in different conferences to present and learn new methods and techniques and trends in research.

Muhammad Shahid ASGHAR is doing his Master of Philosophy (M.Phil) in Project Management from Shandong University Jinan, China. Previously, he did his Bachelor of Technology in Electronics & Communication from University of Engineering & Technology Lahore, Pakistan. He also had the opportunity to study a number of subjects in the humanities and they have been both enjoyable and enlightening, providing me with a new and different perspective on the world in which we live.

Dr. Haji RAHMAN, a man of ambitions to take the challenges in his field. He remained a hardworking human with an excellent academic career. He did his MS in Engineering Management from UET, Taxila, Pakistan and PhD in Management Sciences (HRM) from Preston University, Islamabad on HEC scholarships. He is the author of a number of international and national research papers. He has also presented his research articles in a number of international research conferences. He worked as faculty member for more than 9 years at the Ghulam Ishaq Khan Institute with best result producing teacher awards. He is now associated as Assistant Professor with Preston University, Islamabad campus. Preston University has awarded him the Punctuality and Efficiency Awards for Fall Semester 2015, Spring Semester 2016 and Fall 2016. He is also a visiting faculty member at the IIUI, Islamabad and Federal Urdu University of Arts Sciences and Technology, Islamabad. He also delivered trainings modules at CDA Training Academy and Pakistan Manpower Institute, Islamabad.