ISSN (P):2788-4821 & ISSN (O): 2788-483X
Volume 3, Issue 2, Page 1-19, May 30, 2022 (Special Issue)

IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT ON FIRM PERFORMANCE

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Abstract

Green Supply Chain Management (GSCM) has grown as a topic of interest, especially in the last few years. With growing awareness and environmental challenges, consumers around the world have started demanding more and more organizations to adopt practices which are more environmental friendly. Firms around the world have now started seeing the benefits of implementing these Green Supply Chain Management (GSCM) practices and adopt them anyway. This research is based on finding out the impact of adopting Green Supply Chain Management (GSCM) practices and how it impacts firm performance. Four measures of the GSCM have been taken; Green information systems, reverse logistics, green manufacturing and eco-design. 201 responses have been recorded through questionnaires sent online to individuals who are associated with supply chain department of any firm operating in Karachi. Impact of these measures was seen individually and there aggregate impact on the firm performance was calculated. With its main objective to find if the impact of the GSCM practices on firm performance is significant or not, the study aims to inspire and help more firm managers make the decision about whether or not they should adopt GSCM practices in their firm.

Keywords: Green Supply Chain Management, Firm performance, Green information systems, Eco-design, Reverse logistics, Green Manufacturing.

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Introduction

This research has an aim to highlight the firm's performance being impacted by green supply chain management (GSCM) practices. Having more than one definition, firm performance can be defined as the capability and capacity of a manufacturing entity to effectively and efficiently utilize the available resources and produce products and/or services which are in line with the preset objectives and aims of the firm. Recently, many companies around the world have sought to embrace green practices, which refers to the practices that are more ecologically responsible and environmental friendly. This also includes green supply chain management (GSCM). Firms intend to implement such practices in hopes for positive consequences on their financial health and overall performance. Pakistan, which is a developing country with a growing industrial capacity faces the issue of environmental pollution and other problems. Consequently, the dire need of a counter strategy, growing awareness in general public as well as the government strategy of green incentive have pushed the decision makers of firms in various industries to adopt more environmentally friendly solutions like GSCM. Although, this adoption in most industries is partial or at the beginning stage, there are not enough academic studies that are produced locally which can motivate and inform the decision makers of firms regarding practical and most effective practices of GSCM activities and how they will affect their firm's performance. Most studies that have been done in the past have focused on a single industry. This study is based on firms from different industries to identify whether or not these practices produce desired outcomes. GSC Mcomprises of practices like green material sourcing, green distribution, green energy sourcing, green manufacturing green warehousing, green transporting and reverse logistics. These are all environment friendly counterparts of their conventional practices.

Historical/contextual background of the research

Unlike the last few decades, where only some organizations and activists were concerned with climate change and environment protection, today, more and more individuals are concerned about environment. This leads to a situation where people want to know if the products they are using are produced by firms that are doing something to minimize the harm to the environment. Consequently, more and more firms are ensuring that they adopt environment friendly practices. Although at different pace, this is happening not only in the first world countries but also in the third world countries. GSCM adoption has become a trend around the decision makers of firms as they feel more accountable and responsible. These are the sets of practices that ensure that a firm is taking care of the environment. Since more and more individuals feel a sense of responsibility to the environment preservation and consume such products, this may translate into better performance of the firm as

ISSN (P):2788-4821 & ISSN (O): 2788-483X
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more sales mean more profitability. The study will assist in determining the role of GSCM in a firm's performance. With the help of this study, other firms will be able to make decisions regarding their supply chain to ensure better performance.

Problem Statement

GSCM is an emerging topic amongst firms mostly for the environmental aspect however, recently, perspective of many has changed into adopting it not only for the sake of environment but for the overall improvement of the firm's operations, such as profit maximization and overall performance. In the past, studies relating GSCM to its environmental impact and performance have been conducted but they were limited to a single industry. Moreover, not many academic works for developing countries like Pakistan have been produced that can motivate more firm managers to shift towards more environment friendly practices for the sake of enhancing the firm performance as well as reducing pollution. The main aim of this study is to enhance the generalizability of the relation between GSCM and the firm performance beyond a single industry. The upside of this decision is the availability of a highly sufficient population that is associated with a supply chain management for the purpose of data collection.

Research Objectives

The purpose of conducting this study is to find the impact of green supply chain management practices on firm's performance. This study will identify the effect of GSCM on firm's performance and will also find the nature of this relationship.

The dependent variable of this study is firm performance while the independent variable is GSCM, which is broken down into 4 common practices of GSCM including; Green information systems, eco-design, green manufacturing and reverse logistics. The leanings of this study can be implemented in any sector of the economy. The study will be conducted in the economic hub of Pakistan, Karachi where many small, middle and large scale manufacturing firms of various industries operate. Over the time period of 2 months, data will be collected from personnel associated with the supply chain management of the firms. Based on the research objectives, the following conceptual framework and hypothesis were developed for the study.

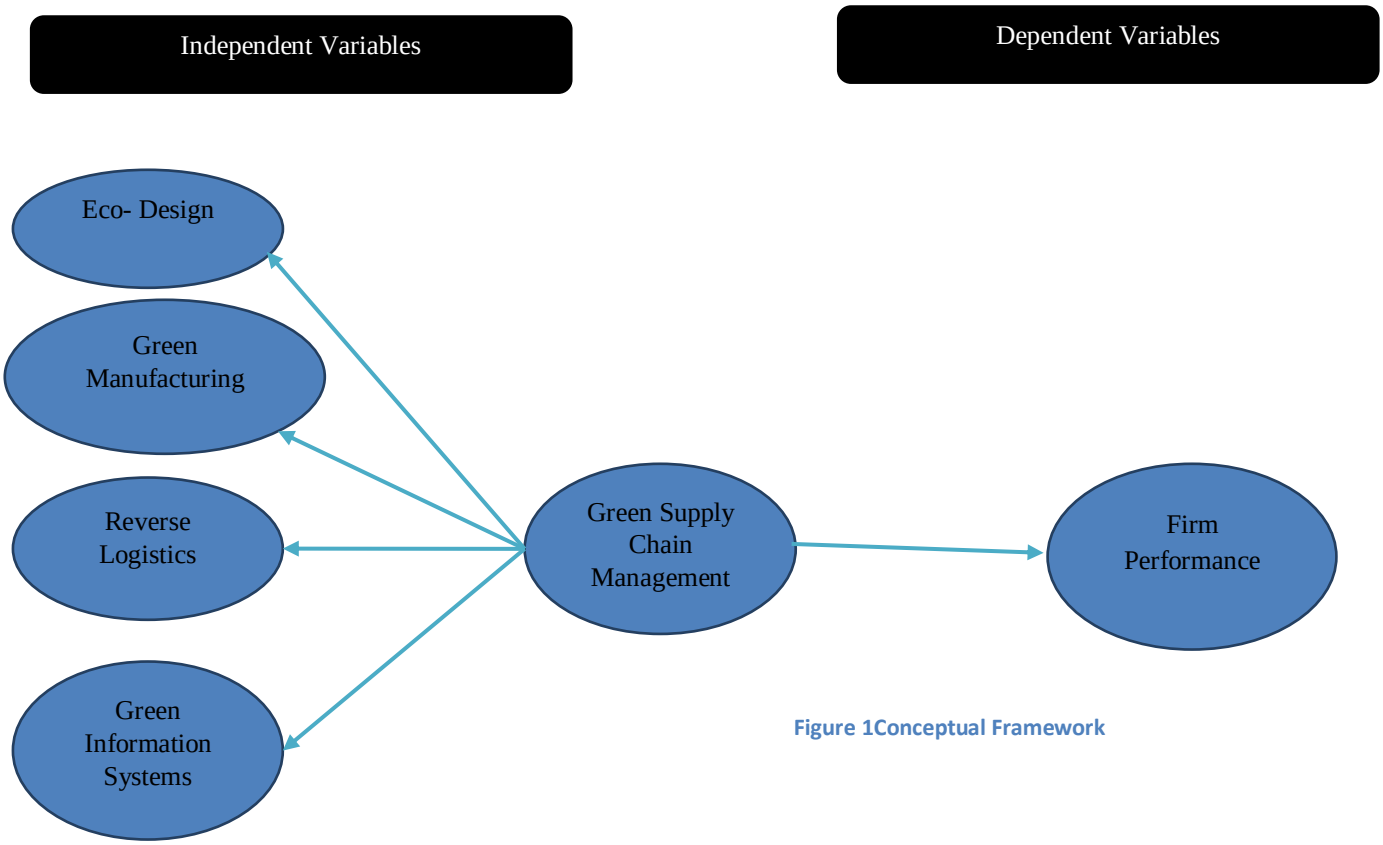


Figure 1Conceptual Framework

The main hypotheses for the study are:

H1: Eco Design has significant effect on Firm performance

H2: Green Manufacturing has significant effect on Firm performance

H3: Reverse Logistics has significant effect on Firm performance

H4: Green Information System has significant effect on Firm performance

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Significance of Study

The research will provide a guideline for the decision makers of the firms beyond a single industry regarding whether or not they should adopt GSCM and which practices of GSCM will be most effective in enhancing the performance of a firm. The findings of the study will not be specific to one industry due to the general nature of the study. Thus, a foundation is laid for future researchers to take its learning into different but specific directions.

Literature Review

Green et al. (2012) found in their study aimed at contributing largely towards the first wave of verifiable analysis of the effects of GSCM on performance of the organization. The paper also intended to focus on developing a comprehensive model of the GSCM activities and performance. The model encompassed the supply chain towards both sides of the manufacturer, i.e. supplier and consumer, to assist environmental sustainability throughout. Managers from 159 manufacturing entities gave the data required. The data was analyzed using structural equation modeling. The data collected was about the extent to which firms worked with their suppliers and consumers on upholding the environmental sustainability of supply chain. It was discovered that generally, the adoption of GSCM activities improved both economic performance and environmental performance. This led to a better operational performance which in turn enhanced the overall performance of the organization. This study however being initial of its nature was exploratory but this was the study that gave a framework to study the effect of GSCM on performance and an empirical model that can be used to study the effects. Internal environment management and green information systems (GIS) are found as crucial elements to the adoption of the green purchase, investment recovery, cooperation with consumers and eco design. Thus, as expected, the outcome of the study seconded the notion that GSCM are beneficial from environmental perspective as well as business perspective but it is endorsed that the adoption of the GSCM is done in a systematic two-wave approach.

Despite thorough underlining of the significance of the integration of various GSCM activities, not enough had been done to probe the effects of the relatedness of these activities and the organizational performance. Al-Sheyadi et al. (2019) studied the combined effect of the external and internal GSCM activities on environmental cost savings and environmental impact. They put forward GSCM as the aggregated proficiency. The study amalgamated 4 unique but inter-related aspects of activities like external environmental practices, eco design, environmental management and source reduction. Structural equation modeling on data from 138 manufacturing

entities of Oman found that strong pragmatic support for GSCM practices, i.e. a strong positive link between degrees of common GSCM activities and impact on the environment achieved. The study asserted that complementarities amongst green supply chain activities affected the performance in a positive way. Therefore, it suggested that managers should focus on multiple complementarily practices of GSCM activities rather than focusing on search for the best activities individually.

Mitra and Datta (2014) felt that despite the growing attention towards the studies based on GSCM and sustainable supply chain management in recent years, not much information relating to these practices being implemented in India is available. Thus, their paper presented data from manufacturing organizations in India from the earliest surveys about the GSCM activities. Corporates' review and existing information assisted in producing survey items. Major findings of this study revealed that most consumers were not aware of environmental sustainability, there was a lack of a regulatory system and the firms' implementation of GSCM activities was at the initial phase. Moreover, it was found that collaboration of supplier had a positive impact on logistics and environmental sustainability of the product design. This further affected economic performance and competitiveness. The study then compared these findings with those of other studies conducted in both first world and developing countries. Guidelines and suggestions were given about incorporating GSCM and sustainable supply chain management activities in Indian firms. Steps to increase awareness in locals about environmental sustainability were also given.

Choi and Hwang (2015) contributed in this stream of research on GSCM. They depended upon relational view and Natural Resource Based Review (NRBV). The paper in particular explored the role of the collective potential that abates the GSCM impact on organization's performance. Data from 230 South Korean manufacturing firms was analyzed in the study and a hierarchical regression was applied. The findings supported the idea that having GSCM activities can benefit the environmental and financial performance. Moreover, when an organization involves its partners in their GSCM, they can expect enhancing financial performance.

Younis et al. (2016) explored through their paper the effects on the corporate performance of the GSCM when it was adopted, especially the effects that GSCM has on its various dimensions. A research model that involved GSCM activities like green purchasing, reverse logistics, eco design and environmental cooperation. Four areas of corporate performance known as environmental, economic, social and operational performance were also included. 117 manufacturing entities from UAE provided the data required for analysis. The test used was multiple regression analysis. The findings showed that the GSCM activities affected various areas of corporate performance differently. Environmental performance and green purchase affected the operational performance while environmental performance remained

ISSN (P):2788-4821 & ISSN (O): 2788-483X
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unaffected by any other activity of the GSCM. Social performance was only affected by reverse logistics while economic performance was affected only by green purchasing. This study had very similar findings to the ones that came before it but it was limited because data was only collected from manufacturing entities operating in UAE. The study can be used by managers to identify the areas of corporate performance they want to enhance and adopt the GSCM activities that affect them the most.

Pertaining to the food sector, in the last 20 years, governments and related firms have shown concerns about environmental sustainability and protection problems. This has led them to realize the significance of GSCM and adopt its activities to grow their brand image and attract more customer by showing goodwill and winning their trust. Sharma et al. (2017) in this study explored the various measures and sub-measures of performance that cause GSCM adoption, it then checked their reliability and performed analytic hierarchy process analysis to grade them. 13 measures and 79 sub-measures of performance were given after a thorough review of literature and expert consultations. Various agro based firms were given questionnaires to collect data for quantitative section of the study while the qualitative section included reception, editing and analysis of the responses. Regulatory pressure, environmental design and internal environmental management came out as the top 3 measures of performance. This was one of the first studies conducted with respect to agro based firms and its findings can help future decision makers of firms in adopting GSCM.

Choi et al. (2018)emphasized upon how competitive market environment can convince a firm into adopting GSCM activities. They also focused on how the adoption on particular activities enhanced the firm's performance. A structural equation model was used on data collected from 322 Korean companies using questionnaires. Green purchasing amongst other green supply chain activities was found to have the highest effect on marketing and manufacturing performance. It was also found that both marketing and manufacturing performance went through a positive influence due to internal environmental management but had negligible effect of reverse logistics and cooperation with customers. The study can help managers who are hesitant in adopting GSCM for their firms because there are dubious views regarding its pros relating to managers. This paper is helpful because it separated more effective activities from the less effective ones and the paper can be taken as a practical advice.

In response to the growing awareness about environmental issues and demands of consumers as well as government regulations about producing goods and services that are most environmental friendly, manufacturing entities have been adopting GSCM activities. However, not many studies have been conducted to explore the

effect of GSCM on operational competitive ability of a developing country. Famiyeh et al. (2018) explored the above mentioned for Ghana along with the magnitude of adoption of the GSCM in the country. Using a survey of informants involving factors like delivery time, cost, quality and flexibility, the variable were studied by applying structural equation model. It was concluded that positive relationship existed between cost, flexibility and quality aspect of operational competitive ability and environmental management systems as well as green purchasing, however, no positive link was found with delivery time. More analysis revealed that flexibility and cost were significantly affected by environmental management activities while the operational efficiency varied for mining, construction, services and manufacturing. An insignificant effect of green purchase was found on delivery time, cost reduction, flexibility and quality improvement. The study provided the effects of environmental management systems and green purchasing aspects of the GSCM and how they can be used in a developing economy to improve cost reduction, quality, flexibility and reduced delivery times. Firms can use this to enhance their operational competitive performance.

Environmental sustainability has promoted firms to adopt environment friendly activities not only within their firm but overall as the GSCM. In light of the mostly presented view, GSCM is seen as well-advised however, the questions regarding the link between practicing it and the performance remain. I.e. what is the link between GSCM and firm performance and secondly, when is this relationship weaker and stronger? Fang and Zhang (2018) studied the existing literature to answer these questions and analyzed them quantitatively using random-effects meta-analysis on 54 pieces of literature with effect sizes of 245. Meta-regression and subgroup analysis was also used to find out likely factors that may affect the intensity of the practice-performance link. The results show a positive link between external and internal GSCM activities while affecting firm performance positively. In descending order of effectiveness it is given as environmental, operational and then economic performance. Further tests revealed the ISO certificates, industry type, cultural element of uncertainty avoidance and export orientation has mediating effect on this link.

Characterized by a growing industrialization, Pakistan is a developing economy with environmental pollution. To counter this, a green incentive has been started. GSCM is an important part of this strategy. Mumtaz et al. (2018) included ten Pakistani organizations that have adopted GSCM. DEMATEL which stands for the Decision-Making Trial and Evaluation Laboratory technique is utilized to identify the most effective components for choosing GSCM. The study found organizational involvement as the most effective component. Factors like ISO 14000 certification of partners, willingness of senior management, recycling of waste heat were found as important components. Much like previous studies, this study also aims to help

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decision makers in choosing important components that they can focus on to effectively adopt GSCM.

Jawaad and Zafar (2020) took a cumulative approach to explore the effects of adopting GSCM on organization's performance with arbitrary part of competitiveness and recovery of investment. This was an initiative to distinguish the link between investment recovery and organizational performance is arbitrated by competitiveness. 272 ISO (14001) certified textile organizations in Pakistan gave the required data that was used in the theoretical model. Partial least square structural equation modeling was used to assess it. Positive effect of the GSCM on the organizational performance was found while strong arbitrary role of investment recovery was found between performance of the organization and green supply chain activities between firms.

Siddiqui and Ikram (2019) explored the effect of GSCM on the export while keeping and account of the arbitrary effect on the environmental performance in the textile industry of Pakistan. Using a questionnaire that had Likert scale style questions, data was extracted from 350 responses from the textile sector. Analysis through structural equation modeling revealed that a significant positive link existed between the three variables. Thus, GSCM can be used by more companies to enhance export and environmental performance.

Khan and Qianli (2017) probed the effects of five variables of GSCM on the performance of an organization. The data for this study was collected from a sample of 218 manufacturing sector organization and the independent variables whose effects were studied are as follows: green information systems, cooperation with consumers, green manufacturing, green purchasing and eco-design. Exploratory factors and regression analysis found that except green purchasing, all the remaining variables had a significant impact. It was also found that the eco-design and green manufacturing had the most impact. One of the major contributions of this study was that it makes possible to study and observe the negative impacts of green purchasing towards organizational performance.

The notion of sustainable and GSCM is still an emerging topic and is in the initial phase, especially pertaining to the emerging economies of Asia. A more wholesome study that studied the influence of GSCM on firm performance with arbitrary role of competitiveness and investment recovery. 272 textile firms with ISO (14001) provided required data. Partial least square structural model assisted the theoretical model. Results from statistics revealed that GSCM practices had a positive impact on

the performance of a firm. Investment recovery strongly arbitrated among company performance and inter-organizational green practices (Zafar & Jawaad, 2019).

The implementation of the GSCM is encouraged within an organization by factors like ecological benefits, monetary benefits and it gives competitiveness advantage. The study focused on drivers of GSCM and its effect on manufacturing company performance in sectors like pharmaceuticals, textiles and chemical industry of Pakistan. Social pressure, institutional pressure and competitive pressure were the three drivers in focus. 263 responses were used as the required data in this study which were collected from managerial positioned individuals in manufacturing sector. It was concluded that institutional pressure had the most impact towards competitiveness and GSCM. Social and competitive pressure also had a significant impact. The competitiveness and economic performance of the firm was also found to have been significantly affected (Akhtar, 2019).

The motive of this study is to study the impact of GSCM on the firm's performance. Therefore, firm performance is the dependent variable while GSCM is the independent variable. Although the articles above show a pattern of a positive significant relationship amongst GSCM activities and performance, in most cases, the studies are either industry specific or they have an arbitrary variable which interferes. Thus, a need to explore and study the relationship of GSCM and firm performance, ceteris paribus, was there, especially for a developing country like Pakistan. Additionally, most studies have been conducted with focus on one industry, therefore this study will be generalized.

Methodology

The main objective of conducting this study is to study the overall impact of GSCM practices on firm performance. Although studies on very similar topics have been conducted in other countries in the past but those studies have been limited to very specific industries or to those markets. Thus, this study is specific to study the impact of GSCM on firm performance but irrespective of the industry type. Four common practices of GSCM have been focused upon in this study and their impact of 4 factors of performance will be studied.

The nature of this study was deductive as we had speculated the relation between the variables by referring to similar studies, but we had to reaffirm the nature of the relation and the effect with empirical data. Due to the Corona Virus threat, Questionnaires developed on Google forms are sent via internet to personnel

ISSN (P):2788-4821 & ISSN (O): 2788-483X
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associated with supply chain activities of firms operating in Karachi. Using the Likert scale with 7 divisions where '1' denoted 'Strongly Disagree' and '7' denoted 'Strongly Agree'. The quantitative and cross sectional data will be collected. The questionnaire will be sent to the maximum organizations so that a good amount of data is collected. The unit of analysis for this study is an individual working in the supply chain department of an organization.

The sampling technique chosen for this study in non-probability sampling technique, as we have chosen the samples conveniently available for the study. The sample size for this study is 201 supply chain individuals. SPSS software was used to check reliability by running Cronbach's alpha test, regression and correlation on the data collected from the responses. Multiple regression analysis was used to test the data.

Data Analysis

Responses from Supply chain individuals were analyzed using SPSS. There were no restrictions of age, gender, income group and/or education level as there was absolutely no need for such data for this study. Therefore no analysis was made on demographics. Before proceeding to the analysis, reliability of the data is checked through Cronbach Alpha. Appendix ATable 5 shows the reliability statistics for 23 items of the questionnaire. Cronbach Alpha (α) of 0.817 established the reliability of the questionnaire as it is above the cutoff point of 0.7 and signifies that strong consistency and closely related objects exist. The important thing was to know about GSCM practices implemented in the organization. Appendix A Table 6 represents the responses of 201 individual's showing 76.6 % individuals belong to firms who used GSCM practices at some level, while 23.4 percent belonged to firms who are not using GSCM practices.

The participants were asked about the firm performance factors that were affected by GSCM practices under considerations. The first question was about Eco-Design, 11% thinks that sales have improved, 25% thinks that it has helped in increasing the profitability where as 17% thinks it has helped in higher return on investment as shown in table 7 Appendix A.

Almost 49% of the respondents thinks that green manufacturing has helped in reducing manufacturing costs where as 26% thinks that it has helped in increasing return on investment as shown in the Appendix A table 8.

Appendix A Table 9 shows the responses related to reverse logistics, 26% thinks that it has helped in increasing return on investment, Whereas 46% supply chain individuals think that reverse logistics have helped in increasing the sales and other think it has somewhat affected profitability, manufacturing cost and return on investments as well.

Correlation test was run to see the interdependence of the variables. The table shows that there is a positive and strong relationship between Eco design and Firm Performance for the sample of this study, where as Green information Systems also has a positive and strong relationship with firm performance. The relationship between all the four factors; Eco-design, Green Information systems, Green manufacturing and Reverse logistics with firm performance is significant as shown in Table 1 below.

Table 1Correlations between Eco Design, Green information systems & Manufacturing, Reverse logistics and firm performance

		ED	**GIS**	**GM**	**RL**	**Firm Performance**
ED	Pearson Correlation	1	0.795**	0.663**	0.658**	0.734**
	Sig.(2-tailed)		0.000	0.000	0.000	0.000
	N	201	201	201	201	201
GIS	Pearson Correlation	0.795**	1	0.712**	0.750**	0.774**
	Sig.(2-tailed)	0.000		0.000	0.000	0.000
	N	201	201	201	201	201
GM	Pearson Correlation	0.663**	0.712**	1	0.694**	0.768**
	Sig.(2-tailed)	0.000	0.000		0.000	0.000
	N	201	201	201	201	201
RL	Pearson Correlation	0.658**	0.750**	0.694**	1	0.731**
	Sig.(2-tailed)	0.000	0.000	0.000		0.000
	N	201	201	201	201	201
Firm Performance	Pearson Correlation	0.734**	0.774**	0.768**	0.731**	1
	Sig.(2-tailed)	0.000	0.000	0.000	0.000	
	N	201	201	201	201	201

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

The value of R Square, Coefficient of determination is 0.725, it means that 72.5% of variation in the dependent variable; firm performance is explained by the independent variables including Eco-design, Green information systems, green manufacturing and reverse logistics as shown in Table 2 below

Table 2Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.852a	0.725	0.720	0.58742

Predictors: (Constant), RL, ED, GM, GIS

Tale 3 shows that the F- statistics is significant, it means that the overall model is good fit for the data and is significant. It can be concluded that the present model can be used for prediction.

Table 3ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	178.600	4	44.650	129.397	0.000[b]
	Residual	67.632	196	0.345		
	Total	246.233	200			

a. **Dependent Variable: Firm Performance**
b. **Predictors: (Constant), RL,ED,GM,GIS**

Table 4Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		

1	(Constant)	0.732	0.219		3.349	0.001
	ED	0.198	0.063	0.200	3.143	0.002
	GIS	0.200	0.064	0.229	3.136	0.002
	GM	0.304	0.052	0.338	5.852	0.000
	RL	0.167	0.053	0.193	3.187	0.002

a. **Dependent Variable: Firm Performance**

Table 4 shows that all of the established hypothesis for this study are accepted as all the significant values are less than 0.05, hence we can conclude that eco design, green manufacturing, reverse logistics and green information systems all have a positive and significant effect on firm performance.

For each unit increase in eco design, the firm performance will increase by 19.8%. Similarly for one unit increase in green information systems, the firm performance will increase by 20%, for one unit increase in green manufacturing, the firm performance will increase by 30.4% and for one unit increase in reverse logistics, the firm performance will increase by 16.7%.

The multiple regression equation for the conceptual model will be

Firm Performance = 0.732 + 0.198(Eco-Design)+0.200(Green information System) + 0.304 (Green Manufacturing) + 0.167 (Reverse logistics)

Conclusion

The findings of this research are somewhat close to that of the previous studies. Many previous studies of similar kind have shown and proved substantial impact of GSCM on Organizational performance. However, the reason for lack of similarity between the findings of this research and the ones before it lies in the choice of measures of dependent and independent variables. The idea that the residual value is 67.632, which denotes that there are other factors affecting the firm performance, tells us that there may be other practices of GSCM which affect the firm performance. These should be studied in the future if we wish to further explore the link between performance of firms and GSCM. Additionally, another reason for lack of similarity maybe the fact that this study aimed to increase the generalizability and it did not focus on a specific industry. Following are the essential findings and results of this study which are mostly in line with previous literature:

- Majority of the people in a significant population of 201 believed that GSCM impacted the firm's performance in a positive way.

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- A significant number of people out of 201 respondents, stated that they worked in firms which implemented one or more GSCM practices.
- Majority of the population believes that the firms which implement GSCM practices are favored by customers more than those which do not.

Recommendation

Although the study found positive relationship between GSCM practices and firm performance, all the firms operating in Pakistan should adopt these practices as Pakistan is likely to be more affected by environmental challenges. The managers should pay more focus on implementation of these practices to further improve firm performance.

Future Studies

For future studies, the geographical area can be expanded and more variables associated with GSCM should also be studied.

Ethical considerations

The responses are anonymous and the data collected was used for this study only. The participation was voluntary and all participants were given a choice to refuse participation if they did not feel comfortable sharing this information at any point while filling the questionnaire.

References

Al-Sheyadi, A., Muyldermans, L., & Kauppi, K. (2019). The complementarity of green supply chain management practices and the impact on environmental performance. *Journal of environmental management, 242*, 186-198.

Akhtar, P. (2019). DRIVERS OF GREEN SUPPLY CHAIN INITIATIVES AND THEIR IMPACT ON ECONOMIC PERFORMANCE OF FIRMS: EVIDENCE FROM PAKISTAN'S MANUFACTURING SECTOR. *Journal of Competitiveness, 11(2)*, 5-18.

Choi , S. B., Min, H., & Joo, H. Y. (2018). Examining the inter-relationship among competitive market environments, green supply chain practices, and firm performance. *The International Journal of Logistics Management*.

Choi, D., & Hwang, T. (2015). The impact of green supply chain management practices on firm performance: the role of collaborative capability. *Operations Management Research, 8(3)*, 69-83.

Famiyeh, S., Kwarteng, A., Darko, D. A., & Dadzie, S. A. (2018). Green supply chain management initiatives and operational competitive performance . *Benchmarking: An International Journal*.

Fang, C., & Zhang, J. (2018). Performance of green supply chain management: A systematic review and meta analysis. *Journal of Cleaner Production, 183*, 1064-1081.

Green, 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(3)*, 290-305.

Jawaad, M., & Zafar, S. (2020). Improving sustainable development and firm performance in emerging economies by implementing green supply chain activities. *Sustainable Development, 28(1)*, 25-38.

Khan, A. R., & Qianli, D. (2017). Impact of green supply chain management practices on firms' performance: an empirical study from the perspective of Pakistan. *CrossMark*, 29-44.

Mitra, S., & Datta, P. P. (2014). Adoption of green supply chain management practices and their impact on performance: an exploratory study of Indian manufacturing firms . *International Journal of Production Research, 52(7)*, 2085-2107.

Mumtaz , U., Ali, Y., Petrillo, A., & De Felice, F. (2018). Identifying the critical factors of green supply chain management: Environmental benefits in Pakistan. *Science of the Total Environment, 640-641*, 144-152.

ISSN (P):2788-4821 & ISSN (O): 2788-483X
Volume 3, Issue 2, Page 1-19, May 30, 2022 (Special Issue)

Sharma, V., Chandna, P., & Bhardwaj, A. (2017). Green supply chain management related performance indicators in agro industry: A review. *Journal of Cleaner Production, 141*, 1194-1208.

Siddiqui, D. A., & Ikram, M. N. (2019). Effect of Green Supply Chain Management on Environmental Performance and Export Performance: A Case Study of Textile Industries in Pakistan. *Social Science and Humanities Journal, 3(4)*, 1006-1019.

Younis, H., Sundarakani, B., & Vel, P. (2016). The impact of implementing green supply chain management practices on corporate performance. *Competitiveness Review, 26(3)*, 216-245.

Zafar, S., & Jawaad, M. (2019). Improving sustainable development and firm performance in emerging economies by implementing green supply chain activities. *Sustainable Development*, 1-14.

Appendix A

Table 5Reliability Statistics

Cronbach's Alpha	No of items
0.817	23

Table 6 Does your firm implement Green Supply Chain Management practices at any level?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	47	23.4	23.4	23.4
	Yes	154	76.6	76.6	100.0
	Total	201	100.0	100.0	

Table 7 Firm Performance factors positively affected by Eco Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sales	22	10.9	10.9	10.9
	Profitability	50	24.9	24.9	35.8
	Reduced Manufacturing Costs	72	35.8	35.8	71.6
	Higher Return on investments	32	16.9	16.9	88.6
	None of the above	23	11.4	11.4	100.0
	Total	201	100.0	100.0	

Table 8 Firm Performance factors positively affected by Green Manufacturing

		Frequency	Percent	Valid Percent	Cumulative Percent
	Sales	8	4.0	4.0	4.0
	Profitability	35	17.4	17.4	21.4
	Reduced Manufacturing	97	48.3	48.3	69.7

Valid	**Costs**				
	Higher Return on investments	52	25.9	25.9	95.5
	None of the above	9	4.5	4.5	100.0
	Total	201	100.0	100.0	

Table 9 Firm Performance factors positively affected by Reverse Logistics

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**Sales**	92	45.8	45.8	45.8
	Profitability	26	12.9	12.9	58.7
	Reduced Manufacturing Costs	35	17.4	17.4	76.1
	Higher Return on investments	12	6.0	6.0	82.1
	None of the above	36	17.9	17.9	100.0
	Total	201	100.0	100.0	