Sustainable performance remains a debate among the business community however, achieving sustainability remains a challenge. Globally, firms have incorporated different initiatives to gain efficiency and effectiveness, but developing nations are still in transit. Operationalization of green initiatives to gain operational performance was rare in Asian literature and practice. Therefore, this study was conducted to examine the role of green supply chain management practices that impact a firm’s operational performance and the mediating role of lean management in the textile sector of Karachi. A quantitative method was used in this study and data were collected from 184 Supply Chain Officials from the textile sector of Karachi through a convenience sampling technique. The data were analyzed by Partial Least Structural Equation Modeling (PLS-SEM) through Smart PLS 3.0. The results indicated that green procurement has a significant direct and indirect effect on operational performance however, eco-design and green manufacturing did not show a significant direct association. Further, lean management significantly mediates the relationship between green manufacturing, green procurement, and operational performance. In contrast, eco-design without lean management does not positively impact operational performance. This study provides sound recommendations to local firms in implementing green practices rigorously to compete internationally and to educate workers and suppliers about the importance of using these practices.

INTRODUCTION

The global output majorly depends on manufacturing firms at one end however, on the other end these firms put enormous pressure on environmental degradation and compromise operational efficiency (Mishra et al., 2022). Organizations worldwide are trying hard to optimize operational efficiency through certain measures. Developed countries have almost re-engineered and redesigned their business processes by integrating green initiatives however, developing countries are still in the transit phase (Khan et al., 2023). The emerging economies are facing immense environmental issues and climate change therefore, heading towards industrial negative influences on land, atmosphere, water, and wildlife resulting in the melting
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of glaciers, icebergs, and depletion of the ozone layer. Nowadays, the outcomes of firms' processes are more visible and customer awareness is increasing regarding environmental challenges, some organizations are still hesitant to adopt green supply chain management practices. Further, firms' awareness of how to adopt environment-friendly processes and the lack of government interest in saving the environment, the majority of firms are reluctant to adopt these practices because of the negative financial influence of GSCM on profitability (Khan et al., 2022). To address these negative perceptions, government, regulatory bodies, and firms need to extend and reinforce regulations, policies, and steps for the efficient implementation of green initiatives (Liu et al., 2023).

The evolution of the supply chain has been witnessed since the twenty-first century and is becoming a philosophy that is very much conscious about the environment and the toxic and harmful impacts on operations (Jaggernath & Khan 2015). Even though the world began to recognize green supply chain management operations and started advancements in GSCM technologies in the 2000s the idea of green supply chain management was proposed in the 1900s (Mathu, 2019). Implementing GSCM is not only advantageous for addressing UNSDGs but also improves energy efficiency, increases profitability, reduces pollution, minimizes operating cost, and helps in gaining a competitive edge (Jaggernath & Khan 2015). Therefore, green manufacturing has been around for a long time but it gained popularity when the world started to realize the environmental effect of manufacturing processes and transformed into environment-friendly processes the benefits of which are growing continuously (Weinhandl, 2018). Green manufacturing is revamping old processes to achieve eco-friendly processes (Panda et al., 2016a, 2016b, Pujara et al., 2019). Green manufacturing focuses on reducing emissions effect on the environment, aiming to minimize the environmental pollution by the manufacturing processes to meet the requirements without affecting the environment, reduce use of raw material, energy, waste, disposal, manufacturing cost, and improve the firms competitive edge, it also uses recycling methods to reduce other means of pollution (Lin & Hao, 2020).

Global regulatory bodies have set some international standards for manufacturing firms and their trading partners in the development of products and services concerning their environmental consequences. Eco-design is one of the primitive steps in products development which covers the role of manufacturing firms and trading partners. (Aslam et al., 2019). By adopting Eco-design, firms and their trading partners are capable of providing the desired products and services to customers fulfilled their demands, and also gaining competitiveness and cost efficiency. (Park et al., 2022; Balikci et al., 2021). Customers are influenced to purchase green products because of environmental awareness and this gives a clear concept that green purchasing enhances a firm's performance and helps in achieving sustainability which results in motivating shareholders to make environment-friendly policies to attract more customers (Hazaea et al., 2022). This can be achieved when an organization demands suppliers to use green practices, and products received by suppliers to be green and to collaborate with
suppliers to take them towards a green direction through training and other means (Blome et al., 2014).

Lean Management is being accepted and used not only in one but many different business sectors as well. It has transformed into an interdisciplinary idea with relationships (Sinha & Matharu, 2019). To gain a competitive edge an organization not only has to work on its internal operations but also the supply chain as a whole. The adoption of lean management has become the reason to increase competitiveness by significantly improving efficiency and flexibility at all steps included in the supply chain (Fuentes et al., 2019). This study revolves around the point of how GSCM practices will benefit the firms' operational performance. This study has explained further the importance of these processes not just for the firms' performance but also for the environmental betterment. Further, lean management has provided a sound competitive benefit, cost reduction, efficiency, and sustainable processes to manufacturing firms. Implementation of lean management practices among firms in developing countries showed mixed findings due to immature research on the topic. Therefore, through this study, scholars have addressed this philosophy among the textile manufacturing firms of Pakistan.

The large-scale manufacturing firms contribute 78% of contribution to the manufacturing and 14-15% in GPD. Similarly, the textile manufacturing sector of Pakistan contributes 61% to Pakistani exports and 41% to the employment provision. This showed the exponential contribution of the textile industry in manufacturing and GDP but on the other hand, these firms are putting immense environmental impact which continuously deteriorating the environmental and climate situation in Pakistan Khan et al., (2023). These environmental and climate changes ignited due to the processes used in the textile manufacturing industry i.e., hazardous chemicals such as bleach being dumped in the sea, untreated waste dumped and burned, etc. causing harm to the environment. To address these climate change and environmental issues, manufacturing firms in textile industry need to incorporate some green initiatives and practices that could minimize these perilous environmental changes and optimize operational performance. Therefore, this study has focused on the impact of green supply chain management practices like eco-design, green purchasing, and green manufacturing with the help of lean management as mediators on the operational performance of textile manufacturing firms. Hence, through this study, scholars have tried to answer the following questions. “How green purchasing, eco-design and green manufacturing influence the firm’s operational performance: and “Does lean management act as a significant mediator between green practices and operational performance”? This paper further proceeds through the following sections; section 2 discussed the literature review and hypotheses development; section 3 discussed the methodology and section 4 covered the results and discussion. Lastly, this paper ends up on a conclusion, implications, and directions for future research.
LITERATURE REVIEW

Green Supply Chain Management

Green supply chain management (GSCM) is a philosophy to provide goods and services to customers through eco-friendly practices that reduces the environmental burden of those goods and services. (Kaufman & Ülkü, 2018). GSCM intends to increase renewable resources and provide methods to manage the effects on the environment (Kazancoglu, et al., 2018). Large companies have started to adopt GSCM practices because of the increasing demand but small businesses are still reluctant to implement these practices and little has been known so far among the developing countries. Like large companies, small firms should also be concerned about environmental protection and should be inspired to add towards a sustainable task (Haq, 2022; Tseng et al., 2019). Literature also indicated that green entrepreneurial-orientated firms can only minimize the dangerous influence, manufacturing and service processes have on the environment by adopting GSCM practices, and by these practices, a firm can minimize the environmental impact. They also state that green entrepreneurial orientated firms can adopt innovations and undergo the risk of implementing them to provide positivity to the environment with the help of GSCM practices (Habib et al., 2020).

Green Manufacturing

Green manufacturing is explained as environmentally friendly production processes in a business that used renewable resources, renewable energy resources raw materials in their manufacturing processes. Green manufacturing not only helps in environmental achievements but also helps in enhancing the producers' bottom line, motivating employees, and illustrating social responsibility to the world (Weinhandl, 2018). Further, literature indicated that green purchasing has the power to integrate the trading partners and compel them to address environmental issues. However, some of the studies have also spotlighted the negative financial consequences of green purchasing on suppliers and also highlighted that product information sharing is a threat to manufacturing firms.

Eco Design

Eco-design is a fundamental tool used to enhance sustainability and lower the negative effects of the product on the environment during the product design (Varžinskas et al., 2020). It is explained as the execution of operations by manufacturers to lower the products' unfavorable environmental effects during the products' life cycle (Schäfer & Löwer, 2020). Eco-design means that in each stage of the designing process, there have been remarkable observations given from the idea of the product, draft, production, and the effect it will have on the environment throughout its life to the delivery and recycling of it (Anderson, 2021). Some of the scholars highlighted that the supplier’s role is very crucial in the product design stage.
Green Procurement

Purchasing raw materials from the suppliers for product development which addresses the environmental needs during the procurement phase is essential. Literature indicates that supplier’s involvement in the procurement phase can provide the manufacturing firms with cost efficiency, effectiveness, and other operational performance in manufacturing. Further, the extension of green purchasing to consumers can alter their buying habits and patterns towards more eco-friendly patterns that can further promote the environmental performance of firms by extending the firms-customer bonding (Davari et al., 2017). Green purchasing refers to strategic purchasing which results in the benefits of procuring goods and services that have minor or little to no unfavorable effect on the environment and replaces those goods and services that are bought for the same purpose but used to damage the environment (Slastanova et al., 2021).

Lean Management

Lean management is known to improve the performance and operations of manufacturing systems (Cortes et al., 2016). Previously lean management was only known for a set of tools that were used in the production system but now it’s been a very important part of the production system (Danese et al., 2018). Lean management brings promise to solve many future challenges in the production department (Mayr et al., 2018). To build a base for better production in an organization mainly in industrial organizations Lean Management plays the most important role. (Deuse et al., 2020). Lean management helps in waste reduction because of which costs, inventory, and storage costs are decreased and by this advantage not only quality is increased but also leads to customer satisfaction (Veres, 2020). Nowadays the concept of Lean is no longer an option but is becoming an essential tool in organizations throughout the world as lean manufacturing brings new opportunities to the firms to create great value to succeed in competition (Pažek, 2021). With the increasing pressure for environmental safety in today’s world, lean management has made its place as an effective management method to eliminate production waste which results as a plus point for the organization.(Teixeira et al., 2021)

Operational Performance

From 2012-2014 and even before authors in their respective research explain that cost, quality, delivery, and flexibility are the methods by which a firm’s performance is judged (Abdallah et al., 2014, 2016; Ortega et al., 2012). Operational performance enhancement is the outcome of waste reduction and other pollution precautions, total quality management, and lean production with the help of lesser costs, taking advantage of the inputs and lower cycle times (Golicic & Smith 2013). Deng & Smyth, (2014) define operational performance into three types. The first is Multidimensionality means that due to shareholders, multiple strategies, and dissimilarity in the understanding size, there is always a difference in the point of view of everyone. Second is Dynamism which is defined as the aim to achieve high rewards for the stakeholders in the
short and long term and the last is Comparability is to investigate the market competitor firms and set a benchmark for the firm according to the analysis (Deng & Smyth, 2014).

A firm should concentrate on its internal processes to achieve competitiveness in the market. A firm's internal processes are represented by a group of variables i.e., the quality of the product, the quality of the process, manufacturing, success, and operational performance (Hameed et al., 2020). These processes are applied to measure a firm's operational performance (Abdallah et al., 2014). A crucial factor of an organization's performance is customer retention which can be forecasted by customer satisfaction (de Haan et al., 2015). A Study conducted a test to measure the firms’ performance and three factors were considered i.e. the financial performance, the marketing performance, and the production performance (Tuan et al., 2016). In 2017 Halim & Mustika (2017) describe that organizational performance is a complex idea and it has three standards that help in the process of increasing the profits for the firm which are production, finance, and marketing. Organizations face a lot of risks to make, improve, and carry on the processes and this is because of growing market competition and uncertainties (Halim et al., 2017).

**Relationship between Green Supply Chain Management and Operational Performance**

GSCM operations like environmental management systems and green buying processes have an enhancing impact on the company’s performance in terms of cost, quality, and flexibility but it doesn’t show a significant relationship with the time of delivery (Famiyeh et al., 2018). Development was made which explained that when environment-friendly processes are followed by taking in together customers and suppliers will result in a favorable impact on the firm's operational performance (Santos et al., 2019). Other than internal environmental management and green buying all other measures of GSCM have an enhancing effect directly or indirectly on performance measures. GSCM operations do not have a direct impact on economic performance but indirectly enhance it (Sahoo & Vijayvargy 2021).

Research was conducted to analyze the related direct and indirect effects between green GSCM practices, green innovations, and the performance of the firm and the results showed a beneficial link between GSCM, green innovations, and the organizations' performance, and an indirect link was also examined which showed that green innovation plays the role of a mediating factor between the organization’s performance and the green supply chain management (Novitasari & Agustia, 2021). Green supply chain management has a beneficial impact on operational performance, the green supply chain has a substantial impact on environmental performance, environmental performance has a significant effect on operational performance and there is a mediating effect of environmental performance on green supply chains effect on operational performance (Permana & Soediantono, 2022).
Green Manufacturing and Operational Performance

The results of adopting green production indicated an exponential decrease in manufacturing cost, expansion in speed and flexibility, enhancement in quality and consequently headed towards improvement in operational performance which takes the organization towards achieving a competitive edge (Musau, 2019). Further, Musau & Rucha, (2021) extended their previous work by using the regression model technique to examine the quantitative data and found that green manufacturing has a substantial impact on operational performance.

Eco Design and Operational Performance

Some research show eco design does have an advantageous impact on operational performance while some literature shows it does not influence operational performance. Previous studies concluded that eco-design does not impact a firm’s operational performance (Li et al., 2016). Eco-design processes have a beneficial effect on the firm's operational and environmental performance. The authors recommended manufacturing firms should provide training and empower their workforce to adopt eco-design processes to ensure success and encourage environmental sustainability (Wakulele et al., 2016). Green design and GSCM had a positive impact on improving a firm's operational performance through the test conducted (Musau and Rucha, 2021).

Green Procurement and Operational Performance

Green purchasing has a remarkable effect on green supply chain management which results in enhancement in operational, economic, environmental, and intangible performance (Khaksar & Management 2309-8023). Green procurement not only has a positive impact on the firms' performance but also is beneficial for the reputation of the firm (Sarhaye, 2017). A study revealed that green purchasing is an important factor in a firm's performance (Anane, 2020). As there are a lot of studies showing a positive relation between the two variables there are also a small number of studies that show that GP does not have a significant impact on OP it was shown that green procurements had no impact on OP (Hijjawi, 2022). Based on the above critical discussion, the scholars have hypothesized the following hypotheses.

H1: Green manufacturing has a significant impact on Operational Performance.

H2: Eco Design has a positive impact on Operational Performance.

H3: Green Procurement has an effective impact on Operational Performance.

Relationship between Lean Management and Operational Performance

Some studies showed a positive influence between lean management and operational performance while others concluded that they did not find any positive association between these variables. A recent study showed that GSCM processes did not support operation performance significantly (Inman & Green, 2018). Lean manufacturing is not an out-of-date
practice but is very important to achieve the advantages of emerging technologies and leads to advancements in operational performance (Buer et al., 2021). Lean practices are significant and directly influence the performance of the manufacturing organizations’ operations. (Sahoo & Vijayvargy, 2021).

By implementing Lean management practices through GSCM, researchers have concluded that there are notable improvements in environmental, economic, and competitive performance (Singh et al, 2020). The importance of the link between GSCM and Lean Management was again explained and highlighted that if a firm wants to achieve sustainable performance through Lean Management they should adopt GSCM practices (Singh et al., 2020). If a firm applies GSCM practices then lean management plays a role in achieving sustainable performance (Awan et al., 2022; Hashmi et al., 2015). Based on the above critical discussion, scholars have drawn the following hypotheses:

H4: Lean Management significantly mediates the relationship between Green Manufacturing and Operational Performance.

H5: Lean Management significantly mediates the relationship between Eco Design and Operational Performance.

H6: Lean Management significantly mediates the relationship between Green Procurement and Operational Performance.

**Conceptual Framework**

![Figure 1 Conceptual Framework](image-url)
DATA AND METHODOLOGY

A deductive approach followed by an explanatory design was utilized to test the proposed relationships. The study was quantitative and we employed a survey strategy as the majority of the management research is conducted by using these strategies and approaches. Further, the study utilizes the cross-sectional nature of data collection as this nature is more convenient and provides bias-free responses from respondents. Data were collected through self-administered adopted questionnaires through all available online mediums and face-to-face methods. The population of this study was the supply chain officials of the textile industry of Karachi. Data were collected from only those textile firms listed on the Karachi Stock Exchange. According to their database, there are only 44 listed textile firms and the number of supply chain officials was unknown. Hence, according to Saunder et al., (2009) and Krejcie & Morgan's, (1970) table, the sample size is 384. A questionnaire was distributed among 384 supply chain officials of these firms through a convenience sampling technique and a total of 184 valid responses were included in data analysis at 95 % confidence and 5 % marginal error. The instrument was adopted from Maware & Adetunji, (2019) and (Khan et al., (2022). A close-ended questionnaire containing a five-point Likert Scale ranging from (1) Strongly Disagree to (5) Strongly Agree was distributed. The collected data was analyzed on Smart PLS through the PLS-SEM technique.

RESULT AND DISCUSSION

Descriptive Statistics

The majority of the respondents were male (75.54 %) between the age 26-35 years with masters as the highest degree and experience between 1-3 years. The rest of the demographic details are shown in table I below.

<table>
<thead>
<tr>
<th>Table I Descriptive Statistics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 to 25</td>
<td>23</td>
<td>12.5%</td>
</tr>
<tr>
<td>26 to 35</td>
<td>105</td>
<td>57.06%</td>
</tr>
<tr>
<td>36 to 45</td>
<td>56</td>
<td>30.43%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>139</td>
<td>75.54%</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>24.45%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate</td>
<td>55</td>
<td>29.89%</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>129</td>
<td>70.11%</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 3 years</td>
<td>78</td>
<td>42.39%</td>
</tr>
<tr>
<td>3 to 5 years</td>
<td>55</td>
<td>29.89%</td>
</tr>
<tr>
<td>5 or more years</td>
<td>51</td>
<td>27.71%</td>
</tr>
</tbody>
</table>
Reliability Analyses

According to Hair et al. (2017) the value of Cronbach alpha / Composite Reliability should be higher than 0.70 and values of AVE should be greater than 0.50. In our case, all the values of Cronbach’s alpha, CR, and AVE meet the threshold values and show good reliability. Further, Hamid et al., (2017) indicated that higher values of reliability are considered good in survey-based research. The statistical analysis of this study shows that all variables used in this study have values more than 0.7 and are higher than 0.70 which means that the reliability level is high and falls in the acceptable index. The values between 0.60 to 0.80 are accepted by falling in under moderate while above 0.80 are considered to be very good. Further, values of two variables fall between the range of 0.60 to 0.80 i.e. (0.727, 0.788) while the other three variables are higher than 0.80 i.e. (0.815, 0.860,0.841) While values above 0.90 are considered to be unpleasant (Nunnally, & Bernstein, 1994). For sufficient convergent validity, the value of AVE should be greater than 0.50 (Fornell, & Larcker, 1981, Bagozzi & Yi, 1988; Hair Jr et al., 2014; Henseler et al., 2009). The AVE of all the variables in this study is greater than 0.50 which means that all variables have sufficient convergent validity and with the help of this we can assume that there are no problems with the validity of the construct. Values of Cronbach’s alpha, composite reliability, and Average Variance Extracted (AVE) are shown in Table II below.

Table II Summary of Reliability Analyses

<table>
<thead>
<tr>
<th>Construct Variable</th>
<th>Cronbach’s alpha</th>
<th>Composite Reliability</th>
<th>AVE</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Manufacturing</td>
<td>0.815</td>
<td>0.856</td>
<td>0.544</td>
<td>5</td>
</tr>
<tr>
<td>Eco Design</td>
<td>0.727</td>
<td>0.842</td>
<td>0.641</td>
<td>3</td>
</tr>
<tr>
<td>Green Procurement</td>
<td>0.860</td>
<td>0.890</td>
<td>0.575</td>
<td>6</td>
</tr>
<tr>
<td>Lean Management</td>
<td>0.788</td>
<td>0.860</td>
<td>0.607</td>
<td>4</td>
</tr>
<tr>
<td>Operational Performance</td>
<td>0.841</td>
<td>0.882</td>
<td>0.601</td>
<td>5</td>
</tr>
</tbody>
</table>

The Discriminant Validity of the constructs is shown in table III below. According to Fornell & Lacker’s (1981) method which shows the square correlation $R^2$ with the variables and shows if a variable is discriminant or not. However, according to the statistical analysis of this study, all the values in the discriminant table are higher than the square root of the AVE, and can be said that there was no discrimination in this study.

Table III Discriminant Validity

<table>
<thead>
<tr>
<th></th>
<th>GM</th>
<th>ED</th>
<th>GP</th>
<th>LM</th>
<th>OP</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM</td>
<td>0.800</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED</td>
<td>0.778</td>
<td>0.830</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP</td>
<td>0.743</td>
<td>0.786</td>
<td>0.758</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LM</td>
<td>0.712</td>
<td>0.761</td>
<td>0.755</td>
<td>0.779</td>
<td></td>
</tr>
<tr>
<td>OP</td>
<td>0.681</td>
<td>0.738</td>
<td>0.685</td>
<td>0.769</td>
<td>0.775</td>
</tr>
</tbody>
</table>
The first hypothesis of this study which states that green manufacturing has a significant relation with Operational Performance has been accepted and the analysis shows a positive relationship between the two variables i.e., green manufacturing and operational performance. The p-value is 0.000 which is less than 0.05 which means it is statistically significant. Adopting green manufacturing processes increases a firm’s operational performance. The second hypothesis of this study states that Eco-design has a positive relation with Operational performance was not supported as the p-value is 0.168 which is greater than 0.05. It is not statistically significant and means that Eco-design does not influence a firm’s operational performance.

The third hypothesis of this study states that green procurement has an effective effect on firm’s Operational Performance was also not supported as the p-value is 0.607 which is greater than 0.05. The statistics show that green procurement does not have a significant impact on a firm’s Operational Performance. The fourth hypothesis of this study states that Lean Management positively mediates the relationship between green manufacturing and Operational Performance and was accepted as the analysis shows a p-value is 0.000 which is less than 0.05. The statistics show that green manufacturing processes with the help of Lean Management positively affect a firm’s operational performance.

The fifth hypothesis of this study states that Lean Management effectively mediates the connection between Eco Design and Operational Performance was not supported statistically as the analysis showed the p-value to be 0.233 which is greater than 0.05. The analysis shows that Lean Management does not mediates the relation between the Eco Design and Operational Performance. The final hypothesis of this study states that Lean Management significantly mediates the link between Green Procurement and Operational Performance proves to be accepted statistically as it shows a p-value to be 0.007 which is less than 0.05 which means the green procurement processes positively impact a firm’s Operational Performance.
This study examined the effects of green Supply Chain Management practices as independent variable and with the help of lean management as a mediating variable on operational performance as the dependent variable. The first hypothesis of this study found that green manufacturing has a favorable effect on the operational performance of a firm (H1 was accepted). It was proved statistically that a firm using green manufacturing processes improves the quality of a firm’s operational performance. As a result, green manufacturing remained significant in improving a firm’s operational performance. The second hypothesis of this study found that eco design does not have a substantial impact on a firm’s operational performance (therefore H2 was rejected). The analysis showed that eco design does not positively impact the operational performance of a firm. According to the data gathered by the respondents, eco design had no significant impact on a firm’s operational performance. These findings are consistent with the study of Li et al., (2016) which indicated that eco-design was not associated with operational performance. The outcomes of this study regarding this hypothesis might differ because of contextual representation as there is a difference in understanding, diffusion and implementation of eco-design as an internal practice among firms of developed and developing countries.
The third hypothesis of this study indicated that green procurement does not show a positive relationship with a firm's operational performance (H3 was rejected). The analysis showed that the respondents don’t think that green procurement is important for a firm’s operational performance and to gain a competitive edge. This might because as people in Pakistan are still not fully aware of the concept of climate change because of being under estimating the issue and lack of knowledge. The findings of this hypothesis are consistent with the Hijjawi, (2022). Their studies also found statistically inconsistent findings between green procurement and firms’ operational performance. However, there are a lot of studies showing positive relation between the two variables of interest and literature is full of such findings. This inconsistent finding might be because of the penetration of green procurement concept into the mature organizations. In our case the respondents were from textile industry and the textile industry of Pakistan is majorly family owned and do not have adequate motivation, penetration and understanding of this concept. The fourth hypothesis of this study presumes that Lean Management significantly mediates the relationship between green manufacturing and the operational performance of a firm (H4 was accepted). This indicates that lean management helps firms in waste management and reduces the waste creation and its proper treatment which actually serves in achieving cost efficiency, profit maximization, efficiency and effectiveness in operations.

The fifth hypothesis shows that lean management does not effectively influence the relationship between eco design and the operational performance of a firm (H5 was rejected). This hypothesis was proven not to have a significant impact on the performance of a firm’s operations by statistical analysis. Similar to direct impact of eco-design on operational performance, the eco-design was also insignificant even after treating lean management as mediator. In our study it is contradicting with majority of previous literature that supported the association between variables of interest in both Asian and European cultures and it is because of the contextual, cultural and industrial differences. The last hypothesis shows that lean management mediates a statistically significant relationship between green procurement and a firm’s operational performance (H6 was accepted). The results of hypothesis 3 show that green procurement does not influence the performance of a firm’s operation but the end results of this hypothesis demonstrate that if lean management is taken as mediating with green procurement it then shows a positive influence on the operational performance of a firm. If lean management is taken into the step of purchasing materials for production it will bring a competitive benefit to the firm’s operational performance. These findings are consistent with the previous studies of Inman & Green, (2018) in which they found uninterrupted lean management positive connection between environmental and operational performance through GSCM practices.
CONCLUSION AND POLICY IMPLICATION

The textile sector of Pakistan is considered to be the largest manufacturing industry in the country and contributes to a major share of the manufacturing and GDP of Pakistan. Being the largest industry in the country this industry needed to be analyzed because of the harmful and toxic steps used in the processes which are being used consistently. In Pakistan waste management has very narrowed concept, chemicals like toxic substances, perilous chemicals like bleach, chlorofluorocarbons, and other wastes are dumped into the sea and these are not considered as being harmful to the marine life, wildlife and human beings that has exponentially impacted the atmosphere. By considering all these important factors, this study comprises GSCM, lean management, and the effects that all these important factors have on a firm’s operational performance to address the environmental and climate issues. A quantitative study was considered using 184 respondents and analyzed that some hypotheses of this study were accepted and some were supported. It was also analyzed that some variables may not directly affect the operational performance but with the help of lean management, it did show positive effects. It was also found that slowly but people are getting to know about green concepts and their importance.

This study has sound theoretical and practical implications for academicians, practitioners and policy makers. This study has extended the implementation of green initiatives in the manufacturing firms of textile industry and provided a way for firms to understand the basics of green concept implementation for eco preservation. Further, this study has created a theoretical framework by integrating lean management as mediator between green concepts and operational performance. Through this linkage the scholars have extended the notion in GSCM implementation with the help of lean management as a critical link between antecedents and firms’ operational performance. Additionally, the proposed framework has some important practices included to help organizations in Pakistan to work on these practices for a better environmental and operational performance and to gain a competitive advantage. The framework has provided insights in managing the processes effectively and efficiently. Finally, the industry can also study its processes in detail by considering these elements for effectiveness of the operational performance.

The world today has diffused into the concept of globalization and is becoming a meaning to share knowledge, information, etc., and is not limited to borders in terms of trade. Previously, companies were competing locally with each other but now the level of competition has increased and is on international levels therefore, the criteria of competition and sustainable growth has been changed with the change in knowledge and awareness of customers regarding product environmental knowledge. Industries in Pakistan should start the adoption of green processes consistently to compete better internationally. As the concept of green is not known by the majority in Pakistan, therefore, organizations should start to provide seminars, training, educational assistance, etc. to employees and workers. Organizations small, medium, or large should support their suppliers to enhance their knowledge and understanding of the green
processes which can be effective for the organization in terms of competitiveness and would lead towards the betterment of the performance and environment.

Like other studies, this study has also some limitations that actually serves as future research avenues for others. This study due to time limitation was conducted in textile industry of Pakistan to examine the role of green initiative and their impact on the operational performance. In future, multiple sectors can be selected to assess the implementation of green concept among these sectors and their consequences on operational performance and especially on the environmental performance. Secondly, the population is limited to Karachi. The time to conduct the research was very limited due to degree completion. In future, textile industry of other cities like Lahore, Faisalabad and Gujranwala may be tested for the same proposed model or with little extension or modification. Finally, the population size for this study was low because of unavailability of sample frame. In future, population size can be enhanced to generalize the results of the findings. One way to enhance the sample size is to expanded the targets respondents to other industries and country-wide as well which will give a much better insight into these problems.
REFERENCES


