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Impression of internal and external green supply chain management practices on consumer purchasing behavior

Muhammad Haris Khan[a] and Faryal Hamza[a*]

[a]*Department of Business Administration, Iqra University Karachi, Pakistan*

C H R O N I C L E

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A B S T R A C T

This study examines the impact of internal and external green supply chain management on consumers' environmentally friendly purchase behavior. Green supply chain management (GSCM) has emerged as a key approach for enterprises seeking to become environmentally sustainable. This study targets all sectors to investigate the impact of internal and external GSCM on consumers' environmentally friendly purchase behavior. This paper proposes to study and emphasize GSCM practices and their impact by using quantitative methods. Responses were collected from different organizational sectors and analyzed by 50 people using regression and CFA. Internal and external green supply chain management positively impacts consumer purchasing behavior.

1. Introduction

Green Supply Chain Management (GSCM) allows us to effectively integrate people and the environment. It makes it possible for the consumers to evaluate the relative fitness of the products for the environment, along with having a healthy impact on their lives. GSCM is defined as a conceptual and systemic integration of marketing strategies, reverse logistics, and activities related to purchasing with a primary focus on the environment (Sarkis, Zhu & Lai, 2011). It is important to make organizations and their employees understand and utilize GSCM as they are the stakeholders of it. This continued practice will help them to develop a deeper understanding of GSCM. There are two main prospects of the green supply chain that need to be understood by the stakeholders to ensure both the production of environmentally healthy products and growth of the organization. The first factor is related to generating a positive image of the organization along with externally increasing the market share, the other factor related to GSCM is relevant to internal functioning of the organization, that is to search for cost effective green materials which will reflect in the company's profit. This division of internal and external components is based upon the organization boundary of the manufacturers (Zhu & Sarkis, 2004).

The internal factor of GSCM consists of both Eco-Design and Internal Environmental Management (IEM). The practices for the external GSCM includes cooperation between social group's consumers, government, and stakeholders (Zhu & Sarkis, 2008). ECO is measured in both the internal and external domains of GSCM rather it is defined as an independent factor (Zhu & Sarkis, 2008; Chen, 2008). Using GSCM to influence consumer's purchasing behavior and effectively implementing a B2B business model has proven to be fruitful. Moreover, it also demands changes in the B2C management to increase the supply chain efficiency and purchasing behavior of consumers (Ta et al., 2015; Zhu et al., 2018, 2029).

The present study is focused on the Karachi-based organization in Pakistan who are incorporating green supply chain management and contributing towards environmental sustainability and having an influence on consumer purchasing behavior by connecting with ISO standards.

* Corresponding author. Tel.: +923093576280
E-mail address: hariskhan228@yahoo.com (F. Hamza)

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1.1 Literature gap

According to Khan and Qianly (2017), green supply chain management, eco-design and green information sharing are positively related to a firm's performance. Their study was designed to analyze the impact of green practices upon their firm's performance, moreover they suggested incorporating internal green management practices in the future study design to better know the impact of green practices. Therefore, the present study first includes both external and internal green management practices in the study model and it also studies its impact on consumer purchasing behavior. In another study by (Mumtaz et al., 2018), they utilized Decision Making Trial and Evaluation Laboratory Technique (DEMATEL), to identify the factors that are important for implementing green supply management, one of the core factors they identified was that organization's internal involvement is very important dimension in implementing GSCM. Therefore, this study will directly involve the stakeholders and analyze how much they are convinced with the green supply management practices. Another survey by (Sarwar et al., 2021), concluded that green supply management is positively associated with firms' performance indicators. Similarly, another study by (Nadeem & Siddiqui, 2017), gathered data from manufacturing firms of Pakistan and concluded that green supply chain is still a naive concept in Pakistan and companies are still learning about it, but pressure from the institutes encourage them to adopt and learn the green supply techniques which will help firm's performance and environment as well. Most of the studies related to green supply management done in Pakistan include manufacturing industries and they have collected information about the organizations performance, none of them has focused upon direct impact of internal and external green supply management upon consumer purchasing behaviors. Therefore, the present study is an effort to learn about how much the employees value green supply chain practices and how according to them it is affecting consumer purchase behavior. This study will fill in the gap by including employees from several national and multinational companies (not only focusing upon manufacturing industries), along with studying the impact upon consumer purchasing behavior.

1.2 Theory

The establishment of GSCM is from the point of view of the employees who will be in charge of promoting environmentally friendly practices between organizations, and within the logistic industry (Zhou & Sarkis, 2008). The internal GSCM is all about the internal operations of an organization that will be planned by keeping in view the environmental management strategies which will lead to development of green products. An increase in Internal GSCM is positively associated with External GSCM (Zhou & Sarkis, 2008). It is suggested by (Zhou & Sarkis, 2004), that both internal and external supply chain management are indicators for determining how successful the GSCM system is. The internal and external management (IEM) is divided into four factors.

1.2.1. Total quality environmental management: This factor includes all the strategies to increase environmentally friendly operations along with maintaining the standard, doing all of this by utilizing modern technologies and cooperation with suppliers (Zhu & Sarkis, 2004).

1.2.2. Environmental Compliance and Auditing Program: This factor is related to environmental regulation and resource consumption such as energy by suppliers both domestically and internationally (Zhu & Sarkis, 2013).

1.2.3. ISO 14000 Certification: This certification is a set of strategies related to management of the environment. Following the guidelines an organization can improve their environmental management. This component of GSCM implies that organizations prefer to co-operate and work with those supply chains that are ISO certified (Zhu & Sarkis, 2008). As a green supply chain is the core component of a green business model.

1.2.4. Commitment and Support from Managers and Employees: This component is linked to cooperation between different management teams to work for the implementation of a green business model and it also refers to how much the top management is committed to adopt the GSCM model. It is cooperation and commitment that can ensure the success of a green supply chain (Zhu & Sarkis, 2013).

The literature has also demonstrated that support at managerial level is the key component for the success and implementation of the GSCM system (Dou et al., 2018). Another important pillar upon which the implementation of GSCM depends is consumer behavior. The purchasing behavior of the customers can effectively change and influence an organizational policy. The consumer's concerns for the environment shape up their behavior to buy more eco-friendly products, therefore, customers will be more likely to mistrust those policies of an organization that are not environmentally friendly. The past literature also demonstrated that consumers who are very much concerned about environment are less likely to trust organization's ecofriendly campaigns about their products if they do not provide them with enough information or there is gap in information and they will be less likely for them to buy those products (Albayrak et al., 2013). Therefore, it is important for organizations to gain the customer's trust regarding their products. Evidence from past literature verified that a shift in ecofriendly policy of the hotels has insured return of customers (Han & Kim, 2010), thus generating a positive impact of organization's policy on consumer behavior. Moreover, research also indicates industry's internal green policies such as utilization of 3R, and finding newer ways to decrease energy consumption and pollution are beneficial in improving the company's green policy image in the outer world. According to Bang et al. (2000), primary focus upon the internal practices is very important as internal management leads the pathway for having effective management between companies, their suppliers and consumers. Therefore, a company's internal environmental image should be maintained and an impactful

branding for this is required by the employers to gain customer's trust and shape their behavior and to have effective cooperation with other segments of the business market (Zhu et al., 2013).

2. The proposed study

2.1 Impact of Internal Green Supply Chain Management

Internal GSCM is related to all the operations within the organization that involves incorporation of green supply chain management strategies. It includes purchasing environmentally friendly raw materials, maintaining green manufacturing and recycling processes and influencing consumers' decision making to be more environmentally friendly (D'Souza & Taghian, 2005). According to Boyce and Mano (2018), it is the consumers, who in contemporary times decide upon and can influence the existing supply chain management strategies for organizations. That is why it is important for organizations to align their customers' purchasing behavior along with their internal environmental management strategies. On the other hand, there are researchers who suggest that it is also possible for organizations to make their consumers shift their purchasing behaviors from non-green to green product purchase (Lee et al., 2021). The present study will also study the relationship between internal GSCM and consumer purchasing behavior, assuming that internal GSCM will be positively related to consumer's purchasing behavior.

Hypothesis 1: *Internal Green Supply Chain Management practices have a positive effect on consumer purchasing behavior*.

2.2. Impact of External Green Supply Chain Management (EGSCM)

The past literature suggests that External GSCM proves to be a valuable tool to make consumers aware of organization green supply chain policy at internal operational level, which will create a positive image of the organizations within the market, thus influencing consumer's purchase behavior (Lee et al., 2021). According to Olson (2013), those marketing strategies that highlight the environmentally friendly policies of an organization, can help consumers to trust the product and lead them to purchase green products. Another researcher suggested that nowadays consumers are more cautious of purchasing green products in comparison to other available products in the market, therefore an organization utilizing External GSCM can attract potential customers thereby increasing their involvement in the green supply chain because of their purchasing behaviors (Thogersen et al., 2012). Based upon the evidence from literature it is suggested that External GSCM will be positively related to consumer purchase behavior.

Hypothesis 2: *External Green Supply Chain Management practices have a positive effect on consumer purchasing behavior*.

Fig. 1 demonstrates the proposed study of this paper.

Fig. 1. Conceptual model of the study

3. Research Methodology

The quantitative method is used to analyze the primary data and to interpret the results which are totally based on facts and figures by collecting data/sampling, observing, and measuring then analyzing and interpreting accordingly. In the Quantitative method regression analysis using IBM SPSS Statistics 24 and confirmatory factor analysis (CFA) using SmartPLS 3 software are evaluate

3.1. Instrumental development

An instrument questionnaire was used in this project, which is based upon practices related to green supply management and consumer purchasing behavior indicated in previous research studies. It contains independent and dependent variables sum of four parts. So, the questionnaire is basically divided into three parts and each part includes four questions related to internal and external green supply chain management and consumer purchasing behavior. The Likert scale used here with 5 points which is used to measure the construct mentioned in the model starting with 1 strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. The questionnaire is in English (See Appendix A).

3.2. Sample and Data Collection

Convenience sampling of 60 employees from different sectors of multinational and national companies had been given questionnaires to be completed in a duration of 15 days via an online platform i.e., Google questionnaire link through

LinkedIn, What Sapp, Facebook, and some personal connections. The response rate was 83 percent as 50 employees participated diligently. This questionnaire was divided into 3 parts based on each variable with a hypothesis that covered most of the aspects of internal and external supply chain and consumer purchasing behavior. The details of the variables and questionnaires are given in the above questionnaire table.

Table 1
Demographics Details of the Sample (N= 50)

Demographics		*f*	*M(SD)*
Gender	Men	35	
	Women	15	
Age			43.5(5.678)
Education	Master	20	
	M.Phil.	23	
	Ph.D.	7	
Companies	National	20	
	Multinational	30	

3. Theoretical Methodology

In the present study the theoretical model proposed is built upon several analyses. Confirmatory Factor Analysis (CFA), is performed to confirm the factor structure of study variables, whereas in order to test the hypothesis, PLS and regression analysis are used. The instruments utilized in this study are adopted from the existing literature, therefore, CFA is used to validate the study instruments. The factor loadings in the table shows that all the item loading are within the acceptable range. To establish the distinction among the understudy latent variables, discriminant validity is established (See Table 4). Before testing the hypothesis, both reliability and convergent validity of the instruments is established, through measuring, Average Extracted Variance, Cronbach's Alpha, rho_A, and composite reliability (See Table 3). The PLS and regression analysis are used to predict the impact of independent variables upon the dependent variable. The results in Figure 2 and Table 5 show a significant relationship between internal and external green supply chain management and consumer purchasing behavior.

4. Results and discussion

4.1 Partial Least Square Model of Study

To confirm the hypothesized relationship between study variables Partial Least Square Algorithm using SmartPLS is calculated. It was hypothesized that consumer purchasing behavior is positively related with internal green supply chain management and external green supply chain management. The (Fig. 2), verify these hypotheses model explains a positive and significant "r" values of (0.50 & 0.42) between IGSCM and consumer purchasing behavior and EGSCM and consumer purchasing behavior respectively. For the factor structure to be confirmed the explained variance or the value of "R^2" should be greater than 0.2. In the present model the value for "R^2" is .72, which means that 72% of the variance in Consumer Purchasing Behavior can be explained by internal and external green supply management.

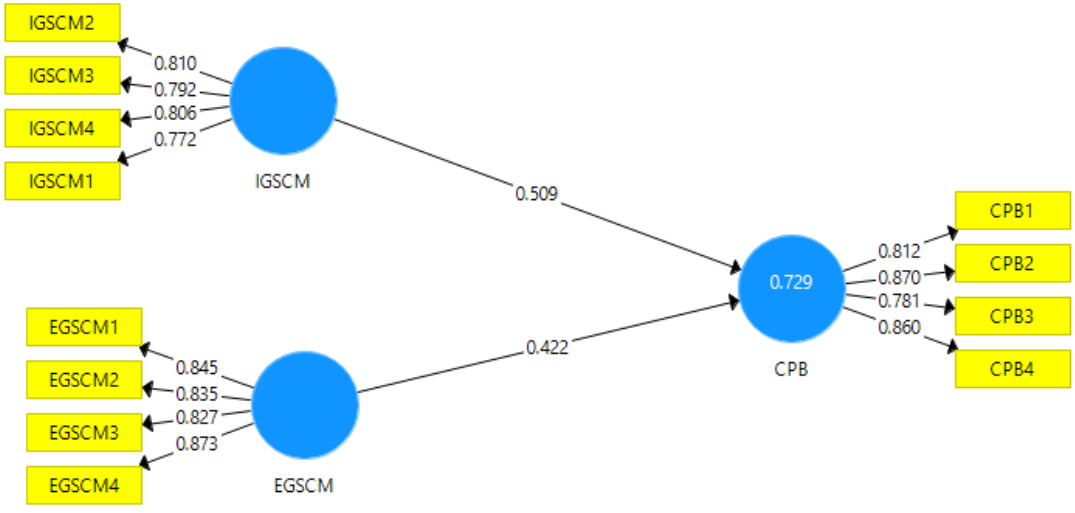

Fig. 2. The results of testing the hypothesis

Table 2
Factor loadings of all the items of Internal and External Green Supply Chain Management Scale and Consumer Purchasing Behavior Scale (N = 50)

	CPB	EGSCM	IGSCM
CPB1	0.812		
CPB2	0.870		
CPB3	0.781		
CPB4	0.860		
EGSCM1		0.845	
EGSCM2		0.835	
EGSCM3		0.827	
EGSCM4		0.837	
IGSCM1			0.772
IGSCM2			0.810
IGSCM3			0.792
IGSCM4			0.806

Note. IGSCM = Internal Green Supply Chain Management; EGSCM = External Green Supply Chain Management; CPB = Consumer Purchase Behavior

Table 2 shows the factor loadings of items with their respective instruments. According to the (Hair et al., 2021), the factor loading above 0.6 is considered acceptable. The loadings that fall between 0.4 and 0.6 are re-examined or such items are deleted. Removing indicators with lower factor loadings increases the composite reliability of the instrument. The model testing indicates that all the loadings are above the acceptable range of 0.6, thus demonstrating the reliability of the instrument.

4.2 Agreement of the Participants upon the indicators of understudy constructs

Fig. 3 represents the percentage of managers working in different firms of Karachi based industries with the indicators of internal green supply chain management. The results of the bar graph indicate the percentage of participants who agree with the adoption of internal green supply chain practices. From the results it is identified that according to the managers companies are more serious about adopting internal green supply chain practices and are deciding to implement these practices by applying quality control and introducing such programs in the future that will help the organization to comply with regulation related to environmental protection. On the other hand, the graph depicts that the pace of the employees in implementing green practices while managing the supply chain is not aligned with the firm's practices. Managers have shown more agreement with the introduction of green policies by the company than the adoption by the employees working within the firms. It indicates that there is still a need for employees to learn about the importance and significance of the green supply chain practices. Moreover, it also refers to the need for effective communication between the employer and employees regarding adoption and implementation of internal implementation of the practices. Lastly the bar graph shows that Karachi based organizations in Pakistan are making efforts to receive competitive edge in the market by adopting the same standards as of the international community, as more 75% of the participants agreed with the fact that they have received ISO 14001 certification.

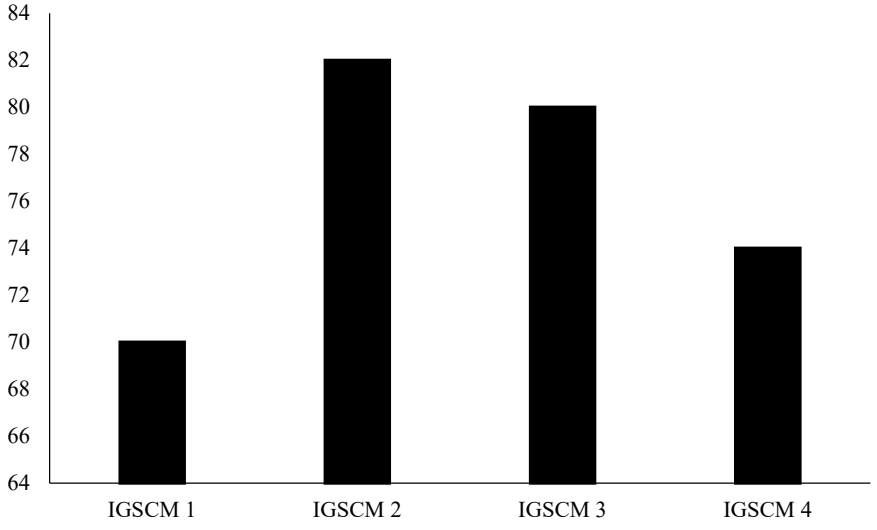

Fig. 3. Agreement of Participants with Indicators of Internal Green Supply Chain Management

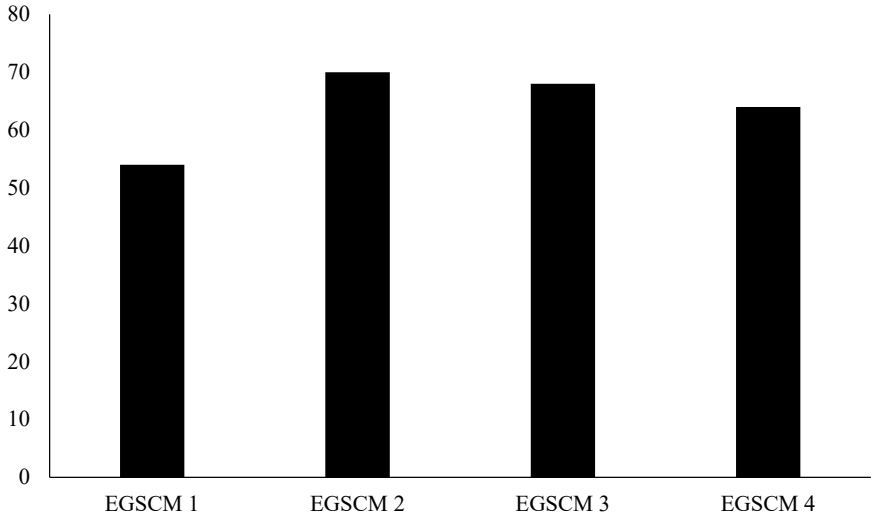

Fig. 4. Agreement of Participants with External Green Supply Chain Management

Fig. 4 shows the agreement of managers working within the Karachi based industries with the indicators of external green supply chain practices. Firstly, if the adoption of the internal and external green supply chain practices are compared, the difference can be seen in terms of percentages in both the figures (3 & 4) that organizations have gained a little more success in implementing internal green practices in comparison to external green practices. Secondly, it indicates that approximately 55% of the managers agree that there is a need for efficient cooperation between suppliers and organizations to meet the ISO certification. This result indicates that organizations still lack knowledge of the importance of cooperation with suppliers to maintain the standard. So, it is concluded that the management within the Pakistani organizations need to understand that in order to attain the internal green supply chain management cooperation with other components such as suppliers is also important. Secondly, the graph indicates managers have shown agreement in greatest amount for avoiding the use of raw material that can be hazardous to the environment. Thirdly, the graph shows that approximately 70% of the participants agreed with the fact that there exists cooperation among the management in terms of information sharing and planning to identify better ways of adopting green practices. Lastly, participants have shown significant agreement upon obtaining ISO certification after implementing strategies that are relevant to international standards and that are less damaging to the environment.

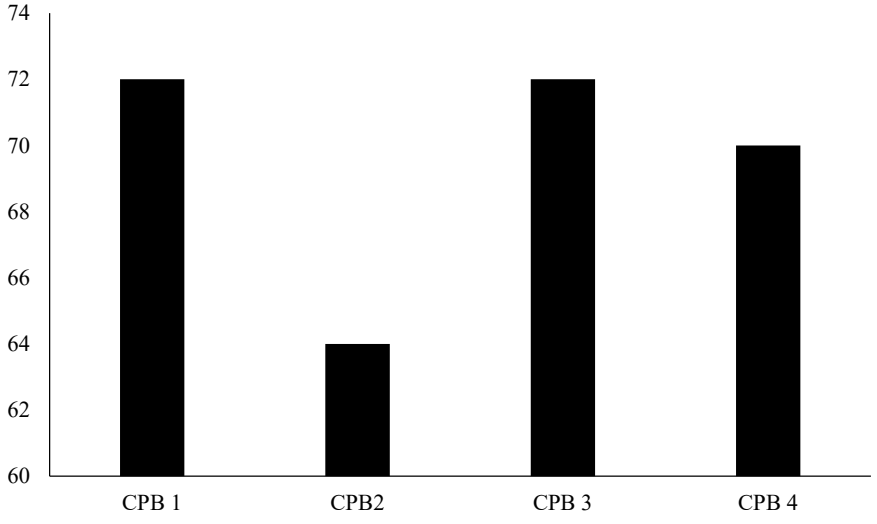

Fig. 5. Agreement of Participants with Consumer Purchasing Behavior Indicators

Fig. 5 indicates the agreement of participants with the indicators of purchasing behavior. The above results indicate how much the organizations are considered while purchasing raw material or products that comply with the green standards. Firstly, more than 70% of the managers agree with the fact that their organization tends to buy environmentally friendly products for their industries. But when it comes to the experience with the eco-friendly products the graph shows that less than 65 % of the participants agreed with having satisfactory experience with green products. Despite the difference between

the usage and satisfaction of the green products, more than 70 % of the participants agreed with the fact that, when provided with both generic and eco-friendly products they tend to choose eco-friendly products. The reason for this may be the pressure to meet the international standards and to get ISO certification. So it can be concluded that Pakistani based organizations now know the importance of green practices and they are making significant efforts to get them aligned with ISO standards. Lastly the graph indicates that while purchasing products the organizations do consider the reliability of products by collecting information about the products certification.

4.3 Construct's Reliability and Validity

4.3.1 Reliability

Table 3 shows the values for reliability and convergent validity of the constructs under study. The Cronbach's Alpha, rho_A and Composite Reliability are used as a measure of reliability, whereas for convergent validity Average Extracted Variance (AEV) is used. The Cronbach's Alpha, rho_A and Composite Reliability all measure the internal consistency of the constructs, according to (Field 2009, Hair et al., 2016), the reliability coefficient greater than 0.70 indicates that the instrument is reliable for measuring construct.

Table 3
Construct Reliability of the Study Variables (N = 50)

	Cronbach's Alpha	rho_A	Composite Reliability	Average Extracted Variance
CPB	0.850	0.850	0.899	0.692
EGSCM	0.867	0.867	0.909	0.714
IGSCM	0.806	0.806	0.873	0.632

Note. IGSCM = Internal Green Supply Chain Management; EGSCM = External Green Supply Chain Management; CPB = Consumer Purchase Behavior

The above table shows that internal consistency values for all the reliability indicators is greater than .80, it means that all the items of the instrument are related to each other, and it is concluded that instruments are reliable for measuring the study variables. Lastly, Table 3 indicates the AEV of the instruments, which is an indicator of convergence between variables. According to (Fornell & Larcker, 1981; Hair et al., 2021), the threshold for AEV is 0.5. The value of 0.5 or greater indicates the existing variance among the constructs, whereas a value lower than 0.5 indicates error. In the present study the AEV is greater than 0.5 for every instrument which is evidence for convergent validity among the constructs.

4.3.2 Discriminant Validity

Table 4 shows the discriminant validity of the study variables. It is the measure of how much the latent variable is distinct from the other variable. To measure discriminant validity of the study variables, the Fornell-Larcker criterion was used, according to this criterion the average variance extracted by the construct should be greater than any of the correlation between the study variables. In the table above the diagonal values represent the average square variance which are greater than the correlation between the variables. It concludes that the under-study constructs are distinct from each other.

Table 4
Discriminant Validity of the Study Variables (N = 50)

		1	2	3
1	CPB	**0.83**		
2	EGSCM	0.76	**0.84**	
3	IGSCM	0.79	0.67	**0.80**

Note. IGSCM = Internal Green Supply Chain Management; EGSCM = External Green Supply Chain Management; CPB = Consumer Purchase Behavior

4.4 Regression analysis

Table 5 shows the results for internal and external green supply chain management for predicting consumers' purchasing behavior. To calculate the results, multiple linear regression was used, and all of the variables were entered simultaneously. Both internal and external green supply chain management comes out to be the significant predictor of consumer purchasing behavior. The relative beta values for the independent variables indicate that internal green supply management ($\beta = .51$; $p < .01$) is a stronger predictor in comparison to external green supply management ($\beta = .41$; $p < .01$). The value of R^2 is .73 whereas, adjusted R^2 is .72, which means that both the predictors contribute 72% of the total explained variance for the dependent variable in the present model.

Table 5
Multiple Linear Regression for Predicting Consumer Purchasing Behavior from Study Variables (N = 50)

Predictors	R^2	Adjusted R^2	β	P	$F(df)$	95% CI	
						LL	*UL*
Constant	.73	.72			64.650**(2)	.33	.77
IGSCM			.51	.000		15.47	8.53
EGSCM			.41	.000		.64	.33

Note. IGSCM = Internal Green Supply Chain Management; EGSCM = External Green Supply Chain Management; CPB = Consumer Purchase Behavior

5. Discussion and Implications

The present study was an effort to find out how internal and external green supply chain management impacts purchase behavior in B2B models. The hypotheses were supported by statistical analysis and existing literature. The first hypothesis stated that Internal green supply chain management positively impacts consumer purchasing behavior. The results of the regression analysis indicate a significant relationship between IGSCM and consumer purchasing behavior, it means that employees working in national and multinational companies of Karachi are aware of the changing business environment around the world and are adopting the firm practices accordingly. The second hypothesis states that external green supply chain management has a positive impact upon consumer purchasing behavior. This relationship is also supported by regression analysis, which means that green supply chain management is also exercised by organizations in terms of developing cooperation with other organizations and consumers that are part of the supply chain, through information sharing and disseminating green policies of the company. In the past supply chain management was mostly measured from the perspective of an organization's performance but little is known about maintaining competitive edge by placing more focus on people dimension (Boyce & Mano, 2018). On the other hand, the interest of consumers is increasing in considering environmentally friendly products over generic products because of increased awareness about environmental issues. This study has focused upon this aspect and provided evidence that consumers can be encouraged to buy green products because of co-operation and communication among organizations and by making consumers aware of the green practices within and outside the firm, and it can be adopted as a new marketing strategy. Finally, it can be said that implementation of GSCM is reflected in buying behaviors, so that firms can convert it to their own advantage in this situation where climate change is a persistent threat (Lee et al., 2021).

The findings of the present study are valuable in the perspective of Pakistan, as it was indicated in the previous literature that green management is still a new concept for organizations in Pakistan and mostly, they are forced to adopt these practices because of the pressure from the international institutions (Nadeem & Siddique, 2017). But this study signifies the fact, that in B2B models' businesses' themselves are purchasing green products, therefore it can be said that in the contemporary times the motivator for Pakistani organizations to adopt GSCM, is not only pressure from the international community, but rather consumer behavior can also influence adoption of green practices among as different businesses are connected through the supply chain. Therefore, in the future researchers can utilize the findings of this and they can design their studies by focusing more on people's dimension and studying factors associated with consumer purchasing behavior, such as cost and benefits, knowledge about green products, etc. to develop a deeper understanding of the direction of relationship between GSCM and consumer purchasing behavior.

6. Conclusion and Future Direction

The present study signifies that both internal and external green supply chains can predict consumer purchasing behavior. Therefore, it is concluded that adopting green supply chain management proves to be beneficial for the industries, as with increased information sharing among components of supply chain, the organizations are encouraged to adopt green practices, and customers in the B2B model are encouraged to buy environment friendly products. Moreover, future researchers can study the relationship between GSCM and purchasing behavior considering other factors, such as knowledge about green products, information sharing strategies by the organizations, how economical the products are for manufacturer and buyers, and what platforms such as social media are valuable in disseminating information and how all these factors can influence consumer purchasing behavior. Lastly, the impact of GSCM can also be studied in the B2C model to understand if purchasing behavior of masses can influence the green policies of the Pakistani industries or not.

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Appendix

Instrumental questionnaire

Variable	**Internal GSCM (Independent Variable)**
Measurement item (Questionnaire)	• The degree to which you think that employees are making significant efforts in eco-friendly management. • The degree to which you think that the company is exercising quality control in eco-friendly internal facilities. • The degree to which you think that there will be a supervisory program to comply with environmental protection legislation. • The degree to which you think that the company has acquired eco-friendly management certification (ISO 14001).
Variable	**External GSCM (Independent Variable)**
Measurement item (Questionnaire)	• What do you think about Cooperation with suppliers for environmental objectives with audit for suppliers' internal management suppliers ISO4000 certification? • What extend the design of products to avoid or reduce the use of hazardous product and/or their manufacturing process? • How much cross-functional cooperation for environmental improvement of the management system exists? • Did total quality environment management with environmental compliance and auditing program to ISO14001 certification?
Variable	• **Consumer Purchasing Behavior (Dependent Variable)**
Measurement item (Questionnaire)	• The degree to which you purchase eco-friendly products in consideration of environmental pollution. • The degree to which you have had a good experience in using an eco-friendly product in the past. • The degree to which you would select an eco-friendly product if you had to choose between an eco-friendly product and a generic product. • The degree to which you prioritize purchasing products with eco-friendly certification indicators.