



RESEARCH PAPER

The Moderating Effect of Greenwashing between Green Supply Chain Management Practices and Green Brand Association: A Study of Pakistani Fashion Brand applying the NRBV

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ABSTRACT

This study examined how environmental greenwashing moderates the link between "green supply chain management" (GSCM) practices and green brand association. Using the natural resource-based (NRBV), this research creates a model to better understand GSCMP and GBA fashion brand in Pakistan. This study included fashion brand customers, selected using non-probability purposive sampling. The cross-sectional study included 15 fashion brand mall customers from six of Pakistan's largest cities: Bahawalpur, Islamabad, Multan, Faisalabad, Karachi, and Lahore. The study used 446 responses. Statistics were done using SPSS and "SmartPLS partial least square, structural equation modelling" (PLS-SEM). A structural model was developed to test hypotheses. The proposed GSCMPs correlated to GBA. GW's negative moderation affects between GBP and GBA significantly. GBD and GBA are negatively moderated by GW. Managers and policymakers should heed current studies to achieve green brand association. First empirical study to use NRBV framework with GW as a moderator.

KEYWORDS Green Supply Chain Management Practices (GSCMP), Green Brand Packaging (GBP), Green Brand Distribution (GBD), Green Brand Association (GBA), Natural Resource-Based View (NRVB)

Introduction

Sustainable Development Goals (SDGs) and the snowball effect of spreading the green lifestyle help corporations create their purpose, strategy, and policy to address environmental issues. Rapid fashion brand has set new standards for rapid, cheap production (Eddy, E. 2022). Synthetic materials and cheap labor have decreased costs below average and made a broad range of fashion brand more accessible for consumers. They have also increased textile waste in landfills, microplastic contamination, greenhouse gas emissions, and poor working conditions in low- and middle-income countries. They make cheap, rapid apparel to meet market requirements, but those needs are shifting.

Global fashion employs 300 million people and produces \$2.4 trillion. However, Adamkiewicz et al. (2022) report that it produces 2-8% of global greenhouse gas emissions, 20% of waste water, \$100 billion in lost income due to inefficient consumption and recycling, and 9% of microplastic leakage into the oceans. Three notable ways the amounts show the fashion industry's environmental impact: The first is rising consumption and clothing waste. Diddi et al. (2019) predicted 35.4 billion pounds of garments in US landfills in 2019. The second is production's environmental impact. 3,000 liters of water, 2 kilograms of chemicals, 400 mega-joules of energy, and 71 pounds of carbon dioxide are squandered each jean. Metlioğlu & Yak (2021) report that textile waste production in the US rose from 2.5 million tons in 1980 to 7.4 million tons in 1995 and 15.1 million tons in 2013. The third is supply chain environmental damage. Supply chain greenhouse gas emissions like CO₂ and methane are physically and chemically altering soil, air, and saltwater. Hunger, intense

thunderstorms, and increased temperatures are also resulting from this (He 2019). Climate change causes Pakistan's decreased and erratic rainfall, which hurts agriculture (IPCC, 2021). Global warming may exceed 10 °C, according to supply chain estimates. Global warming is expected to rise by 0.2 °C every decade (most likely 0.1–0.3 °C). Global warming will rise 1.5 °C between 2030 and 2052 (Klein 2010). Rising sea and land temperatures, droughts, and heavy rainfall have been linked to global warming.

Pakistan exports 23% to the EU, with 75% of them textiles and clothing (European Commission, 2021; PBS, 2022). Several studies show that 94% of Europeans care about the environment (Ecevit 2023). GSCM means adding environmental factors into supply chain management (Sarkis 2011; Lee 2015). Green brand distribution is usual in textile and fashion businesses for environmental preservation. GSCM practice's green brand distribution and packaging aims to reduce emissions of harmful gases, chemicals, and solid waste from the supply chain to finished goods delivery to improve green brand association (Rahman, 2023). Majeed (2022) found that Pakistani consumers are increasingly seeking green products and conscious of their environmental impact. Energy efficiency is a global problem for green brand distribution in fashion brand. According to Saberi et al. (2018), energy-efficient technology reduces transportation costs and fashion brand distribution's environmental impact. The fashion brand continues to utilize a lot of energy. GSCMP has become one of the most essential issues in this field. The green movement has highlighted these firms' green packaging methods that include recycled paper, cardboard, biodegradable polymers, efficient energy use, and renewable energy (Pathirana 2018). Fashion brand customers in Pakistan are more likely to link GSCMP with green brands when promoted extensively. As a rising country in one of the world's most dynamic areas and a major South Asian market, Pakistan is a good place to study the interaction between green consumer and fashion brand. Pakistan has a strong growth record but has struggles with excessive consumption and environmental deterioration (Shultz et al., 2018).

Greenwashing is when fashion brands lie about their environmental policies or product benefits (Pauguel et al. 2015). When these promises are broken, the strategy and brand message fail, hurting consumers' impressions of green businesses (Leonidou & Skarmas, 2017). Greenwashing may affect fashion brand customers by tarnishing the brand. The author emphasizes that greenwashing affects Taiwan's green electronics buyers' view of green companies. Additionally, it showed how greenwashing damages green brand reputations (Chen 2016). Green supply chain management practices (GSCMPs) favorably and directly correspond with many important performance measures in prior supply chain management research. This link affects purchase intention, according to Sugandini (2020), not operational success, according to Aunyawong (2024). Khaksar (2016) explained how GSCMP boosts competitiveness in many contexts. All of these studies show that GSCMP improves consumer behavior, competitive positioning, and organizational performance independent of setting or country. According to Montero-Navarro et al. (2021), writers write on retail, agriculture, and food. Some study examines greenwashing's origins, traits, and effects, while others examine its ideas and typologies (de Freitas Netto et al., 2020; Yang, 2020). Despite Gatti et al.'s (2021) excellent knowledge, GSCMPs and GBA's ramifications have yet to be thoroughly examined.

The green association is nascent in many developing nations, including Pakistan (Ali 2011). To identify the relationship between GSCMP and consumers' green brand association, additional research is needed to expand on other new streams. These new streams may incorporate moderating elements that affect consumer relationships. The researchers may be able to explain the complex relationship between GSCMP and GBA and find new findings that could improve their findings' generalizability to less developed and developed nations after investigating these new streams. Thus, it will contribute to sustainable consumption research by investigating greenwashing's moderating impact, which was previously ignored. We know nothing about how impoverished people—particularly Pakistanis—view the environment. This study addresses two questions: First,

it examines how green supply chain management practices affects fashion brands' eco-friendly project relationships. This study's second question examines how greenwashing affects Pakistan's textile industry's negative opinions of fashion brands. This new framework of two questions helps fashion brand become greener and expands GSCMP expertise.

This study's structure is classified as follow. Section 2 examines a study of the literature and puts forward four theories. The technique, sample, data collection, and measurement of the construct are then covered in section 3 of this study. In section 4, the results of the regression model, factor analysis, dependability, and descriptive statistics are presented. Additionally, section 5 of this paper discusses the findings, implications, and directions for future research.

Literature Review

The natural resource-based view theory (NRBV)

This research utilizes the natural resource-based view theory (NRBV) to identify the link between GSCMP and brand association. The conceptual basis of GSCMP is the natural resource-based view (NRBV) hypothesis (Kumar, 2015). Hart (1995) developed the NRBV (Natural-Resource-Based View) theory as an extension of the previous RBV (Resource-Based View) theory. Academics utilized the NRBV (Natural Resource-Based View) to establish a correlation between environmental strategy and business performance. This was achieved by substituting environmental performance metrics for environmental strategy. The studies conducted by Hart & Ahuja (1996), King & Lenox (2002), and Russo & Fouts (1997) support this approach. Moreover, Canepari (2017) highlights that the assets responsible for generating capabilities are part of the NRBV and should be connected to the organization's ecological performance. NRBV, similar to the Porter theory, proposes that enterprises should focus on internal resources and capabilities to identify sources of competitive advantage, rather than relying on external factors in competitive contexts. It does this by elucidating the connection between the resources, competencies, and competitive advantages of a corporation (Canepari, 2017). Hart (1995) argues that many marketing theories have traditionally disregarded the limitations imposed by the biophysical (natural) environment. Hence, it is essential to include a vision plan centered on natural resources into the organization's ecological corporate framework in order to get a competitive advantage and foster the growth of thriving small and medium enterprises, hence improving company performance. This is consistent with Bassey's (2015) argument that it is basic knowledge for firms to establish and successfully leverage their competitive advantage in the marketplace. Furthermore, according to Adeniran and Johnston (2012) and Wang (2014a), the natural resource-based approach sees the firm as a mix of key assets that are spread differently within associations in order to build a sustainable competitive advantage.

Green brand packaging and green brand association

Green packaging, sometimes referred to as sustainable packaging or eco-friendly packaging, is composed completely of naturally occurring materials, is capable of being recycled or reused, readily degrades, and actively supports environmental sustainability throughout its lifespan. Moreover, green packaging is not only safe but also advantageous for the well-being of humans and animals, as well as for the environment (Zhang 2012). Nevertheless, as the prevalence of green associations with brands increases, shoppers are developing a greater awareness of the environmentally-friendly packaging of fashion brands. Customers' perceptions of environmentally friendly products are often shaped by companies, since a successful environmentally friendly stance requires a distinct selling point and a unique brand identity. Recent research has shown that products that do not include environmentally friendly traits and attributes have lower commercial success rates

(Gong 2020; Majeed 2022). Customers of fashion companies would consider a firm to be a "sustainable brand" if it effectively conveys the distinct environmental value it creates via its eco-friendly goods (Hartmann 2005; Lin 2017). Research indicates that the effectiveness of green branding initiatives is also contingent upon green positioning (Zameer 2020). According to earlier research on green fashion brands and environmental initiatives, there is a positive link between the fashion company's green brand packaging and green brand association (Rehman & Siddique 2023). According to another survey (Wüstenhagen 2006; Sreen 2018), European consumers have a positive attitude towards products with eco-brands. Therefore, it is possible to formulate the first hypothesis as follows.

Hypothesis 1 (H1) GBP has a positive and significant impact on GBA

Green brand Distribution and Green brand Association

Green distribution is one of the important elements of GSCM, according to Rehman & Siddique (2023), because of its ability to have a good environmental affect. The inquiry focused on examining the second dimension of GSCM, which is green distribution. Gardas et al. (2019) defines green distribution as any endeavor that seeks to minimize transportation waste and mitigate environmental effect. Green distribution performance is influenced by factors such as fuel usage, transport operation frequency, client distance, and package features including weight, shape, and material (Geng 2017). Important work includes green distribution that influences how well green supply chain management techniques work. Any suggested mode of conveyance green distribution refers to the distribution process between stores and consumers that does the least amount of harm to the environment. Not only that, but it also addresses everything from: loading cars, transporting goods to customers, repackaging, order processing, packing, and picking (Geng, Mansouri, & Aktas, 2017). Agreements with suppliers that are cooperative and strategic in nature are necessary to manage the delivery process. Not to mention overseeing and choosing the supplier, it is critical to evaluate the provider's compliance with the company's environmental standards (Paulraj, 2011).

Brand association is the term used to describe a consumer's mental image of a brand that is associated with a product or service. It includes the symbolic meanings associated with certain brand aspects. According to another definition, brand association is defined as a collection of customer impressions of a brand that are expressed in brand associations (Cretu and Brodie, 2007). Customers' perceptions of brands are based on their overall dispersion, which is green. The characteristics that set apart brand knowledge and are crucial in defining the many responses that contribute to the development of brand equity are the potency and distinctiveness of brand associations (Keller, 1993). Several research have examined the beneficial effects of GSCM adoption on competitive advantages (Astawa 2021; Khaksar 2016), and Jum'a 2022 confirms a substantial correlation between GSCM practice and purchasing intention. Rehman and Siddique (2023) affirm that there was a good correlation between GSCM practices and brand image. Consequently, the following formulation of the second hypothesis is possible:

Hypothesis 2 (H2) GBD has a positive and significant impact on GBA.

The Moderating Role of green washing (GW)

"The act of misleading consumers regarding the environmental practice in the market" is referred to as "greenwashing" (Pomering 2009). Customers would thus be skeptical of green promises made by businesses, even if they claim that their products or services are eco-friendly (Lyon 2011). Customers' opinions of a company's environmental intentions would be negatively impacted by perceptions of "greenwashing" (Peattie 2009). Therefore, greenwashing might harm a company's affiliation with the green brand by making customers question its GSCMP (Polonsky 2010). In the more complicated GSCMP scenario, where it is difficult for customers to distinguish between fashion brands or

services, green brand association is vital. Just by cutting down on fashion brand packaging, green supply chain management techniques may make certain consumers of fashion brands feel good. The link between the GSCMP and green brand association is moderated by greenwashing. According to earlier studies (Qayyum 2023), green washing has a detrimental effect on the equity of green brands. Creating a strong customer relationship with the brand is crucial to developing a sustainable fashion brand (Rehman & Siddique 2023) According to Kahraman and Kazançoğlu (2019), greenwashing weakens customers' long-term associations with a brand and damages their connection with it. Moreover, there exists a negative correlation between greenwashing and customers' purchasing intentions, green branding equity, and green trust (Chen & Chang, 2013; Akturan, 2018). Customers will not link a fashion brand with greenwashing if it is used in the supply chain. Customers won't connect a fashion brand with deceptive packaging and delivery practices. Greenwashing is linked to customer mistrust since it might heighten consumers' fears that the true intentions of fashion brands are not in line with sustainability (Johnstone & Tan, 2015). Consequently, consumers of fashion brands who are more socially conscious are also more likely to have elevated views of greenwashing, which refers to the belief that fashion brands overstate or obscure significant environmental facts. In consequence, this impression will have a detrimental effect on these customers' brand associations with green fashion labels. The link between GSCMP and fashion companies' green brand associations might be adversely mediated by green washing. Thus, Hypothesized.

Hypothesis 3 (H3) GW negatively moderate between GBP and GBA.

Hypothesis 4 (H4) GW negatively moderate between GBD and GBA.

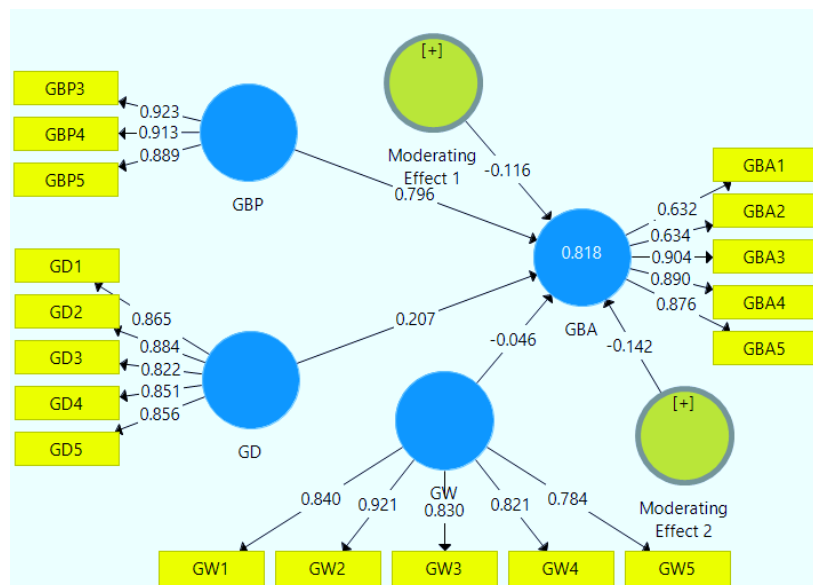


Figure 1: Research Model

Material and Methods

Data Collection Approach

The instruments/questionnaires and quantitative survey technique were used from earlier research. Cross-sectional primary data, or one-time data, was gathered and examined using PLS-SEM and SPSS. Fashion brands were used as analytical units. The study's demographic comprises fashion brand customers. Fashion brands are particularly susceptible to environmental challenges and have a significant role in the economy. The companies/respondents selected for this research are aware of environmental problems and have already formed their supply chain departments. To choose the sample size, a non-probability purposive sampling approach was used. Firms listed on the Pakistan Stock

Exchange provided the information about the companies. Among the respondents were fashion brand customers

Measures/Instruments

The GSCMP tool was modified to include a green brand packaging scale with five components, which was taken from (Silayoi and Speece 2004; Juwaheer 2012). The distribution scale for green brands was derived from Perotti et al. (2012) and Zhu et al. (2013). It included six items and was used in the studies by Green et al. (2012), Perotti et al. (2012), Zhu et al. (2008). The five-item green brand association measure was derived from Chang and Chen (2014). The five components that made up the greenwashing scale were drawn from Chen and Chang (2013). One item of green brand distribution no. 6 and two pieces of green brand packaging nos. 1 and 2 are eliminated due to low loadings. Three pieces of packaging for green brands, five pieces of distribution for green brands, five pieces of association for green brands, and five pieces of green washing are all kept. A 5-point metric was used to assess this instrument (1 being strongly disagree and 5 being strongly agree).

Data Analysis Tools and Techniques

The Statistical Package for Social Sciences (SPSS) 25 was used to analyses demographic data, and partial least square structural equation modelling, or PLS-SEM, was used to analyses the data. The most effective method for analyzing primary data—that is, data gathered by surveys—is PLS-SEM. Upon developing the first measurement model, it was required that the factor loadings be more than 0.7, the convergent validity (AVE and CR) be greater than 0.5, and the CR be greater than 0.70. The square root of the AVE, which meets the Fornell Larcker criteria, was used to verify discriminant validity. An >0.70 Cronbach alpha is required. Using beta values, t-statistics, p, and bootstrapping 5,000 resamples, a structural model was created in the second step to test the hypotheses (Hair et al., 2014).

Table 1
Measurement model

Variable	Abbreviator	Loading	AVE	CR	Alpha
Green brand packaging (GBP)	GBP3	0.9	0.8	0.9	0.8
	GBP4	0.9			
	GBP5	0.8			
Green brand distribution (GBD)	GBD1	0.8	0.7	0.9	0.9
	GBD2	0.8			
	GBD3	0.8			
	GBD4	0.8			
	GBD5	0.8			
Green brand association (GBA)	GBA1	0.6	0.6	0.8	0.8
	GBA2	0.6			
	GBA3	0.9			
	GBA4	0.8			
	GBA5	0.8			
Green washing (GW)	GW1	0.8	0.6	0.8	0.8
	GW2	0.9			
	GW3	0.8			
	GW4	0.8			
	GW5	0.7			

Note: Green brand packaging (GBP), Green brand distribution (GBD), Green brand association (GBA), Greenwashing (GW), Average Variance Extracted (AVE), Composite Reliability (CR)

Table 2
Discriminant validity through Fornell-Larcker Criterion

	GBA	GBP	GD
GBA	0.797		
GBP	0.895	0.908	
GD	0.673	0.678	0.856

Note: Green brand packaging (GBP), Green brand distribution (GBD), Green brand association (GBA), Greenwashing (GW)

Table 3
Hypotheses testing moderation results

Hypothesis	Relationship	β	SE	t	p	Remarks
H1	GBP → GBA	0.812	0.045	17.974	0.000	Supported
H2	GBD → GBA	0.122	0.048	2.553	0.011	Supported
H3	Moderation 1	-0.116	0.065	2.793	0.004	Negative Moderation
H4	Moderation 2	-0.142	0.064	2.23	0.026	Negative Moderation

Results and Discussion

A total of 670 customers of fashion brands were chosen to be research participants. Of these, 453 completed questionnaires were received; 07 were excluded because they were incomplete, and 446 were selected to be further examined in the present study. There were 66.5% responses. As stated in a previous section of this article, we covered every mall shown in Table 4 that was situated in Pakistan's major cities, including Karachi, Lahore, Islamabad, Multan, Faisalabad, and Bahawalpur. Respondents were chosen based on predetermined criteria and had to be familiar with GSCMP and GW in addition to having established supply chain departments.

Table 4
The sample of stated and supermarket/malls Name

No	City	Sample size		Name of mall	Sampling	Valid	Not Co/v
1	Karachi	110	1	Apparel shopping malls	50	30	20
			2	Dolmen Mall Clifton	50	30	20
			3	Port Grand shopping malls	50	30	20
			4	Lucky One Mall	50	20	30
2	Lahore	90	5	Emporium Mall	40	30	10
			6	Packages Mall	40	30	10
			7	Amanah Mall	40	30	10
3	Islamabad	80	8	Olympus Mall	50	40	10
			9	The Centaurus Mall.	50	40	10
4	Multan	50	10	Chen One Tower Multan	40	25	15
			11	The United Mall	40	25	15
5	Bahawalpur	26	12	Apex Mall Bahawalpur	25	16	9
			13	City Mall Bahawalpur	25	10	15
6	Faisalabad	97	14	Sitara Mall.	60	45	15
			15	Kohinoor One	60	52	08
Total	6	453			670	453	217

Not Co/V = not completed and not valid.

With the use of the Statistical Package for Social Sciences (SPSS) 25, demographic data were examined. Confirmatory factor analysis (CFA) was used in PLS-SEM to create the measurement model. Findings (Table 1) made it clear that one item from the green brand distribution—items 1 and 2—was eliminated from the examination of the green brand packaging item due to low factor loadings. Additionally, it is shown that all items had factor loadings greater than 0.7, as recommended by Hair et al. (2014); nevertheless, factor loadings of 0.6 for GBA1 and GBA2 items were also kept in some instances since these values

are close to 0.7. Furthermore, all constructions' AVEs and CRs reached their threshold values, which are >0.50 and >0.70 , according to the data (see Table 1). It was also shown by discriminant validity from Table 2—Fornel-Larcker criterion—that the constructs are distinct from one another. The explanation above led to the assumption that the scales utilized in this investigation are valid and trustworthy, and that convergent and discriminant validities have been proven. To test the hypotheses, bootstrapping was performed in PLS SEM with a 5,000 resample rate. The third table displays the structural model. Hair et al. recommended bootstrapping as a means of obtaining beta, standard error, t-statistics, and significance values (2014). The present investigation found support for all of the hypotheses, H1 and H2. Green brand packaging was shown to have a significant influence on green brand association ($\beta = 0.796$, $t = 14.084$, $p < 0.05$; Table 3). A one-unit change in green brand packaging was found to be associated with a 79.6% change in green brand association. Additionally, the distribution of green brands was shown to have a significant influence on the association of green brands ($\beta = 0.207$, $t = 2.765$, $p < 0.05$; Table 3). A one unit change in the distribution of green brands was found to be associated with a 20.7% change in green brand association.

Moreover, it was found that green brand association is significantly impacted by green brand packaging and green washing (interaction term) ($\beta = -0.116$, $t = 2.793$, $p < 0.05$, and were negative); this moderation result explained how GBP and GW combined could cause a change in GBA of -11.6%. Similarly, the combination of GBD and GW indicated a substantial and negative influence on GBA ($\beta = -0.142$, $t = 2.230$, $p < 0.05$; Table 3). This suggests that a 14.2% variation in the businesses' GBA might be attributed to GBD and GW.

Discussion

With green washing acting as a moderator, this research has added to our understanding of how green supply chain management techniques affect green brand association. The results of the present research showed that there is a positive correlation between green brand association and all of the stated components, including green brand packaging and distribution. There were noteworthy correlations among green brand association, green brand dispersion, and packaging. According to one of the study's conclusions, green brand association is influenced by green brand packaging. (Rehman & Siddique 2023). A successful green position makes a brand unique, which is supported by a large body of earlier research on how green brand packaging may improve associations about buying green fashion brands. Additionally, it has been proposed that the rise in sales of non-green items is less (Martins 2021). Moreover, academics have asserted that the effective execution of green branding initiatives depends on green brand packaging (Meffert 1993). Many studies have been conducted on the qualities, behavior, and importance of environmental products. European consumers have shown favorable views towards environmentally friendly items (Tan 2021). In order to boost fashion brand association, fashion brands must thus include more useful ecologically friendly packaging, such as employing recyclable clipboards and less harmful plastics, into their packing materials. Furthermore, there is a negative correlation between green washing and the association with green brands since green components and materials are more costly than non-green ones, and fashion brands in Pakistan are not granted any special treatment from the government in the form of tax exemptions or reduced import tariffs. Conversely, in developed nations such as the United States, the United Kingdom, France, and Germany, regulatory bodies have stringent environmental laws and also assist businesses in promoting green supply chains by offering low import duties and tax exemptions. Green brand packaging plays a significant role in green supply chain management as well, as customers are the primary source of profit for businesses. If customers put more pressure on businesses to adopt green practices, then businesses are forced to adopt green practices in their end-to-end supply chain management in order to reduce air pollution and increase environmental association

Limitations and Future Directions

The present study has some limits based on its results, and it may eventually give rise to new research topics. The scope of the present study was restricted to fashion brands; however, other industries in Pakistan have also had a role in driving brand equity. As such, additional research on other sectors may be established to improve the generalizability of the results. Furthermore, the study only examined the direct association between GSCM practices and GBA; other factors may also have an impact on GBA. As a result, future research may examine this relationship using other moderating and mediating variables.

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