

# GSCM, GHRM and Sustainable Performance: Does External Pressures matter?

Samina Khan, Dr. Urooj Pasha\*

<sup>1</sup> PhD Scholar, Institute of Management Sciences, Bahauddin Zakariya University, Multan (Pak).

Email: [khansamina44@yahoo.com](mailto:khansamina44@yahoo.com)

\*Assistant Professor, Institute of Management Sciences, Bahauddin Zakariya University, Multan Pak).

\* Corresponding author: [uroojpasha@hotmail.com](mailto:uroojpasha@hotmail.com)

Received: 18th April, 2021

Revised: 27h May, 2021

Accepted: 29th June, 2021

---

**Abstract:** As the ever-increasing concern for the environment is among the world's most crucial issues, and organizations must balance their economic, environmental, and social performance. With these increasing environmental and socio-economic concerns, organizations integrate and implement green practices along their supply chains and human resource management practices. The current study examines the influence of green supply chain and human resource management on sustainable performance with the moderating role of external pressures. The partial least square-structural equation modeling (PLS-SEM) analytical tool (Smart PLS) is used to analyze the data. The findings show that green supply chain management (GSCM) substantially positively influences sustainable performance (SP). Similarly, green supply chain management (GSCM) positively impacts green human resource management (GHRM). In the same way, GHRM has a significantly positive influence on SP. GHRM plays a partial mediating role between GSCM and SP. External pressures (EP) fully moderate the relationship between GSCM and SP but in a negative manner. This means that as external forces increase, the effect of GSCM on SP decreases.

**Keywords:** Green Supply Chain Management, Green Human Resource Management, Sustainable Performance, Sustainable Development Goals, External Pressures.

---

## 1. Introduction

Environmental issues such as pollution, global warming, and rapid depletion of resources are deteriorating ecological balance. The government, companies, communities, and individuals are taking precautionary measures for these environmental issues. As a result of pressure from society and the government, companies must review their production processes and supply chain activities (Çankaya and Sezen, 2018). Due to the significant necessary investment for technical, the uncertainty, and the long-term maturity associated with the green investment, environmental policies are viewed as a threat to business profitability (Agyabeng-Mensah et al., 2020).

The concern for climate change and sustainable production and consumption is also part of the 2030 Agenda of the United Nations (UN). Goals 12 and 13 emphasize the significance of sustainable production and consumption, as well as climate change. Sustainable consumption and production aim to achieve greater efficiency while using fewer resources. Economic activities can become more productive in net welfare gains by reducing resource use, degradation, and pollution along the whole life cycle. It also increases the quality of life. As a result, 93 percent of the world's top 250 firms aim to be sustainable. (United Nations, 2015).

As the ever-increasing concern for the environment is among the world's most crucial issues, organizations are obliged to balance their environmental, economic, and social performance (Zaid et al., 2018). For achieving these sustainability objectives, organizations need to pay attention to the external environment.

With these increasing environmental and socio-economic concerns, organizations are integrating and implementing green practices along their supply chains (Foo et al., 2018). The concept of integrating green in the supply chains dates back to the 1990s, but it focused on academicians and practitioners after 2000. According to Sarkis et al. (2011), this concept gained importance in 1960 due to the Environmental Management Movement and is evolving. Green Supply Chain Management takes the shape of a new discipline after 1990 (Seuring and Muller, 2008). Various researchers have defined the concept differently as Handfield (1997) described it in applying environmental management principles across all activities such as designing, procurement, logistics, and distribution. Sarkis (2012) narrated it as integrating environment in doing actions and inclusion of ecological concerns in the supply chain and is termed Green Supply Chain Management (GSCM). The definition of GSCM is widely used, which is given by Srivastava (2007) in the literature. According to him, it is the incorporation of environmental thinking in supply chain management. It includes everything from reactive monitoring practices (routine, regular checking, including inspections from incidents to shed light on our performance) to proactive activities (re-using, recycling, and reverse logistics). There are different definitions of green supply chain management discussed in the literature. Sustainable Supply Chain Management (SSCM) has some overlapping definitions with green supply chain management (GSCM), showing that SSCM is the extension of GSCM (Ahi and Searcy, 2013).

Adopting organizational practices and successfully implementing supply chain management depends on effective human resource management (Schuler and Jackson, 2014). This relation between human resource management and supply chain management gained little attention (Lengnick-Hall et al., 2013). Jabbour (2016) proposed a framework for integrating GSCM and GHRM and emphasized its importance for researchers and practitioners (Jabbour and Jabbour, 2016). Green human resource management involves greening all the functions. The activities such as hiring, training, development, and rewards should be based on green initiatives.

Wehrmeyer (1996) first introduced the concept of integrating "green" in human resource management. Renwick coined the term Green Human Resource Management (GHRM) in 2008 to incorporate environmental problems into human resource management processes such as recruiting and selection, training, development, pay, and incentives. GHRM practices help make the employees "green" to benefit the natural environment, society, and businesses. It is essential to fulfilling specific green competencies, green attitudes, and green behavior (Opatha and Arulrajah, 2014).

GHRM refers to incorporating environmental management in the theories and practices of human resource management (Renwick et al., 2012). All human resource management activities, including

planning, recruitment and selection, training and development, remuneration, and appraisal, must be implemented using GHRM. Organizations should focus on social and ecological sustainability (Saeed et al., 2018). It can only be achieved by linking environmental management with human resource management, as human resource is the life-blood of an organization and impacts all other disciplines (Jabbour et al., 2014). For achieving sustainable performance, the greening of behaviors, commitment from top management, and green practices are necessary (Provasnek et al., 2016). So greening of human resources enhances environmental performance and increases employee's awareness and commitment (Tang et al., 2017).

In developing countries like Pakistan, the concept of GSCM is at its developing stage. It is essential to understand the difficulties in implementing GSCM, which vary in each nation and regional context (Oliveira et al., 2018). Most of the research on the greening of human resources is found in western culture and specifically in manufacturing industries (Jabbour and Jabbour, 2016). Silva et al. (2018) suggested that green supply chain management should be explored in relevance to other perspectives. Integrating green human resource management and green supply chain management is an essential consideration as organizational competitiveness is enhanced by effective supply chain management through human factors (Jurado and Fuentes, 2013). Literature also shows that empirical research on GHRM and GSCM in developing countries is scarce (Jabbour et al., 2017). As Geng et al. (2017) also stated that in Asian economies greening is a relatively new concept.

Moreover, quantitative research and some exploratory study are lacking in this domain (Zaid et al., 2018). There is a lack of research on integrative frameworks for GSCM and GHRM in the developing world compared to developed economies. Literature indicates that green supply chain management has confusing and inconsistent results on a firm's performance (Agyabeng-Mensah et al., 2020).

Based on the research gaps, the following questions are the focus of this research.

- (1) Do GSCM and GHRM directly influence SP?
- (2) Does GHRM mediate the relationship between GSCM and SP?
- (3) Do ExP moderates the relationship between GSCM and SP?

The current study proposes and tests a theoretical model that examines the relationship between GSCM, GHRM, external pressures, and sustainable performance. Moreover, the study will contribute substantially to GHRMPS and GSCMPS literature because it is conducted in Pakistan, with low representation in literature. More so, the study's findings will serve as a blueprint for adopting GSCMPS and GHRMPS to achieve specific organizational performance goals.

The other sections of the study are organized as follows: the second section describes the literature review; the third section explains the methodology; the fourth section provides the data analysis and results, and the fifth section contains the discussion. Section six presents the conclusion.

## **2. Literature review**

### **2.1. Research Background**

#### **2.1.1. Green Supply Chain Management (GSCM)**

In this globalized world, corporations worldwide appreciate the value of supply chains and consider it a source of competitive advantage that can also enhance revenues, customer retention and reduce cost. With all these advantages, it is crucial to consider these supply chains' impact on the environment. Organizations are putting efforts into developing policies and practices that can reduce such effects.

Environmental and supply chain management are at the heart of green supply chain management. Incorporating green into supply chain management and environmental management examines the relationship between the two and explores how they interact. The concept's scope ranges from green purchasing to customers and the extent of reverse logistics (Zhu et al., 2008). With the increasing environmental concerns, green supply chain management is becoming a complex challenge for organizations worldwide (Jabbour et al., 2014).

GSCM is defined as "Incorporating environmental thinking in supply-chain management. It includes designing products, selecting and sourcing materials, manufacturing processes, delivering the final product to the consumers, and end-of-life management after the product's useful life". Srivastava (2007) explains that companies are evolving from reactive to proactive strategies by changing management practices and establishing these as part of business policies through Rs (Reducing, Re-using, Rework, Refurbishing) Reclaiming, Recycling, Remanufacturing and Reverse logistics. Greening of the supply chain is not important only for the environmental concerns but also impacts corporate performance (Chan et al., 2012).

Recent literature shows that greening the supply chains impacts corporate reputation positively (Quintana et al., 2019). In the same way, literature reviews published by Srivastava (2007) and Fahimnia et al. (2015) give a greater understanding of the development of the concept.

The Implementation of GSCM and its performance assessment is essential for surviving in a highly competitive environment. As in the circular economy context, for improving GSCM, constant monitoring of performance is crucial (Kazancoglu et al., 2018). Researchers studied green supply chain management with other variables. Chan et al. (2012) studied the impact of external and internal environmental orientations, green supply chain management, and corporate performance. Here competitive intensity moderated this relationship. The concept of sustainability in the supply chains faces barriers such as less commitment from top management and lack of financial resources (Luthra et al., 2015).

The primary focus of green supply chain management is currently on natural resource conservation, waste reduction, and energy consumption reduction. In order to meet the goals of green supply chain management, a model is proposed that almost eliminates waste while using the least amount of energy (Iqbal et al., 2019).

#### 2.1.2. Green Human Resource Management (GHRM)

Studies on the greening of organizations by integrating human resource management and environmental management dates back to the 1990s. Wehrmeyer considers the initial work in 1996 through a book named "Greening people." Green human resource management integrates environmental management and management practices to strengthen organizational performance and respond to sustainability challenges. Renwick (2008) proposed this integration and coined the term green human resource management. Previous literature showed that human resource management (HRM) is slow in responding to environmental issues (Jackson, 2012). It involves integrating typical HRM practices with the environmental goals (Jabbour et al., 2014).

GHRM practices act as a strategic tool for organizations, so they must be compatible with their overall strategy. It can help to stimulate environmentally responsible behavior of employees (Cherian and Jacob, 2012). Moreover, researchers are considering GHRM from the social and economic perspectives of employees. It involves all three pillars of sustainability (Yusoff et al., 2015). Green human resource management helps organizations develop competent employees who are environmentally conscious and try to minimize carbon footprints by efficient utilization of resources

such as less usage of papers, video conferencing and job sharing, etc. It is essential to consider that green actions are incorporated in every step of HRM practices. These practices help implement and maintain environmental management systems for better environmental performance (Jabbour and Jabbour, 2016).

GHRM is a critical component for improving environmental results (Ren et al., 2018). Green training, according to the AMO principle, equips employees with the necessary information, attitudes, and abilities (Jabbour et al., 2010). It assists them in identifying environmental concerns and taking appropriate steps at work to enhance their green performance waste from the system while utilizing the smallest amount of energy (Vidal-Salazar et al., 2012). In the same way, evaluating green performance helps align behaviors, ensure responsibility, and emphasize environmental objectives to improve companies' environmental outcomes. (Guerci et al., 2016). Green HRM helps in spreading green initiatives across organizations (Nejati et al., 2017). Previous literature generally focused on individual practices of HRM; according to Renwick et al. (2013), Green HRM approaches can have a more significant influence on organizational performance. According to Acquah et al. (2020), green human resource management and supply chain management techniques increase operational and market performance more than environmental performance.

#### 2.1.3. External Pressures (EP)

It is critical to comprehend the elements that influence GSCM adoption. Few drivers include government restrictions, market drivers (consumers, rivals, investors, and public pressures), and suppliers. The institutional theory explains that institutions impact the adoption of GSCM (Vanalle et al., 2017). In the context of the environment, there are specific pressures from the government in the regulations. The pressure of these regulations forces organizations to comply.

In the same way, there can be specific market pressures from competitors, customers and media, and other stakeholders. The demands of the customers can be a powerful force, and they can influence eco-design. Apart from the customers, there are increasing pressures from other stakeholders. Sometimes firms need to change their practices because their competitors are going green. In the same way, pressures from suppliers can also force firms to adopt green practices. Suppliers can play an active role in the management and implementation of green supply chain activities.

Ahmed et al. (2019) researched in an unstable developing country to find the impact of GSCM practices and institutional pressures on organizations' environmental and economic performance. The results revealed that institutional pressures and internal green supply chain practices have an insignificant negative impact on economic performance, whereas these variables contributed significantly towards improving environmental performance.

#### 2.1.4. Sustainable Performance (SP)

The concept of sustainability is becoming essential in business operations. The World Commission on Environment and Development (WCED) defines sustainable development as "development which is meeting the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Dyllick and Hockerts (2002) use a corporate framework to translate the notion of sustainable development. "Meeting the requirements of a firm's immediate and indirect stakeholders (such as shareholders, workers, clients, pressure groups, communities, and so on) without jeopardizing its ability to fulfill the needs of future stakeholders," A triple bottom line strategy, which considers economic, environmental, and social factors, is used to achieve sustainable performance. These three components of the triple bottom line are equally essential and create value for the firm (Svensson et al., 2018).

Management of corporate environmental sustainability is complex. It is considered a challenge for organizations. The capacity of an organization to minimize air emissions, effluent waste, solid wastes, the consumption of hazardous and toxic goods, and the frequency of environmental mishaps is referred to as environmental performance. Economic performance is defined as "improvements in financial and marketing performance as a result of employing GSCM principles that lead to increasing the firm's competitiveness in comparison to the industry average." The writers established that costs of raw materials and energy utilized decreased, resulting in financial gains. Costs of waste disposal and environmental mishaps have both declined (Younis et al., 2016). Wood (1991) defined social performance as "a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs and observable outcomes as they relate to the firm's societal relationships." (Wood, 2016).

## 2.2. Hypothesis Development

### 2.2.1. Green Supply Chain Management and Sustainable Performance

According to Acquah et al. (2020), green supply chain management positively impacts environmental performance. Longoni et al. (2018) and Zaid et al. (2018) conducted the studies on manufacturing firms in Italy and Palestine, respectively, and showed consistent results. Their studies indicated that implementing green supply chain activities helps prevent environmental pollution, reducing waste and energy consumption.

Sahoo and Vijayvargy (2020) investigated the influence of green supply chain management on organizational performance in the same way. They examined the influence of five aspects of green supply chain management on environmental, economic, and operational performance: internal environmental management, green purchasing, eco-design, customer collaboration, and investment recovery. The study indicated that all green supply chain management dimensions significantly affect at least one dimension of performance, either directly or indirectly, except internal environmental management and green purchasing. Environmental performance is predicted by investment recovery, whereas operational performance is predicted by eco-design. Green supply chain management practices do not directly affect economic performance, but these practices can indirectly affect it.

Green practices act as an opportunity for improving the competitiveness as well as the environmental performance of firms. An organization's capacity to minimize waste, pollution, environmental mishaps and the usage of dangerous substances is measured by its environmental performance. Green supply chain methods attempt to reduce the negative impacts of a company's operations on the environment, therefore improving environmental performance (Sahoo and Vijayvargy, 2020).

Abdallah and Al-Ghawayeen (2019) researched Jordan to examine the influence of green supply chain management on economic, environmental, and commercial performance in developing nations. Green supply chain management is favourably related to environmental and operational performance, according to their results. Green supply chain management does not directly affect business performance; it indirectly affects environmental and operational performance. Organizations adopt several practices for gaining a competitive advantage. These practices may include greening of supply chains, just in time, and total quality management. These practices also help in improving operational and business performance. (Mensah et al., 2020).

Similarly, in developing countries, the impact of GSCM on export performance and environmental performance was studied, and results showed that GSCM has a positive and significant impact on EP and export performance. Also, the environmental performance has a positive and significant

impact on export performance. In the same way, EP has a significant and positive mediating relationship between green supply chain management and export performance (Al-Ghwayeen and Abdallah, 2018). Environmental management systems and green purchasing positively impact a firm's competitive performance; this can be cost, flexibility, and quality (Famiyeh et al., 2017).

Yang et al. (2021) examined the impact of supplier coercion and cognitive pressures on a manufacturer's green buying decision-making process, as well as the operational and environmental consequences. According to the findings, a supplier's coercive pressure, environmental awareness, and social responsibility will lead to more effective green purchasing operations, which will result in enhanced operational and environmental performance. The outcomes of the study show that the financial benefits of green purchasing and social and political commitments will drive the adoption of green purchasing practices (Yang et al., 2021). So based on the above literature, we hypothesize:

H1: There is a positive relationship between GSCM and SP.

### 2.2.2. Green Supply Chain Management, Green Human Resource Management, and Sustainable Performance

A recent stream of research has centered on the role of human resource management practices in achieving environmental results, offering empirical evidence for the assumption that particular GHRM practices are favourably correlated with environmental outcomes. The AMO theory has used a variety of articles, including those by Jabbour et al. (2010), as well as papers presented in a special issue of Human Resource Management (Vol. 51, No. 6, 2012) to explore the degree to which HRM activities relate to environmental outcomes of organizations. Environmental outcomes are a firm's determination to protect the environment and show observable operating metrics under the specified environmental care parameters. (Paillé et al., 2014) Previous research has looked into the impact of GHRM practices on organizational environmental outcomes (Zhang et al., 2019), with several studies looking into topics including the correlations between GHRM practices and green supply chain management, employee green engagement, and individual green behavior. Literature reviews on GHRM are used to supplement quantitative research (e.g., Renwick et al., 2013; Ren et al., 2018). As a result, GHRM may be a crucial factor to consider (Ren et al., 2018). Green training, according to the AMO theory, equips workers with the necessary expertise, behaviors, and abilities (Jabbour et al., 2010) to aid them in detecting environmental issues and taking suitable actions at work to enhance their green results.

Similarly, evaluating workers' sustainability success aligns behaviors, ensures accountability, and focuses attention on sustainable goals, increasing organizations' environmental outcomes (Guerci et al., 2016). Organizations that prioritize employee engagement provide resources for workers to contribute their expertise and skills to sustainability practices, implement green programs at work, and provide creative waste reduction and resource use efficiency enhancement strategies, which increase the organization's environmental performance (Pinzone et al., 2016). When properly applied, GHRM activities can help to increase environmental sustainability.

So we hypothesize that:

H2: GSCM is positively related to GHRM

H3: GHRM is positively associated with SP

H4: GHRM mediates the relationship between GSCM and SP

### 2.2.3. Green Supply Chain Management External Pressures and Performance

During the last two decades, private and public organizations published different environmental regulations and standards to promote green practices. ISO 14000, for example, was introduced by

the International Organization for Standardization (ISO). It is an environmental management standard that establishes environmental management, labeling, performance evaluation, and lifecycle assessment criteria (Karimi et al., 2015). According to Porter and Linde (1995), rigorous environmental regulations serve as one of the most crucial drivers for supply chain management, which helps firms to become more innovative and efficient. In the same way, firms adopted environmental codes in order to reduce political risks (Haufler, 2001). After 1970 as the regulations became financially significant, upgrading environmental management became the central focus of firms.

In the context of GSCM, supply chain actors work in a way that meets both customer and regulatory standards. As a result, government agencies and national and international authorities will pressure enterprises to adopt environmentally responsible practices. Government laws, consumer needs, and supplier performance are three high-priority factors, according to Asif et al. (2020). In the same way, studies found that environmental pressures from rivals and stakeholders help implement green supply chain management, and top management support plays a mediating role for environmental initiatives. (Dai et al., 2015). In the same way, stakeholder theory suggests that stakeholder pressure helps in motivating companies to implement environmental and green supply chain management practices (Sarkis et al., 2011).

Green management is becoming an important topic now a day. Environmental damages, flooding, clean water, air pollution, and other such issues attract the community's attention towards the importance of healthy living. Green management involves converting inputs into outputs by maintaining the synergy and balance among social, economic, and environmental benefits.

Sarah and Peter (2000) investigated the link between corporate environmental disclosure and financial performance. The findings show that firms with good financial success have stronger ties to environmental commitment policies than companies with low financial performance. Similarly, firms with a middle financial performance have the most corporate environmental policies and/or explanations of their environmental commitments.

Purnomo and Widianingsih (2012) investigated the link between environmental performance and the financial success of Indonesian firms. Environmental performance has a beneficial impact on financial performance, according to the findings. Khan and Dong (2017) conducted an empirical study on green supply chain management to determine the critical elements. They discovered that the primary determinants of green supply chain management are governmental authorities and customers, who pressure businesses to reduce their negative impacts on society and environmental sustainability. Although certain green practices are not directly linked to financial gains, many businesses embrace them due to environmental rules and regulations. Environmental practices in company operations significantly increase firm performance and provide a competitive advantage in the long term.

So we hypothesize that:

H5: EP moderates the relationship between GSCM and SP.

### **3. Methodology**

#### **3.1. Data Collection and Sample Size**

The current study is conducted in different organizations of Pakistan, and these are selected based on their efforts towards environmental initiatives. These organizations are from the "Annual Environmental Excellence Awards" awardees by National Forum for Environment and Health (NFEH, 2018). This award is given to recognize the efforts of organizations making an outstanding

contribution to sustainable development. These organizations are from different sectors trying to achieve economic and social development while reducing the negative impact on the environment. Three hundred and fifty (350) structured questionnaires along with a letter of permission were distributed. The data was gathered from human resource and supply chain managers who have some experience and it shows that the respondents have the requisite skills and experience to participate in the study to provide in-depth data. All the firms that took part in the study had one human resource manager and one supply chain manager.

### 3.2. Description of measurements

Close-ended questionnaires were employed to gather data for this study. The questionnaire comprises four constructs GSCM, GHRM, EP, and SP. GHRM is measured by the scale adapted from Jabbour et al. (2010) & (Kaur 2011). GSCM, by the scale adapted from Laosirihongthong et al. (2013) & Abdullah et al. (2015). EP is measured by the scale adapted from Agarwal et al. (2017), and similarly, SP, by a scale adapted from Zhu et al. (2013), Abdullah et al. (2015) & Green and Inman (2005).

A five-point Likert-type scale (from 1= low extent to 5 = great extent) is used to measure GHRM and GSCM.

### 3.3. Theoretical Model

Figure 1 shows the theoretical model proposed and tested in this study. The model incorporates four variables and five hypotheses. GSCM is modeled as an exogenous variable, while GHRM and sustainable performance are modeled as mediators and endogenous variables, respectively. The model tests the positive hypothesized relationships among the variables. The model facilitates the examination of the individual and combined influence of GSCM and GHRM on sustainable performance.

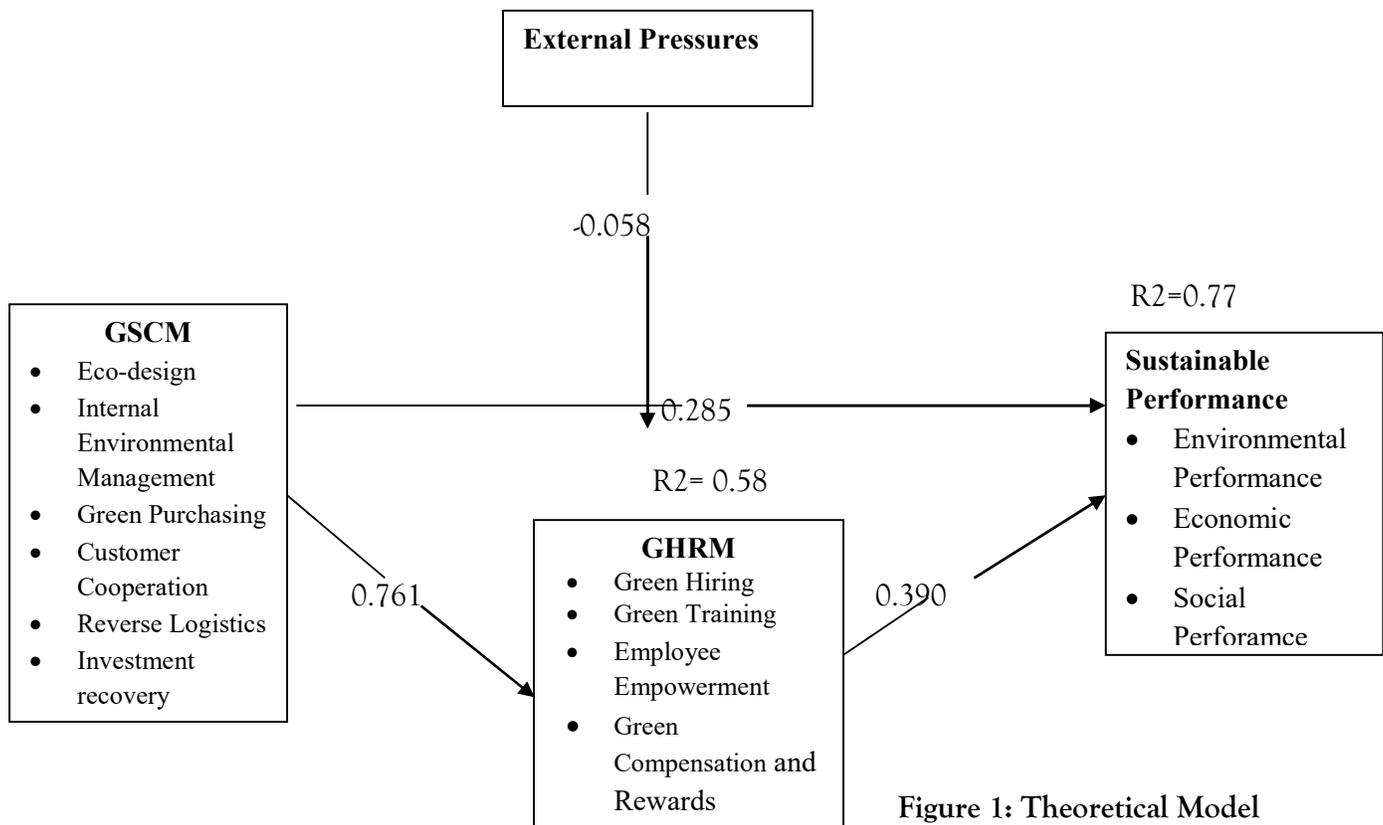


Figure 1: Theoretical Model

#### 4. Data Analysis and Results

The partial least square-structural equation modeling (PLS-SEM) analytical tool (SmartPLS) analyzed the data. PLS-SEM is well suited to predictive analysis and identifying a construct's drivers (Matthews et al., 2018; Hair et al., 2011). Moreover, PLS-SEM is appropriate for an exploratory study like this paper. The data analysis involves a two-part process. It entails a review of the measurement model as well as the structural model. Cronbach's alpha, average variance extracted (AVE), composite reliability, indicator (factor) loadings, Fornell-Larcker criteria, and heterotrait-monotrait ratio of correlations are all used to determine the model's validity and reliability (HTMT) (see Hair et al., 2019). In PLS-SEM, the structural model assessment includes testing hypotheses and examining the variance explained (R<sup>2</sup>), effect size (f<sup>2</sup>), and the predictive relevance (Q<sup>2</sup>) of the independent constructs on the dependent constructs and the predictive relevance of the model. The VIF is also evaluated to determine the endogeneity of this study. The VIF values are less than 3.5, indicating that the investigation is free from multicollinearity.

##### 4.1. Measurement model

The results obtained for Cronbach's alpha (0.894-0.950) and composite reliability (0.913-0.955) indicate that the model has achieved internal consistency reliability since the values are more than 0.60. (Henseler, 2017). The AVE values (0.509-0.559) also suggest that the model has achieved convergent validity and indicator reliability, respectively (Wong, 2016). The values for the Cronbach alpha, AVE, composite reliability, and indicator (factor) loadings are shown in Table 1. Furthermore, the Fornell-Larcker criteria are employed to assess the model's discriminant validity. The AVE of a component should be larger than the total of its squared correlations with all other factors in the model, according to the Fornell-Larcker (Henseler et al., 2016). The correlation values between GHRM, GSCM, EP, and SP displayed in Table 2 indicates that the model meets the criteria.

##### 4.2. Structural model

To assess the model's quality, the variance explained (R<sup>2</sup>), effect size (F<sup>2</sup>), and predictive relevance (Q<sup>2</sup>) are employed. The R<sup>2</sup> values suggest that GHRM (58.0%) and SP (40.2%) adequately explain the model. With the introduction of a moderating variable, i.e., EP, the value of the R<sup>2</sup> for SP increases to 77.7%. In addition, the Q<sup>2</sup> values for GHRM (0.303) and SP (0.425) indicate that the model has good predictive relevance since the Q<sup>2</sup> values are more than 0.000 (Hair et al., 2019).

**Table 1: Measurement Property of Reflective Constructs**

Construct	Loadings	Items	CA	AVE	CR
Sustainable Performance	0.711	SP1	0.950	0.559	0.955
	0.784	SP2			
	0.724	SP3			
	0.673	SP4			
	0.720	SP5			

	0.796	SP6			
	0.799	SP7			
	0.793	SP8			
	0.784	SP9			
	0.766	SP10			
	0.743	SP11			
	0.789	SP12			
	0.750	SP13			
	0.771	SP14			
	0.771	SP15			
	0.780	SP16			
	0.503	SP17			
EP	0.714	ExP1	0.931	0.550	0.941
	0.781	ExP2			
	0.709	ExP3			
	0.770	ExP4			
	0.620	ExP5			
	0.761	ExP6			
	0.718	ExP7			
	0.791	ExP8			
	0.788	ExP9			
	0.737	ExP10			
	0.741	ExP11			
	0.756	ExP12			
	0.735	ExP13			
GHRM	0.800	GHRM1	0.894	0.545	0.913
	0.518	GHRM2			
	0.565	GHRM3			
	0.852	GHRM4			
	0.838	GHRM5			
	0.857	GHRM6			
	0.739	GHRM7			
	0.716	GHRM8			
	0.678	GHRM9			
GSCM	0.639	GSCM1	0.916	0.509	0.929
	0.651	GSCM2			
	0.808	GSCM3			

	0.795	GSCM4
	0.787	GSCM5
	0.810	GSCM6
	0.816	GSCM7
	0.790	GSCM8
	0.818	GSCM9
	0.664	GSCM10
	0.555	GSCM11
	0.526	GSCM12
	0.491	GSCM13

### 4.3. Results

The study explores the influence of GSCM and GHRM on SP. Moreover, the moderating effect of ExP is also explored. After running the bootstrapping the results indicate that GSCM has a positive influence on SP (H1,  $\beta = 0.285$ ,  $T = 3.801$ ,  $p = 0.000$ ) and GHRM (H2,  $\beta = 0.761$ ,  $T = 22.508$ ,  $p = 0.000$ ) and in the same way GHRM has a positive influence on SP (H3,  $\beta = 0.390$ ,  $T = 1.467$ ,  $p = 0.000$ ) as shown in table 3.

The study further explores the indirect influence of GSCM on SP through GHRM. The findings indicate that GHRM plays a partial mediating role between GSCM and SP, as shown in table 4. This relation is examined using VAF method ( $VAF = 0.51$ ,  $t = 4.663$ ,  $p = 0.000$ ).

The result of moderation shows that EP moderates the relationship between GSCM and SP ( $\beta = -0.058$ ,  $t = 2.030$ ,  $p = 0.043$ ). The negative value of beta indicates that moderation is negative with the increase in external pressures, the relation between GSCM and SP decreases.

**Table 2: Fornell-Larcker Criterion**

	EP	GHRM	GSCM	SP
ExP	0.741			
GHRM	0.599	0.738		
GSCM	0.570	0.761	0.714	
SP	0.875	0.601	0.579	0.748

## 5. Discussion

To answer the first question and achieve the objective of our study, the direct relationship between GSCM and SP is tested. The results show that GSCM has a significant positive influence on SP. it shows that firms adopting GSCM are likely to improve sustainable performance; Similarly, GSCM has a positive impact on GHRM. In the same way, GHRM has a significantly positive influence on SP, similar to the finding of Longoni et al. (2018), which indicates a positive relationship between GHRMPS and performance among manufacturing firms in Italy.

**Table 3: Direct effect**

Path	Hypothesis	Beta $\beta$	T Statistics	P Values	Results
SSCM $\rightarrow$ SP	H1	0.285	3.801	0.000	Supported
SSCM $\rightarrow$ GHRM	H2	0.761	22.508	0.000	Supported
SHRM $\rightarrow$ SP	H3	0.309	1.467	0.000	Supported

The mediating role of GHRM is investigated to answer the study's second question. The findings indicate that GHRM acts as a partial mediator between GSCM and SP. Previous studies also suggest that a multidisciplinary approach such as integrating GSCM and GHRM is required (Pagell and Shevchenko, 2014). There are challenges with the implementation of GSCM, but green hiring, green training, employee involvement, green rewards, and compensation can help overcome these challenges (Jabbour and de Sousa Jabbour, 2016).

**Table 4: Indirect Effect**

Path	Hypothesis	VAF	T Stats	P Stats	Results
SSCM $\rightarrow$ GHRM $\rightarrow$ SP	H4	0.51	4.663	0.000	Supported

The moderating role of external pressures was tested in order to answer the third question. Results indicate that external pressures fully moderate the relationship between GSCM and SP but negatively, which means that as external pressures increase, the effect of GSCM on SP decreases. According to Ambec and Lanoie (2008) and Ren et al. (2018), green sustainable management practices (e.g., GHRMPS) serve as a strategic opportunity for firms to avoid regulatory fines and respond to changing external environment. The finding is consistent with the findings of Ahmed et al. (2019). They researched an unstable developing country to find the impact of GSCM practices and institutional pressures on organizations' environmental and economic performance. The results revealed that institutional pressures and internal green supply chain practices have an insignificant negative effect on economic performance.

## 6. Conclusion

### 6.1. Implication for theory

The current study adds to the literature in several ways. A theoretical framework is tested in which we examined the combined effect of GSCM and GHRM on SP from the perspective of a developing country. Moreover, this paper also responds to the literature that calls for exploring the synergy between GSCM and GHRM. Examining the direct influence of GSCM and GHRM on SP in Pakistan deepens the understanding of the perspective for achieving sustainability goals in Pakistani Organizations. Furthermore, the study presents quantitative evidence to substantiate the notion that incorporating green practices into human resource management and supply chain management improves performance. The synergy of GSCM and GHRM and examining their combined effect on all the three dimensions of sustainable performance and the moderating effect of external pressures are the significant contributions of this study. And these were also missing in the literature.

### 6.2. Implications for practice

The study contributes to managers and practitioners in different ways. It could help managers understand that GSCM and GHRM should be implemented in an organization as these can lead to sustainable performance. Moreover, the effective implementation of GSCM is possible through the implementation of green practices in HRM. Surprisingly the study shows the external pressures can negatively influence this relationship which shows that firms while responding to the external pressures, may have to incorporate heavy investments, which can negatively impact the sustainable performance in the short run.

### 6.3. Limitations and future research directions

We can interpret the findings of this research with the following limitations in mind. These identified limitations may serve as future study directions. We tested a model to test the combined effect of GSCM and GHRM on SP. Further studies can use dimensions of SP individually to explain the moderating impact of External pressures better. In the same way, a mixed-method approach is also recommended.

## References

- Acquah, I. S., Agyabeng-Mensah, Y., & Afum, E. (2020). Examining the link among green human resource management practices, green supply chain management practices and performance. *Benchmarking: An International Journal*, 267-290.
- Agyabeng-Mensah, Y., Ahenkorah, E. N., & Agnikpe, M. C. (2020). The Intermediary Role of Supply Chain Capability Between Supply Chain Integration and Firm Performance. *Journal of Supply Chain Management Systems*, 32-44.
- Ahmad, S., Islam, T., Sadiq, M., & Kaleem, A. (2021). Promoting green behavior through ethical leadership: a model of green human resource management and environmental knowledge. *Leadership & Organization Development Journal*.
- Ahmed, W., Najmi, A., & Khan, F. (2019). Examining the impact of institutional pressures and green supply chain management practices on firm performance. *Management of Environmental Quality An International Journal*.
- Al-Ghwayeen, W. S., & Abdallah, A. B. (2018). Green supply chain management and export performance: The mediating role of environmental performance. *Journal of Manufacturing Technology Management*, 1233-1252.
- Asif, M. S., Lau, H., Nakandala, D., Fan, Y., & Hurriyet, H. (2020). Adoption of green supply chain management practices through collaboration approach in developing countries e From literature review to conceptual framework. *Journal of Cleaner Production*.
- Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The Impact of Human Resource Management on Environmental Performance: An Employee-Level Study. *Journal of Business Ethics*, 451-466.

- Sahoo , S., & Vijayvargy, L. (2020). Green supply chain management practices and its impact on organizational performance: evidence from Indian manufacturers. *Journal of Manufacturing Technology Management*.
- United Nations. (2015). Retrieved from Sustainable Development Goals: <https://www.un.org/sustainabledevelopment/>
- Abdallah, A. B., & Al-Ghwayeen , W. S. (2019). Green supply chain management and business performance: The mediating roles of environmental and operational performances. *Business Process Management Journal*, 489-512.
- Agarwal, A., Yuan, L., & François C, G.-C. (2018). A Mediation Model of Green Supply Chain Management Adoption: The Role of Internal Impetus. *International Journal of Production Economics*, 342-358.
- Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions of green and sustainable supply chain management. *Journal of Cleaner Production*, 52, 329-341.
- Ahmed, W., & Najmi, A. (2018). Developing and analyzing framework for understanding the effects of GSCM on green and economic performance : Perspective of a developing country. *Management of Environmental Quality: An International Journal*, Vol. 29 No. 4, 740-758.
- AlNuaimi, B. K., & Khan, M. (2019). Public-sector green procurement in the United Arab Emirates: Innovation capability and commitment to change. *Journal of Cleaner Production*, 482-489.
- Arulrajah, A. A., Opatha, H. H., & Nawaratne, N. N. (2016). Green Human Resource Management Practices: A Review. *Sri Lankan Journal of Human Resource Management*, 5(1), 1-16.
- Çankaya, S. Y., & Sezen, B. (2018). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*.
- Cherian, J., & Jacob, J. (2012). A Study of Green HR Practices and Its Effective Implementation in the Organization: A Review. *International Journal of Business and Management*, 7(21).
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130-141.
- Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green Supply Chain Management: A Review and Bibliometric Analysis. *International Journal of Production Economics*, 162.
- Foo, P.-Y., Lee, V.-H., Tan, G. W.-H., & Ooi, K.-B. (2018). A gateway to realising sustainability performance via green supply chain management practices: A PLS-ANN approach. *Expert Systems with Applications*.
- Geng, R., Mansouri, A., & Aktas, E. (2017). The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies. *International Journal of Production Economics*.

- Guerci, M., Longonia, A., & Luzzini, D. (2016). Translating stakeholder pressures into environmental performance – the mediating role of green HRM practices. *The International Journal of Human Resource Management*, 27(2), 262-289.
- Handfield, R. B., Walton, S. V., Seegers, L. K., & Melnyk, S. A. (1997). 'Green' value chain practices in the furniture industry. *Journal of Operations Management*, 15(4), 293-315.
- Haufler, V. (2001). Public Role for the Private Sector: Industry Self Regulation in a Global Economy. Washington DC: Carnegie Endowment for International Peace .
- Iqbal, M. W., Kang, Y., & Jeon, H. W. (2019). Zero waste strategy for green supply chain management with minimization of energy consumption. *Journal of Cleaner Production*.
- Jabbour, A. B., Jabbour, C., Govindan, K., Kannan, D., & Arantes, A. F. (2014). Mixed methodology to analyze the relationship between maturity of environmental management and the adoption of green supply chain management in Brazil. *Resources, Conservation and Recycling*, 92, 255-267.
- Jabbour, A. B., Jabbour, C., Govindan, K., Kannan, D., & Arantes, A. F. (2014). Mixed methodology to analyze the relationship between maturity of environmental management and the adoption of green supply chain management in Brazil. *Resources, Conservation and Recycling*.
- Jabbour, C. J., & Jabbour, A. B. (2016). Green Human Resource Management and Green Supply Chain Management: linking two emerging agendas. *Journal of Cleaner Production*, 112, 366-377.
- Jabbour, C. J., Almada, C. F., & Nagano, M. S. (2010). Contributions of HRM throughout the stages of environmental management: methodological triangulation applied to companies in Brazil. *The International Journal of Human Resource Management*, 1049-1089.
- Jackson, S. E. (2012). Portrait of a slow revolution toward environmental sustainability. In *Managing Human Resources for Environmental Sustainability* (pp. 3-20). Jossey-Bass.
- Jackson, S. E., & Seo, J. (2010). The greening of strategic HRM scholarship. *Organization Management Journal*, 7(4), 278-290.
- Jackson, S. E., Schuler, R. S., & Jiang, K. (2014). An Aspirational Framework for Strategic Human Resource Management. *The Academy of Management Annals*, 8(1).
- Jia, F., Gong, Y., & Brown, S. (2019). Multi-tier sustainable supply chain management: The role of supply chain leadership. *International Journal of Production Economics*, 44-63.
- Jurado, P. J., & Fuentes, J. M. (2013). HR management during lean production adoption. *Management Decision*.
- Karimi, A., & Abdul Rahim, K. (2015). Classification of external stakeholders pressures in green supply chain management. *Procedia Environmental Sciences*, (pp. 27-32).

- Kaur, H. (2011). Impact of human resource factors on perceived environmental performance: an empirical analysis of a sample of ISO 14001 EMS companies in Malaysia. *Journal of Sustainable Development*.
- Khan, S. A., & Qianli, D. (2017). Impact of green supply chain management practices on firms' performance: an empirical study from the perspective of Pakistan. *Environmental Science and Pollution Research*, 24(1), 16829-16844.
- Khan, S. A., Jian, C., & Zhang, Y. (2018). The Role of Ethical Leadership in Brand Image Building and Cost Reduction through the Adoption of Green Practices: A Path Analysis Using SEM., 1, pp. 457-462.
- Khan, S., & Qianli, D. (2017). Impact of green supply chain management practices on firms' performance: an empirical study from the perspective of Pakistan. *Environmental Science and Pollution Research*.
- Lee, S.-Y. (2008). Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives. *Supply Chain Management: An International Journal*, 185-198.
- Lengnick-Hall, M. L., Lengnick-Hall, C. A., & Rigsbee, C. M. (2013). Strategic human resource management and supply chain orientation. *Human Resource Management Review*, 23(4), 366-377.
- Liu, J., Liu, Y., & Yang, L. (2020). Uncovering the influence mechanism between top management support and green procurement: The effect of green training. *Journal of Cleaner Production*.
- Luthra, S., Garg, D., & Haleem, A. (2015). An analysis of interactions among critical success factors to implement green supply chain management towards sustainability: An Indian perspective. *Resources Policy*, 46(1), 37-50.
- Mensah, Y. A., Afum, E., Agnikpe, C., Cai, J., Ahenkorah, E., & Dacosta, E. (2020). Exploring the mediating influences of total quality management and just in time between green supply chain practices and performance. *Journal of Manufacturing Technology Management*, 156-175.
- Min, S., & Mentzer, J. T. (2011). Developing and measuring Supply Chain Management concepts. *Journal of Business Logistics*, 25(1), 63-99.
- Mumtaz, U., Ali, Y., Petrillo, A., & Felice, F. D. (2018). Identifying the critical factors of green supply chain management: Environmental benefits in Pakistan. *Science of the Total Environment*, 144-152.
- Nejati, M., Rabiei, S., & Jabbour, C. J. (2017). Envisioning the invisible: understanding the synergy between Green Human Resource Management and Green Supply Chain Management in Manufacturing Firms in Iran in light of the moderating effect of employees' resistance to change. *Journal of Cleaner Production*, 168, 163-172.
- NFEH. (2018). NFEH. Retrieved from <http://www.nfeh.org.pk>.
- Oliveira, U., Espindola, L. S., Silva, I. R., Silva, I., & Rocha, H. M. (2018). A systematic literature review on green supply chain management: Research implications and future perspectives. *Journal of Cleaner Production*.

- Opatha, H. H., & Arulrajah, A. A. (2014). Green Human Resource Management: Simplified General Reflections. *International Business Research*, 7(8).
- Pagell, M., & Shevchenko, A. (2013). Why Research in Sustainable Supply Chain Management Should Have no Future. *Journal of Supply Chain Management*, 40(1), 44-55.
- Pinzone, M., Guerci, M., Lettieria, E., & Redma, T. (2016). Progressing in the change journey towards sustainability in healthcare: the role of 'Green' HRM. *Journal of Cleaner Production*, 201-211.
- Porter, M. E., & Linde, C. V. (1995). Toward a New Conception of the Environment-Competitiveness Relationship. *Journal of Economic Perspectives*, 97-118.
- Provasnek, A. K., & Sentic, A. (2016). Integrating Eco-Innovations and Stakeholder Engagement for Sustainable Development and a Social License to Operate. *Corporate Social Responsibility and Environmental Management*, 24(6).
- Quintana-García, C., Benavides-Chicónb, C. G., & Marchante-Laraa, M. (2019). Does a green supply chain improve corporate reputation? Empirical evidence from European manufacturing sectors. *Industrial Marketing Management*.
- Ren, S., Tang, G., & Jackson, S. E. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management*, 769-803.
- Renwick, D. W., Redman, T., & Maguire, S. (2012). Green Human Resource Management: A Review and Research Agenda. *International Journal of Management Reviews*, 15(1), 1-15.
- Renwick, D., Redman, T., & Maguire, S. (2008). Green HRM: A review, process model, and research agenda. *International Journal of Management Reviews*, 15(1).
- Saeed, B. B., Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M. A. (2018). Promoting employee's proenvironmental behavior through green human resource management practices. *Corporate Social Responsibility and Environmental Management*, 26(2), 424-438.
- Sarkis, J. (2012). A boundaries and flows perspective of green supply chain management. *Supply Chain Management*, 17(2), 202-216.
- Sarkis, J., & Dijkshoorn, J. (2007). Relationships between solid waste management performance and environmental practice adoption in Welsh small and medium-sized enterprises (SMEs). *International Journal of Production Research*, 45(21), 4989-5015.
- Sarkis, J., Zhu, Q., & Lai, K.-h. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, 130, 1-15.
- Schuler, R. S., & Jackson, S. E. (2014). Human resource management and organizational effectiveness: Yesterday and today. *Journal of Organizational Effectiveness People and Performance*, 1(1), 35-55.

- Seuring, S., & Müller, M. (2008). From a Literature Review to a Conceptual Framework for Sustainable Supply Chain Management. *Journal of Cleaner Production*, 16(15), 1699-1710.
- Srivastava, S. K. (2007). Green Supply Chain Management: A State-of-The-Art Literature Review. *International Journal of Management Reviews*, 9(1), 53 - 80.
- Svensson, G., Ferro, C., Høgevd, N., Padin, C., Sosa Varela, J. C., & Sarsetedt, M. (2018). Framing the triple bottom line approach: Direct and mediation effects between economic, social and environmental elements. *Journal of Cleaner Production*, 197(1), 972-991.
- Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2017). Green human resource management practices: scale development and validity. *Asia Pacific Journal of Human Resources*, 56(1), 31-55.
- Teixeira, A. A., Jabbour, C. J., Jabbour, A. B., & Latan, H. (2016). Green Training and Green Supply Chain Management: Evidence from Brazilian Firms. *Journal of Cleaner Production*, 113(1), 1-7.
- Vanalle, R. M., Gangab, G. M., Filho, M. G., & Lucato, W. C. (2017). Green supply chain management: An investigation of pressures, practices, and performance within the Brazilian automotive supply chain. *Journal of Cleaner Production*, 151(10), 250-259.
- Vidal-Salazar, M., Cordon Pozo, E., & Ferron-Vilchez, V. (2012). Human Resource Management and developing proactive environmental strategies: The influence of environmental training and organizational learning. *Human Resource Management*, 51(6), 904-934.
- Wood, D. J. (2016). Corporate social performance revisited. *Academy of Management Review*, 691-718.
- Yang, J., Wang, Y., Gu, Q., & Xie, H. (2021). The antecedents and consequences of green purchasing: an empirical investigation. *Benchmarking: An International Journal*.
- Younis, H., & Sundarakani, B. (2019). The impact of firm size, firm age and environmental management certification on the relationship between green supply chain practices and corporate performance. *Benchmarking: An International Journal*, 319-346.
- Younis, H., Sundarakani, B., & Vel, P. (2016). The impact of implementing green supply chain management practices and corporate performance. *Competitiveness Review*, 216-245.
- Zaid, A. A., Jaaron, A. A., & Bon, A. T. (2018). The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study. *Journal of Cleaner Production*, 965-979.
- Zhang, S., Wang, Z., & Zhao, X. (2019). Effects of proactive environmental strategy on environmental performance: Mediation and moderation analyses. *Journal of Cleaner Production*, 1438-1449.
- Zhu, Q., Sarkis, J., & Lai, K.-h. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International Journal of Production Economics*, 111(2), 261-273.