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The effect of green strategies and eco-innovation on Mexican automotive industry sustainable and financial performance: Sustainable supply chains as a mediating variable

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Abstract

This work focuses on the study of how green strategies (GBS) and eco-innovation (EI) contribute to increasing sustainable and financial performance in the context of the Mexican manufacturing industry, and whether these relationships are mediated by the practices involved in sustainable supply chains (SSCs). This analysis is carried out through an empirical study of a sample of 460 companies in the automotive industry. The results reveal direct positive effects of GBS and EI on performance both, sustainable and financial. In spite of the key role played by SSC, this variable only exerts a mediating effect on the sustainable performance. Nevertheless, although the significant direct effect of sustainable supply chains on financial performance is not verified, there is an indirect effect of supply chains on financial performance through their influence on sustainable development. The findings reveal important implications for managers. They provide rational arguments (increase in performance) that should motivate companies in the Mexican automotive industry to incorporate values, standards, and actions focused on reducing the effects of their activities on the environment. These considerations will lead to a change in behavior which is better aligned with global environmental demands.

KEYWORDS
eco-innovation, financial and sustainable performance, green business strategy, sustainable development, sustainable supply chain

1 | INTRODUCTION

In the last two decades, social pressure has been put on government authorities to adopt stricter policies to reduce the levels of pollutants emitted by companies (Wesseling et al., 2015). These environmental regulations are causing companies to define green strategies and increase their interest in eco-innovation and sustainable supply chain to comply with regulations aimed at reducing pollution levels and protecting the environment (Dixit, 2020; Guoyou et al., 2013; Sun et al., 2018). In this sense, green strategies can be defined as systematic elements that substantially improve the environmental safety and sustainability of all the activities carried out both inside and outside of manufacturing companies (D'Agostini et al., 2017). Eco-innovation is "the development or implementation of (new) products, services, processes or management systems that can generate various environmental benefits" (Horbach et al., 2012), and sustainable supply chain is the "alignment, linkages and coordination of processes, people, information, knowledge, strategies, and communication across the supply chain amongst all points of contact and making the efficient and effective movements of materials, information, money and knowledge as needed by the customer" (Stevens & Johnson, 2016). Grounded on previous definitions green strategies, eco-innovation and sustainable supply chain can boost economic development by means of energy efficiency and the efficiency of industrial waste management (Abbey et al., 2018; Genovese et al., 2017).

To motivate responsible behavior from manufacturing internally, it is necessary to demonstrate that these types of policies have positive effects on business performance. However, mixed results reinforce the need to explore the effects of green strategies on business results and, especially, financial performance (Leonidou et al., 2015; Yu et al., 2017). Identifying the variables that mediate this relationship is crucial to understand the key factors of the relationship. In this regard, the role played by sustainable supply chains as a mediating variable stands out. The sustainable supply chains can have a significant effect on performance (Matos et al., 2020), and act as a vehicle for the green strategies and eco-innovation activities. However, companies' good intentions can be hindered by the complexity of clearly identifying sustainable activities (Carter et al., 2020; Reiner et al., 2015; Wontner et al., 2020; Ye et al., 2020), and that resource restrictions and low level of awareness about environmental activities make it more difficult to identify green practices that are strategic for organizations (Porter & Kramer, 2006). This could result in their losing interest in adopting and implementing green strategies (Glover, 2020; Nath et al., 2020; Silvestre et al., 2020). Indeed, the high level of competitiveness among companies and the globalization of the economy, coupled with business uncertainty, are generating much more complex supply chains (Varma et al., 2006) since the design, organization, and interactions within supply chains are undergoing radical changing (Gold et al., 2010).

The objective of this work is to analyze whether sustainable supply chains act as a mediating variable in the relationship between the adoption of green strategies and eco-innovation with sustainable and financial returns. To address this research objective, an empirical study is carried out in the context of the Mexican automotive industry. The sample used is 460 observations, estimating the model through PLS-SEM structural equations. This context is interesting because the traditional economic model production and consumption that prevails in most manufacturing companies, especially in emerging economies such as Mexico's, is generally incompatible with the environmental commitment society currently demands (Scur et al., 2019). In addition, since the beginning of the current decade, Ceschin and Vezzoli (2010) have considered that the automotive industry is an industry which is economically interested in reducing the consumption of energy and materials in their production systems since this would allow them to reduce production costs. Nevertheless, they have no interest in reducing the energy consumption of the vehicles they produce, despite the fact that cars have been shown to have a highly negative impact on air quality (Farkavcova et al., 2018).

The results of this research show evidence in favor of a positive effect of green strategies and eco-innovation on environmental and financial performance. These relationships are partially mediated by sustainable supply chains. Thus, while this variable mediates the relationship between green strategies and eco-innovation with environmental performance, the indirect effect on financial performance is not verified. This work contributes to the sustainability literature in two essential aspects. First, there is a limited number of empirical studies that have analyzed how green strategies impact the level of sustainable and financial performance, particularly in manufacturing companies in emerging economies such as Mexico's, where conservation of the environment is in an embryonic stage (Child & Tsai, 2005; Hoskisson et al., 2000; Tatoglu et al., 2014). Second, it contributes to the knowledge about the effects and conditions in which green strategies affect performance levels through the mediating effect of sustainable supply chains in emerging economies (Chan, 2010; Hsu et al., 2016). The results have important implications for both public administrations and managers of companies in the automotive sector. Thus, the results show the great importance of fostering the integration of green strategies and eco-innovative practices in companies since this would have a significant effect on environmental performance.

2 | THE EFFECT OF GREEN STRATEGIES ON SUSTAINABLE AND FINANCIAL PERFORMANCE

Green strategies are systematic elements that substantially improve the environmental safety and sustainability of all the activities carried out both inside and outside of manufacturing companies (D'Agostini et al., 2017). A clear example of the results of green strategies in the automotive industry is the creation of Mazda eco-value initiatives to reduce hazardous materials in the production of its vehicles (Mazda, 2016), or Nissan's innovative Zero Emissions Through Solar Cell and Electric Vehicle Production (Nissan, 2018). These initiatives not only have reduced the levels of pollution and CO2 to the environment, but they have also substantially increased the sustainable performance of companies (D'Agostini et al., 2017).

Traditionally, the automotive industry has received enormous attention in the context of green strategies, mainly because of the pollution it generates (Van Hoek, 2001; Zhu et al., 2007). Most companies in the automotive industry are adopting green strategies to reduce negative environmental impacts and increase their sustainable performance (Liu et al., 2016), through the production of electric and hybrid vehicles that are more environmentally friendly. This is due, in part, to consumer demands that companies generate this type of products (Hsu et al., 2016; Thun & Muller, 2010). The greater demand for these products not only reduces adverse environmental effects (Leonidou et al., 2015) but also improves sustainable performance (Yasir et al., 2020). Therefore, according to the information presented, it is possible to propose the following research hypotheses:

H1a. Adoption of green strategies has a significant positive impact on sustainable performance.

Additionally, the preferences for more sustainable products are causing manufacturing companies to adopt and implement green strategies that are more defined and better aligned with their objectives and business strategies, considering all the stakeholders in their supply chains, and allowing them to obtain better financial results (Owen et al., 2018). However, the literature considers that there are serious doubts about the positive relationship between environmental protection and the financial performance of companies (Eiadat et al., 2008;Leonidou et al., 2015; Yu et al., 2017).

These mixed results reinforce the need to explore the effects of green strategies on business results and, especially, financial performance (Leonidou et al., 2015; Yu et al., 2017). In this paper, we consider that the articulation of green strategies has to have not only an environmental aspect but also a financial one that fosters the implementation of this kind of strategy. Therefore, according to the information presented, it is possible to propose the following research hypotheses:

H1b. Adoption of green strategies has a significant positive impact on financial performance.

3 | THE EFFECT OF ECO-INNOVATION ON SUSTAINABLE AND FINANCIAL PERFORMANCE

Eco-innovation appears in the literature as one of the most effective actions manufacturing companies can take to reduce negative impacts on the environment (Jiménez-Parra et al., 2018; Vieira & Radonjic, 2020). Likewise, in the literature, eco-innovation is considered a multi- and interdisciplinary concept (Boons & Lüdeke-Freund, 2013), which is used in different expressions such as sustainable innovation and environmental and green innovation (Cheng et al., 2014). According to Kemp and Pearson (2007), eco-innovative activities include "The protection, assimilation or exploitation of products, processes and management systems that are totally new or improved in the organization, and whose results, through the life cycle of the products, is a reduction in negative impacts on the environment and pollution, in addition to the use of renewable resources, including the use of energy". Therefore, manufacturing companies that adopt eco-innovative activities can significantly minimize waste and levels of pollution and gas emissions, which allows them to comply with the various environmental regulations established by national and international government authorities (Weng & Lin, 2011) and design new production and consumption systems compatible with the principles of sustainable and environmental development (Garcés-Ayerbe et al., 2019). In this sense, the following hypothesis is tested:

H2a. The adoption of eco-innovation has a significant positive impact on sustainable performance levels.

Various researchers and academics argue that eco-innovation in the manufacturing industry can increase opportunities not only to improve sustainable performance (Peralta et al., 2019; Provasnek et al., 2017) but also to substantially enhance the financial performance of companies (Carrillo-Hermosilla et al., 2009; Roscoe et al., 2019). Various authors have analyzed and discussed the relationship between eco-innovation and financial performance through the comparison of profit margins and sales among competitors (Chang & Gotcher, 2020). Cheng et al. (2014) found that eco-innovation in products, processes, and management has an impact on financial performance levels, while Almeida et al. (2013), considered that the adoption of eco-innovation is positively associated with operating costs, image, sales, and market position, all of which have significant positive impacts on the financial performance of companies. Thus, according to the information presented, the following research hypotheses are considered.

H2b. The adoption of eco-innovation has a significant positive impact on financial performance levels.

4 | THE MEDIATING EFFECT OF SUSTAINABLE SUPPLY CHAINS

4.1 | The effect of green strategies on sustainable supply chains

Sustainable supply chains emerge in the literature as one of the topics of greatest interest in the field of qualitative and quantitative research (Genovese et al., 2017) since they encompass the purchasing, manufacturing, storage, distribution, use, and recycling activities of materials and raw materials (Linton et al., 2007). Thus, companies in the manufacturing industry are receiving social pressure to incorporate both sustainable strategies and eco-innovative activities in their supply chains (Lintukangas et al., 2015). This would allow them to more easily adapt to the changes brought about by global production, markets, fluctuation in demand, and economic changes (Sampurna et al., 2019).

In this context, success in adopting and implementing green strategies will partially depend on the access that manufacturing companies have to the diverse resources and external capacities of their main commercial partners (Blome et al., 2014). Sustainable supply chains (Laosirihongthong et al., 2013) facilitate both cost reduction and added value in processes involving commercial partners (Harms et al., 2013). A clear example of this is Ford, which has made efforts to develop closer relationships with all the manufacturing companies that make up its supply chain to improve their capacity to achieve sustainable objectives in product development and in their supply chain (Ford, 2014).

However, there is a lack of uniformity in the use of green strategies. Proof of this is that while some studies, such as Diabat and Govindan (2011), found that sustainable supply chains improve with green strategies by reducing energy consumption and increasing the reuse and recycling of materials, other studies, such as that presented by Wu and Pagell (2011) showed that green strategies, which include clean production, the number of patents awarded, pollution prevention, and the use of green technology, did not have significant results in sustainable supply chains. These mixed findings reinforce the need to provide more empirical evidence about the effects of green strategies on sustainable supply chains (Liu et al., 2019). Considering the previous literature review we highlight the fact that green strategies go beyond company's frontiers, affecting its supply chain. Therefore, according to the information previously presented, the following hypothesis is proposed:

H3a. The adoption of green strategies has a significant positive impact on sustainable supply chains.

4.2 | The effect of eco-innovation on sustainable supply chains

More and more manufacturing companies, including those in the automotive industry, are embracing and implementing eco-innovative activities to significantly improve both the sustainability of the natural environment and their supply chains (Hazarika & Xiaoling, 2019; Kanda et al., 2019). The exchange of resources and capabilities between manufacturing companies and the main partners in their supply chains are considered in the literature to be one of the most important ways to improve sustainability (Lin et al., 2020).

The adoption and implementation of eco-innovative activities in both manufacturing companies and companies that make up supply chains, as well as the exchange of research and development activities, will generate a more sustainable supply chain, especially in high tech industries, such as the chemical, pharmaceutical, and automotive industries, which are characterized by rapid diffusion of knowledge (Hagedoorn, 2002; König et al., 2018; Roijakkers & Hagedoorn, 2006). However, there are relatively few studies that have analyzed and discussed the effects of eco-innovation in sustainable supply chains (Gao et al., 2016; Mylan et al., 2015).

Horbach et al. (2012) have pointed out the lack of a comprehensive model explaining the effects of eco-innovation on supply chain sustainability. This observation has been corroborated by Fernando et al. (2019), who highlight the need for researchers and academics to provide empirical evidence about the relationship between eco-innovation and supply chains in the context of sustainability. Based on this need, the following hypothesis is tested:

H3b. Eco-innovation has a significant positive impact on sustainable supply chains.

4.3 | The effect of sustainable supply chains on performance

The transformation from conventional to sustainable supply chains requires manufacturing companies to make fundamental changes to their supply chains and incorporate sustainable activities into their daily activities (Busse et al., 2017). Sustainable supply chains must integrate environmental action that contributes to increasing organizations' social and sustainable performance levels (Sampurna et al., 2019). Therefore, sustainable supply chains are generally considered in the literature to be a set of capabilities which are commonly used to improve both the economic and financial results and sustainable performance levels of manufacturing companies (Vachon & Klassen, 2008).

Furthermore, Tan et al. (2017) concluded that sustainable supply chains fomented a substantial change in the behavior of trading partners and had an impact on the sustainable performance of organizations, while Zarei et al. (2019) found that sustainable supply chains have various consequences, including the improvement of sustainable performance. Finally, Naumov et al. (2020), in a study carried out in the automotive sector, found that sustainable supply chain activities can generate significant results in the sustainable performance of organizations through a substantial reduction in traffic congestion levels.

Despite the theoretical and empirical evidence recognizing a strong relationship between sustainable supply chains and sustainable performance levels (Ahmed et al., 2020; Cousins et al., 2019; Macchion et al., 2020; Meinlschmidt et al., 2018; Meqdadi et al., 2020; Zarei et al., 2019), some authors acknowledge that these results are modest, for which it is necessary to provide greater empirical evidence (Gold & Schleper, 2017; Pagell & Shevchenko, 2014; Shevchenko et al., 2016). As the results obtained so far can be considered inconclusive, it is necessary to delve more deeply into sustainable development activities (Matos et al., 2020). Consequently, the hypothesis is the following:

H4a. Sustainable supply chains have a significant positive impact on sustainable performance levels.

Various researchers consider that attention should be paid to sustainability activities that improve supply chains (Andalib & Soltanmohammadi, 2018), especially guiding studies on how sustainable supply chains affect financial performance levels (Matos et al., 2020). Adopting and implementing sustainability practices have been shown to significantly improve the financial performance of companies, in addition to providing other social benefits (Matos et al., 2020). However, in practice, sustainability activities can be too complex since various parameters intervene which makes their identification difficult (Carter et al., 2020; Wontner et al., 2020; Ye et al., 2020). Therefore, more empirical evidence is needed (Glover, 2020; Nath et al., 2020; Silvestre et al., 2020).

Khodakarami et al. (2015) and Sampurna et al., (2019) considered that moving towards supply chain sustainability allows companies not only to improve their market positions in a global context but also their financial performance. Therefore, the transformation of a conventional supply chain into a sustainable one requires manufacturing companies to change supply chain activities, to adapt them to the needs of sustainability, which will allow these companies to improve their financial performance through a substantial reduction in distribution and product production costs (Busse et al., 2017).

Likewise, more and more manufacturing companies are adopting sustainability practices to make their supply chains more sustainable and to improve their financial performance (Govindan et al., 2015). In addition, the production of more environmentally friendly products through more sustainable supply chains (Xie, 2016) generates greater competitiveness and financial performance (Raut et al., 2015). Therefore, according to the information presented, it is possible to propose the following research hypothesis:

H4b. Sustainable supply chains have a significant positive impact on financial performance levels.

Given that evidence has been provided that green strategies and eco-innovations positively affect sustainable supply chains and that they have a positive effect on performance (sustainable and financial), we consider that it is to be expected that part of the effects green strategies and eco-innovations have on sustainable and financial performance are produced through the activities of sustainable supply chains. The literature has established that the adoption of sustainability commonly inspires manufacturing companies to implement practices such as recycling products at the end of their life cycles and implementing more environmentally friendly supply chains (Zhu et al., 2007). When green strategies and/or eco-innovations are incorporated at the supply chain level, financial performance in organizations is enhanced (Rajak & Vinodh, 2015).

Adopting and implementing eco-innovation activities in manufacturing companies generate better financial results if the sustainability of the supply chain is improved. Performance levels will thereby be increased by distributing more environmentally friendly products and services (Lee & Schmidt, 2017; Luthra et al., 2017).

Additionally, in today's changing and highly competitive business environment, sustainable supply chains appear in the literature as one of the most significant activities in manufacturing companies, particularly in the automotive industry, as they improve the effectiveness of organizations' results in social and environmental terms through better financial performance (Tseng et al., 2015; Fahimnia et al., 2017). Therefore, various researchers, academics, and industry professionals related to the field of sustainable supply chains consider it to be of the utmost importance for greater empirical evidence to be provided about the relationship between green strategies, eco-innovation, supply chains, and levels of sustainable and financial performance (Chen et al., 2017; Costantini et al., 2017; Kanda et al., 2019; Sampurna et al., 2019).

Consequently, the following indirect relationships arise.

H5a. Sustainable supply chains have a mediating effect on the relationship between green strategies and sustainable performance.

H5b. Sustainable supply chains have a mediating effect on the relationship between green strategies and financial performance.

H6a. Sustainable supply chains exert a mediating effect on the relationship between eco-innovation and sustainable performance.

H6b. Sustainable supply chains have a mediating effect on the relationship between eco-innovation and financial performance.

5 | SUSTAINABLE AND FINANCIAL PERFORMANCE

The new patterns of production and consumption that society is adopting have changed sustainability systems in manufacturing companies during the last two decades. This is pressuring companies to increase their levels of competitiveness (Marques Kneipp et al., 2019). To achieve this objective, more and more companies are implementing sustainability activities which allow them to minimize the negative impacts their production activities have on the environment and to increase financial performance levels (Marques Kneipp et al., 2019). In addition, Dyck and Silvestre (2018) considered that greater levels of sustainable performance by companies generate significant increases in their reputations, which can result in improved financial performance.

According to Adams et al. (2016), sustainable performance is related to organizational changes in philosophy and values, as well as in products, processes, and management practices. This creates social and environmental value that resulting in financial gain. Therefore, adopting sustainable performance practices can positively affect the financial performance of manufacturing companies, as has been shown by Wagner (2010), Gunday et al. (2011), and López-Valeiras et al. (2015). Sustainable performance contributes to the sustainability of companies, in addition to having a significant positive effect on levels of financial performance in manufacturing companies (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013).

Various studies have analyzed and discussed the influence of sustainable performance on levels of financial performance during the last decade (e.g., Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Gunday et al., 2011; López-Valeiras et al., 2015; Wagner, 2010). Wagner (2010) analyzed the relationship between sustainability management and financial performance, using a separate measurement for social and environmental performance, and found a direct positive effect between these two sustainability activities and performance. This establishes that sustainable performance significantly contributes to the sustainability of companies by positively affecting their financial performance (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013). Therefore, the following research hypothesis is tested.

H7. Sustainable performance has a significant positive impact on financial performance levels.

Figure 1 shows the proposed research model.

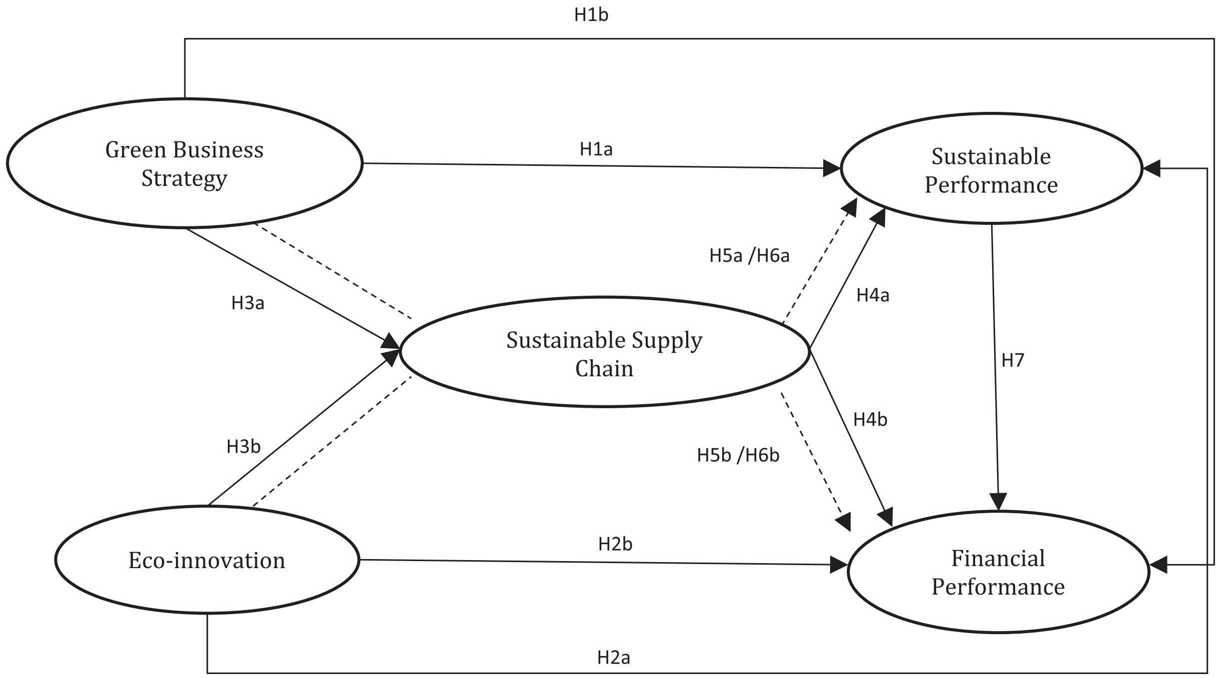

FIGURE 1 Research model

TABLE 1 Sample characteristics

Variable	Frequency	Percentage
Firm's age		
Young companies (<10 years)	156	33.9
Mature companies (>11 years)	304	66.1
Total	460	100.0%
Company size		
Small (10–50 employees)	139	30.2
Medium (51–250 employees)	199	43.3
Large (>250 employees)	122	26.5
Total	460	100.0%
Family character		
Family business (>50% del capital y el gerente es familiar)	122	26.5
Non-family business (<50% del capital y el gerente no es familiar)	338	73.5
Total	460	100.0%

6 | METHODS

6.1 | Sample

In order to test the research hypotheses, the business directory of the Mexican automotive industry was used as a reference framework. This directory had a registry of 909 companies that produced automobiles and auto parts on November 30, 2018. In addition, in this directory, companies belong to different local, regional and national chambers of commerce so the empirical study is not focused on a particular business group or association. The survey employed to collect the information was applied to a sample of 460 companies selected through simple, random sampling, with an error of ±4% and a confidence level of 95%. This sample represented 50.6% of the total population. Data was collected between the months of January and March, 2019, using a questionnaire. The surveys were applied in eight states of the Mexican Republic (Aguascalientes, Guanajuato, San Luis Potosí, Querétaro, Coahuila, Puebla, Estado de México and Nuevo León), which concentrate around 90% of the total production of the automotive industry and auto parts from Mexico. Table 1 shows the main characteristics of the sample. In the sample, 66% of the firms are mature (more than 10 years in the market), 43% are medium-sized companies (51–150 employees) and 26% are categorized as family firms (more of 50% of ownership belongs to a family and there is a family manager).

6.2 | Variables

All the items of the scales used were measured through a five-point Likert scale, with 1 = Totally disagree and 5 = Totally agree. This type of scale generally provides an adequate balance between the complexity of responses and the ease of information analysis (Forza, 2016; Hair et al., 2016).

The green business strategy construct was measured using an adaptation of the scale proposed by Banerge et al. (2003), who considered that this construct could be measured through six items. In order to measure eco-innovation, an adaptation was made to the scale proposed by Doran and Ryan (2012) and Segarra-Oña et al. (2011) considering five items. The sustainable supply chain variable was

TABLE 2 Measurement model assessment

Indicators	Constructs	Factor loads (*p*-value)	Q^2
Green business strategy definition composite type A (GBS) Banerge et al. (2003) Cronbach's alpha:0.909; Dijkstra – Henseler's rho (ρA): 0.909; CRI (ρc): 0.930; EVI: 0.688			
GBS1	It has recently incorporated environmental activities into its strategic planning processes	0.829 (0.000)	
GBS2	Quality control includes reducing the environmental impacts of your products and production processes	0.830 (0.000)	
GBS3	Strives to align its environmental objectives with the other objectives of the organization.	0.872 (0.000)	
GBS4	It has a strong social commitment to develop products and processes that minimize the impact of the environment.	0.876 (0.000)	
GBS5	The protection of the environment is one of the essential objectives that guide the business strategy of the organization	0.777 (0.000)	
GBS6	Environmental activities are regularly considered when developing new products	0.788 (0.000)	
Eco-innovation composite type A (EI) Doran and Ryan (2012) and Segarra-Oña et al. (2011) Cronbach's alpha: 0.931; Dijkstra–Henseler's rho: 0.933; CRI: 0.947; EVI: 0.783			
EI1	It mainly focuses its investment on eco-innovation activities	0.898 (0.000)	
EI2	Raises awareness towards eco-innovation	0.905 (0.000)	
EI3	It has a distribution of eco-innovation information	0.905 (0.000)	
EI4	Has constant training in eco-innovation	0.890 (0.000)	
EI5	Participates or develops research and development projects in eco-innovation	0.824 (0.000)	
Sustainable supply chain composite type A (SSC) Bag (2014) Cronbach's alpha: 0.901; Dijkstra–Henseler's rho: 0.906; CRI:0.919; EVI: 0.643			
SSC1	Mid-level managers fully support the strategy to make the organization's supply chain more sustainable.	0.702 (0.000)	0.080
SSC2	Has an environmental management program as part of the total quality of the organization's supply chain	0.789 (0.000)	0.096
SSC3	Has programs for compliance with environmental regulations and auditing in the organization's supply chain.	0.791 (0.000)	0.105
SSC4	Provides its suppliers with a detailed specification program for the design of their products, which includes environmental care.	0.820 (0.000)	0.145
SSC5	It has a well-defined program of cooperation and collaboration with its suppliers for the care of the environment throughout the supply chain.	0.820 (0.000)	0.132
SSC6	It has a program of cooperation and collaboration with its main clients to achieve production that does not harm the environment.	0.693 (0.000)	0.118
SSC7	Has a program for the sale of waste and unused materials throughout the supply chain	0.695 (0.000)	0.094
SSC8	It has a program of cooperation and collaboration with its suppliers for the design of products for reuse, recycling, or recovery of material components.	0.717 (0.000)	0.079
SSC9	It has a program of cooperation and collaboration with its suppliers to design products that avoid or reduce the use of hazardous materials.	0.688 (0.000)	0.094
Sustainable performance type A (SP) Gadenne et al. (2009) Cronbach's alpha: 0.862; Dijkstra–Henseler's rho:0.868; CRI:0.900; EVI: 0.643			
SP1	It has significantly reduced environmental accidents	0.836 (0.000)	0.197
SP2	Has significantly reduced energy consumption costs	0.791 (0.000)	0.174
SP3	Waste treatment has decreased significantly	0.811 (0.000)	0.173

(Continues)

TABLE 2 (Continued)

Indicators	Constructs	Factor loads (*p*-value)	Q^2
SP4	Waste discharge has significantly decreased	0.820 (0.000)	0.145
SP5	It has significantly reduced fines for environmental accidents	0.750 (0.000)	0.081
Financial performance type A (FP) Leonidou et al. (2013) Cronbach's alpha: 0.801; Dijkstra–Henseler's rho: 0.801; CRI: 0.870; EVI: 0.627			
FP1	The profit margin has increased	0.754 (0.000)	0.120
FP2	The return on investment has increased	0.805 (0.000)	0.106
FP3	Sales volume has increased	0.848 (0.000)	0.127
FP4	Cash flow has increased	0.757 (0.000)	0.129

Note: Q^2, cross-validated redundancies Stone–Geisser Q^2 index.
Abbreviation: AVE, average variance extracted; CRI, composite reliability index.

measured using an adaptation of the scale proposed by Bag (2014), who included nine items. To measure sustainable performance, an adaptation was made to the scale proposed by Gadenne et al. (2009), which was measured through five items. Finally, financial performance was measured with the scale developed by Leonidou et al. (2013), who proposed four items. Table 2 shows the specific items used for each construct.

6.3 | Analysis

To respond to the research hypotheses raised in this empirical study, a PLS-SEM was applied with the use of SmartPLS 3.3 software (Hair et al., 2019). PLS-SEM is considered to be a technique of statistical modeling in the literature (Chin, 2010; Hair et al., 2011; Henseler et al., 2012). It is used in a variety of disciplines (do Valle & Assaker, 2015; Richter et al., 2016; Ringle et al., 2012; Sarstedt et al., 2014) and in those situations where the theory is less developed (Hair et al., 2012), the objective pursued when applying the modeling of structural equations is the prediction and explanation of the constructs (Rigdon, 2012), and the non-normality of the data derived from the measurement scales may be present (Goodhue et al., 2012; Hair et al., 2012; Henseler et al., 2009). This technique is suitable for this research because (a) PLS does not require specific distribution in the indicators (Chin, 2010), (b) PLS avoids serious problems such as inadmissible or improper solutions and indeterminate factors (Fornell & Bookstein, 1982), and (c) PLS is quite robust when regressors are omitted (Cassel et al., 1999). Composite indicators work as contributors to a construct instead of truly causing it (Bollen, 2011; Bollen & Bauldry, 2011). These indicators have to share the same consequences (Henseler, 2017), although they may not be unidimensional and might not share a conceptual unit. Thus, composite indicators may represent different aspects relating to the construct. Mode A composite links to the correlation weights derived from bivariate correlations between each indicator and the construct. In this research all the constructs are considered Type A composite.

7 | RESULTS

7.1 | Measurement model

The reliability and validity of the scales of the constructs used in this empirical study were measured using Cronbach's alpha, the Composite Reliability Index (CRI), the Dijkstra–Henseler rho, and the average variance extracted (AVE) (Table 2) (Hair et al., 2019). The literature has established that the discriminant validity of the constructs should be evaluated by means of three elements: the Fornell and Larcker criterion, the cross loads and, especially, the heterotrait-monotrair ratio (HTMT) of correlations (Hair et al., 2019; Henseler et al., 2015) (Table 3).

The results obtained show that the factorial loads are significant for all the constructs (between 0.702 and 0.905), exceeding the proposed minimum level of 0.7. All the constructs have a Cronbach's alpha greater than 0.8, so their levels are satisfactory (Hair et al., 2019). The CRI and Dijkstra–Henseler rho levels are also above the recommended limits. In fact, the CRI varies between 0.870 and 0.947 and the Dijkstra–Henseler rho is in a range between 0.801 and 0.933, all of which are above the recommended levels (Bagozzi & Yi, 1988; Hair et al., 2014). Similarly, the EVI are at levels that exceed the limits proposed by the literature (Bagozzi & Yi, 1988; Fornell & Larcker, 1981).

The discriminant validity analysis provides evidence of the validity of the measures and their ability to clearly identify different constructs. Thus, the Fornell and Larcker criterion is fulfilled in such a way that the shared variance between pairs of constructs is less than the variance extracted for each individual construct. The most effective measure is the HTMT (Henseler et al., 2015) since the HTMT is an estimate of what the real correlation between two constructs would be if they were measured in a perfect way. An HTMT value lower than 0.85 is recommended (Henseler et al., 2015). In our case, the HTMT ratio varies between 0.176 and 0.471, showing very satisfactory levels far from the recommended maximum of 0.8. Further, we assessed the predictive ability by using the blindfolding procedure in Smart PLS in order to check that cross-validated communalities and redundancies Q^2 are superior to 0 (Tenenhaus et al., 2005).

TABLE 3 Measurement model. Discriminant validity

Measurement model. Discriminant validity									
PANEL A: Fornell-Larcker criterion						*Heterotrait–Monotrait ratio (HTMT)*			
	1	2	3	4	5	1	2	3	4
1 GBS	**0.830**								
2 EI	0.163	**0.885**				0.176			
3 SSC	0.425	0.180	**0.748**			0.464	0.195		
4 SP	0.425	0.231	0.382	**0.802**		0.471	0.257	0.434	
5 FP	0.380	0.182	0.270	0.354	**0.792**	0.444	0.207	0.311	0.424

PANEL B: Cross-loadings											
	GBS	EI	SSC	SP	FP		GBS	EI	SSC	SP	FP
GBS1	**0.829**	0.148	0.359	0.31	0.327	SSC7	0.36	0.131	**0.82**	0.315	0.288
GBS2	**0.83**	0.17	0.36	0.354	0.335	SSC11	0.327	0.188	**0.693**	0.276	0.131
GBS3	**0.872**	0.138	0.356	0.344	0.319	SSC12	0.291	0.158	**0.695**	0.309	0.144
GBS4	**0.876**	0.147	0.352	0.374	0.311	SSC13	0.258	0.165	**0.717**	0.269	0.15
GBS5	**0.777**	0.091	0.335	0.37	0.321	SSC14	0.29	0.158	**0.688**	0.275	0.146
GBS6	**0.788**	0.115	0.338	0.359	0.278	SP1	0.427	0.203	0.289	**0.836**	0.286
EI1	0.171	**0.898**	0.173	0.198	0.152	SP2	0.382	0.173	0.32	**0.791**	0.288
EI2	0.133	**0.905**	0.125	0.216	0.156	SP3	0.335	0.199	0.358	**0.811**	0.317
EI3	0.121	**0.905**	0.115	0.201	0.12	SP4	0.306	0.174	0.328	**0.82**	0.27
EI4	0.167	**0.89**	0.159	0.224	0.185	SP5	0.224	0.175	0.241	**0.75**	0.251
EI5	0.123	**0.824**	0.211	0.181	0.179	FP1	0.334	0.141	0.202	0.243	**0.754**
SSC1	0.281	0.101	**0.702**	0.259	0.201	FP2	0.245	0.118	0.205	0.313	**0.805**
SSC2	0.313	0.087	**0.789**	0.289	0.228	FP3	0.285	0.144	0.225	0.315	**0.848**
SSC3	0.329	0.083	**0.791**	0.296	0.243	FP4	0.335	0.171	0.22	0.251	**0.757**
SSC4	0.374	0.152	**0.82**	0.308	0.25						

Note: PANEL A: Fornell–Larcker criterion: Diagonal elements (bold) are the square root of the variance shared between the constructs and their measures (AVE). For discriminant validity, diagonal elements should be larger than off-diagonal elements. PANEL B: Cross-loadings of the items for all the constructs. Abbreviations: EI, eco-innovation; FP, financial performance; GBS, green business strategy; SP, sustainable performance; SSC, sustainable supply chain.

7.2 | Structural model

The results of the evaluation criteria satisfy their respective thresholds. The adjusted R^2 is greater than 0.1, the variance inflation factor is below 3, while the Q^2 is always positive (Hair et al., 2019). The SRMR is below 0.08 (Hu & Bentler, 1998). Furthermore, the SRMR, the geodetic discrepancy (dG) and the unweighted least squares discrepancy (dULS) are below HI 99%, verifying the significance of the model (Dijkstra & Henseler, 2015). In addition, the results verify that green strategies and eco-innovation in companies favor both sustainable and financial performance. Thus, the coefficients linked to the relationship between green strategies and sustainable and financial performance are 0.304 and 0.252, both being significant with *p*-values of 0.000 (Table 4).

Consequently, adopting and implementing green strategies improve performance in manufacturing companies from the economic and environmental perspectives. Likewise, the coefficients linked to the relationship between eco-innovation and sustainable and financial performance are positive and significant at 0.140 (*p*-value 0.003); 0.082 (*p*-value 0.033). These results show evidence in favor of hypotheses H1a, H1b, H2a, and H2b, and coincide with the results obtained by Liu et al. (2017), D'Agostini et al. (2017), and Yasir et al. (2020) referring to the relationship between green strategies and sustainable and financial performance, and by Almeida et al. (2013), Roscoe et al. (2019), and Scur et al. (2019) about the relationship between eco-innovation and sustainable and financial performance.

Regarding the mediating effect of sustainable supply chains, the results show significant relationships between a company's green strategy and eco-innovation with a sustainable supply chain. Thus, this strategy favors or encourages the existence of sustainable supply chains (0.404; *p*-value: 0.000). A boost is also provided by eco-innovative activities (0.114; *p*-value: 0.005). This evidence shows that green strategies and eco-innovation strengthen the sustainability of supply chains, thereby verifying hypotheses H3a and H3b. These results are in agreement with Wu and Pagell (2011), Diabat and Govindan (2011), and Liu et al. (2016) regarding the relationship between green strategies and supply chains and by Kanda et al. (2019), Hazarika and Xiaoling (2019), and Lin et al. (2020) regarding the relationship between eco-innovation and supply chains.

TABLE 4 Structural model

Paths	Path (*t*-value; *p*-value)	95% confidence interval	f^2	Support
GBS → SP	0.304 (5.044;0.000)	[0.198–0.396]	0.100	Yes
GBS → FP	0.252 (4.695; 0.000)	[0.163–0.339]	0.059	Yes
GBS → SSC	0.404 (8.971;0.000)	[0.326–0.474]	0.196	Yes
EI → SSC	0.114 (2.594;0.005)	[0.039–0.185]	0.016	Yes
EI → SP	0.140 (2.778;0.003)	[0.057–0.223]	0.025	Yes
SSC → SP	0.233 (4.149;0.000)	[0.139–0.324]	0.058	Yes
EI → FP	0.082 (1.767; 0.033)	[0.004–0.156]	0.008	Yes
SSC → FP	0.071 (1.444; 0.074)	[−0.007–0.155]	0.005	No
SP → FP	0.200 (3.217; 0.001)	[0.096–0.301]	0.038	Yes
Indirect effects		95% confidence interval		
GBS_SSC_ SP	0.094 (3.674; 0.000)	[0.055–0.139]		
GBS_SSC_FP	0.029 (1.395; 0.082)	[−0.003–0.065]		
EI_SSC_SP	0.027 (1.962; 0.025)	[0.008–0.053]		
EI_SSC_FP	0.008 (1.189; 0.117)	[0.000–0.024]		
GBS_SP_FP	0.061 (2.503; 0.006)	[0.027–0.107]		
EI_SP_FP	0.028 (2.273; 0.012)	[0.012–0.053]		
SSC_SP_FP	0.047 (2.527; 0.006)	[0.021–0.082]		
GBS_SSC_SP_FP	0.019 (2.436; 0.007)	[0.009–0.034]		
EI_SSC_SP_FP	0.005 (1.673; 0.047)	[0.002–0.013]		
Endogenous variable	Adjusted R^2	Model fit	Value	HI99
		SRMR	0.036	0.037
SSC	0.187	dULS	0.567	0.606
SP	0.246	dG	0.202	0.221
FP	0.194			

Note: One-tailed *t*-values and *p*-values in parentheses; bootstrapping 95% confidence intervals (based on $n = 10{,}000$ subsamples).
Abbreviations: dG, geodesic discrepancy; dULS, unweighted least squares discrepancy; EI, eco-innovation; FP, financial performance; GBS, green business strategy; HI99, bootstrap-based 99% percentiles; SP, sustainable performance; SRMR, standardized root mean squared residual; SSC, sustainable supply chain.

However, while supply chains do exert a positive effect on sustainable performance (0.233; *p*-value: 0.000), verifying hypothesis H4a, this result is not found when we talk about financial performance, where the path is still positive but it is not significant since the confidence interval includes a zero. Therefore, the data does not support hypothesis H4b. Thus, in the analysis of the indirect effects influencing the mediating effect exerted by sustainable supply chains, we observe that this mediating effect is significant in relation to sustainable performance, which verifies hypotheses H5a and H6a. Therefore, we verify that part of the effect of green strategies and eco-innovation is transferred to sustainable performance through the role played by sustainable supply chains, with this variable being a key explanatory variable.

Finally, the estimate reveals the existence of a significant positive effect of sustainable performance on financial performance (0.200; *p*-value: 0.001). Consequently, there is a link to financial performance through a company's environmental performance. This result verifies hypothesis H7, which is in line with the results obtained by López-Valeiras et al. (2015), Adams et al. (2016), and Dyck and Silvestre (2018). Although no evidence has been found in this study to support a direct and significant effect of sustainable supply chains on financial performance, the data does support an indirect effect of this supply chain on sustainable performance. The coefficient linked to this indirect effect is 0.047 (*p*-value: 0.006).

8 | CONCLUSIONS AND DISCUSSION

This work focuses on the study of how green strategies and eco-innovation contribute to increasing sustainable and financial performance in the context of the Mexican manufacturing industry, and whether these relationships are mediated by the practices involved in sustainable supply chains. This analysis is carried out through an empirical study of a sample of 460 companies in the automotive industry. The relationship between these four constructs is a topic that is still open to discussion (Mena & Schoenherr, 2020), requiring its empirical contrast in different contexts (Carrillo-Hermosilla et al., 2009).

The results have shown that sustainable performance in Mexican manufacturing firms is influenced by the implementation of green strategies, eco-innovation, and sustainable supply chains. These effects are not only direct and positive but significant indirect effects are also identified that leverage the positive effects of green strategies and eco-innovation. Thus, sustainability in the analyzed companies is improved by the good practices implemented through green strategies and eco-innovation, but these effects are also mediated by the sustainability of the supply chains.

Financial performance is affected by green strategies, eco-innovation, and sustainable performance. Consequently, the Mexican automotive companies that implement these types of actions for the benefit of the environment obtain better financial returns. Although the significant direct effect of sustainable supply chains on financial performance is not verified, there is an indirect effect of supply chains on financial performance through their influence on sustainable performance. Therefore, sustainable supply chains play an essential role since they act as transmitters of the commitments that companies have to the environment through green strategies and the adoption and implementation of eco-innovative activities, which positively influence sustainable and financial performance in organizations (Liu et al., 2016; Thun & Muller, 2010).

In the context of Mexico, these results are similar to those obtained by Cerón-Palma et al. (2013) and Giner et al. (2019), who concluded that green strategies generate a higher level of sustainability in manufacturing companies in Mexico. Thus, government authorities should support more business strategies aimed at improving not only the environment and the sustainability of the localities where companies are located, through the production of eco-products, but also in the generation of a higher level of sustainable and financial performance.

From a practical perspective, the results have useful implications for firm management. Thus, the positive effects of green strategies and eco-innovation on sustainable and financial performance provide rational arguments that should motivate companies in the Mexican automotive industry to incorporate values, standards, and actions focused on reducing the effects of their activities on the environment. For which they must make more and more investments in the adoption and implementation of green strategies that substantially improve the sustainability of the communities where they are located, in order not only to comply with the commitments established by Mexico in the Paris Agreements and the OECD, but also to improve their level of financial performance, as suggested by Banacloche et al. (2020) and verify by this research.

Despite the complexity of the supply chain, managers in the automotive sector in Mexico that promote sustainability based on their relationships with suppliers achieve greater sustainable and, therefore, financial performance. This evidence indicates that managers can increase company performance through a holistic strategy that includes the entire supply chain. The implementation of green strategies and eco-innovative activities will allow companies to develop more sustainable supply chains since the use of recyclable materials and renewable energies both in vehicle manufacturing and in their distribution systems will reduce gas emissions and logistics costs, thereby improving sustainable and financial performance. This will have positive effects for the company and for society in general since the environmental effect will be multiplied in each of the companies that participates in the supply chain. This finding is especially relevant because a high percentage of vehicle production in Mexico uses fossil fuel, and even though Mexico is one of the OECD countries with the lowest level of CO_2 emissions per capita, it is the 12th country in gas emissions and CO_2 through fuel combustion (Guevera et al., 2018). In addition, the automotive industry emits around 34% of the total emissions of greenhouse gases and CO_2 at the national level, which is increasing not only global warming of the planet, but also respiratory diseases of the population.

Managers must have the knowledge and ability to apply adequate green strategies that favor their companies' short, medium, and long-term objectives as well as the ability to make adequate decisions to solve the problems that may arise from the implementation of these strategies. One of the green strategies that they should promote is the use of renewable energy in the production of eco-products, since the companies of the automotive industry in Mexico use around 90% of non-renewable energy, which generates a higher level of emission of CO_2 into the atmosphere and has increased the country's temperature by 2°C (IEA, 2017), thereby breaching the Paris agreements to increase the use of renewable energy (Nieto et al., 2018).

Finally, another green strategy that managers of companies in the Mexican automotive industry must adopt and implement is the sustainability of the supply chain, since the global supply chain generated in 2015 around 680 million tons of solid waste, and it is expected that for the next 10 years it will increase to 2.2 billion tons (World Bank, 2016). In the specific case of Mexico, it generated 145 million tons in 2015 and is expected to increase by more than double in the next 10 years (SEMARNAT, 2016). However, if managers implement green strategies that improve the sustainability of the supply chain, they could reduce waste generation by more than 30% and increase the level of sustainable and financial performance of the organization (Gómez-Maturano, 2020).

To achieve these results, the managers of companies in the automotive industry in Mexico must align the objectives of the supply chain with those of sustainable development, and substantially modify the processes and activities that generate both a higher level of solid waste and a level of CO_2 emission, recommending for this the evaluation of the risks that this entails through the identification of the processes and activities of the supply chain that can be improved, such as sustainability and the development of eco-innovation, which could generate not only greater opportunities for participation in the global market, but also a substantial increase in the levels of sustainable and financial performance.

This investigation has some limitations that may become future lines of research. In the study we only include Mexican companies so the results might not be generalizable to other contexts (García-Piqueres & García-Ramos, 2020). Considering other geographical areas and identifying the factors that lead to different results (Javed et al., 2020) would allow the literature to get a more comprehensive view. This research has been carried out using cross-sectional data so temporal effects have not been analyzed in the proposed model; hence, the need for longitudinal studies (Zheng et al., 2019). As a single source of information through the view of managers is used, considering quantitative data from different sources (Battaglia et al., 2014), or the opinions of employees would reinforce our findings (Afsar et al., 2020).

Gathering information not only from the manager but also at different levels of an organization and obtaining measures of the different constructs from different sources to try to control for some causes of biases, such as social desirability, acquiescence, leniency effects, or yea- and nay-saying, as pointed out by Podsakoff et al. (2003), should be considered in the future. However, it is necessary to emphasize that the level of formal, statistical information in Mexico is far from adequate. Additionally, this research opens up future lines of research that may contribute to fostering the literature on sustainability in the automotive industry. Future studies could examine the mediating or moderating effects of certain SME characteristics, such as resilience, digital transformation, leadership style, etc., or other factors as dynamism and industry competitiveness (Santos et al., 2021).

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REFERENCES

Abbey, J. D., Guide, J. R., & Vlade, D. R. (2018). A typology of remanufacturing in closed-loop supply chain. *International Journal of Production Research*, *56*, 374–384.

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: A systematic review. *International Journal of Management Reviews*, *18*(2), 180–205.

Afsar, B., Maqsoom, A., Shahjehan, A., Afridi, S. A., Nawaz, A., & Fazliani, H. (2020). Responsible leadership and employee's proenvironmanetal behavior: The role of organizational commitment, green shared vision, and internal environmental locus of control. *Corporate Social Responsibility and Environmental Management*, *27*(1), 297–312.

Aguilera-Caracuel, J., & Ortiz-de-Mandojana, N. (2013). Green innovation and financial performance: An institutional approach. *Organization & Environment*, *26*(4), 365–385.

Ahmed, S. K., Shujaat, M. M., Kusi-Sarpong, S., Zaman, S. I., & Alam, S. H. (2020). Social sustainable supply chains in the food industry: A perspective of an emerging economy. *Corporate Social Responsibility and Environmental Management*, *28*(3), 404–418.

Almeida, C., Bonilla, S., Giannetti, B., & Huisingh, D. (2013). Cleaner production initiatives and challenges for a sustainable world: An introduction to this special volume. *Journal of Cleaner Production*, *47*, 1–10.

Andalib, D. A., & Soltanmohammadi, A. (2018). Investigating and analyzing the factors affecting the development of sustainable supply chain model in the industrial sectors. *Corporate Social Responsibility and Environmental Management*, *26*(1), 199–212.

Bag, S. (2014). Impact of sustainable supply chain management on organizational performance: Mediating effects of leadership. *Indian Journal of Management Science*, *4*(3), 10–25l.

Bagozzi, R., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74–94.

Banacloche, S., Cadarso, M. A., Monsalve, F., & Lechon, Y. (2020). Assessment of the sustainability of Mexico green investment in the road to Paris. *Energy Policy*, *141*(1), 1–11.

Battaglia, M., Testa, F., Bianchi, L., Iraldo, F., & Frey, M. (2014). Corporate social responsibility and competitiveness within SMEs of the fashion industry: Evidence from Italy and France. *Sustainability*, *6*(2), 872–893.

Blome, C., Schoenherr, T., & Eckstein, D. (2014). The impact of knowledge transfer and complexity on supply chain flexibility: A knowledge-based view. *International Journal of Production Econonomics*, *147*(1), 307–316.

Bollen, K. A. (2011). Evaluating effect, composite, and causal indicators in structural equation models. *MIS Quarterly*, *35*(2), 359–372.

Bollen, K. A., & Bauldry, S. (2011). Three CS in measurement models: Causal indicators, composite indicators, and covariates. *Psychological Methods*, *16*(3), 265–284.

Boons, F., & Lüdeke-Freund, F. (2013). Business model for sustainanble innovation: State-of-the-arts and steps towards a research agenda. *Journal of Cleaner Production*, *45*(1), 9–19.

Busse, C., Schleper, M., Weilenmann, J., & Wagner, S. (2017). Extending the supply chain visibility boundary: Utilizing stakeholders for identifying supply chain sustainability risks. *International Journal of Physical Distribution and Logistics Management*, *47*(1), 18–40.

Carrillo-Hermosilla, J., del Río, P., & Könnölä, T. (2009). *Eco-innovation: When sustainability and competitiveness shake hands*. Palgrave Macmillan.

Carter, C., Kaufmann, L., & Ketchen, D. (2020). Expect the unexpected: Toward a theory of the unintended consequences of sustainable supply chain management. *International Journal of Operations & Production Management*, *40*, 1857–1871.

Cassel, C., Hackl, P., & Westlund, A. H. (1999). Robustness of partial least-squares method for estimating latent variable quality structures. *Journal of Applied Statistics*, *26*(4), 435–446.

Cerón-Palma, I., Sanyé-Mengual, E., Oliver-Solá, J., Montero, J. I., Ponce-Caballero, C., & Rieradevall, J. (2013). Towards a green sustainable strategy for social neighborhoods in Latin America: Case from social housing in Merida, Yucatan, Mexico. *Habitat International*, *38*(1), 47–56.

Ceschin, F., & Vezzoli, C. (2010). The role of public policy in stimulating radical environmental impact reduction in the automotive sector: The need of focus on product-service system innovation. *International Journal of Automotive Technology and Management*, *10*(213), 231–341.

Chan, R. (2010). Corporate environmentalism pursuit by foreign firms competing in China. *Journal of World Business*, *45*(1), 80–92.

Chang, K., & Gotcher, D. (2020). How and when does co-production facilitate eco-innovation in international buyer-supplier relationships? The role of environmental innovation ambidexterity and institutional pressures. *International Business Review*, *10*(1), 17–31.

Chen, J., Cheng, J., & Dai, S. (2017). Regional eco-innovation in China: An analysis of eco- innovation levels and influencing factors. *Journal of Cleaner Production*, *153*(1), 1–14.

Cheng, C., Yang, C., & Sheu, C. (2014). The link between eco-innovation and business performance: A Taiwanese industry context. *Journal of Cleaner Production*, *64*(1), 81–90.

Child, J., & Tsai, T. (2005). The dynamic between firms' environmental strategies and institutional constraints in emerging economies: Evidence from China and Taiwan. *Journal of Management Studies*, *42*(1), 95–125.

Chin, W. W. (2010). How to write up and report PLS analyses. In V. E. Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of partial* *least squares: concepts, methods and applications* (pp. 655–690). Springer.

Costantini, V., Crespi, F., Marin, G., & Paglialunga, E. (2017). Eco-innovation, sustainable supply chains and environmental performance in European industries. *Journal of Cleaner Production*, *155*(1), 141–154.

Cousins, P., Lawson, B., Petersen, K., & Fugate, B. (2019). Investigating green supply chain management practices and performance: The moderating roles of supply chain ecocentricity and traceability. *International Journal of Operations & Production Management*, *39*(5), 767–786.

D'Agostini, M., Tondolo, V., Camargo, M., Dullius, A., & Russo, S. (2017). Relationship between sustainable operations practices and performance: A meta-analysis. *International Journal of Productivity and Performance Management*, *66*(8), 1020–1042.

Diabat, A., & Govindan, K. (2011). An analysis of the drivers affecting the implementation of green supply chain management. *Resources, Conservation and Recycling*, *55*(6), 659–667.

Dijkstra, T., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly*, *39*(2), 297–2316.

Dixit, A. (2020). Protection of environment for sustainable development. *Studies of Indian Place*, *40*(12), 1369–1380.

do Valle, P. O., & Assaker, G. (2015). Using partial least squares structural equation modeling in tourism research: A review of past research and recommendations for future applications. *Journal of Travel Research*, *55*(6), 695–708.

Doran, J., & Ryan, G. (2012). Regulation and firm perception, eco-innovation and firm performance. *European Journal of Innovation Management*, *15*(1), 421–441.

Dyck, B., & Silvestre, D. (2018). Enhancing socio-ecological value creation through sustainable innovation 2.0: Moving away from maximizing financial value capture. *Journal of Cleaner Production*, *171*(1), 1593–1604.

Eiadat, Y., Kelly, A., Roche, F., & Eyadat, H. (2008). Green and competitive? An empirical test of the mediating role of environmental innovation strategy. *Journal of World Business*, *43*(2), 131–145.

Farkavcova, V. B., Rieckhof, R., & Guenther, E. (2018). Expanding knowledge environmental impacts of transport processes for more sustainable supply chain decisions: A case study using life cycle assessment. *Transportation Research Part D: Transport and Environment*, *61*(6), 68–83.

Fernando, Y., Jabbour, C., & Wah, W. (2019). Pursuing green growth in technology firms through the connections between environmental innovation and sustainable business performance: Does service capability matter? *Resources, Conservation and Recycling*, *141*(1), 8–20.

Ford (2014). Creating a sustainable supply chain: Ford's overall approach. http://corporate.ford.com/microsites/sustainability-report-2013-14/supply-creating.html (accessed 17 February 2021).

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50.

Fornell, C. G., & Bookstein, F. L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, *19*(4), 440–452.

Forza, C. (2016). Surveys. In C. Karlsson (Ed.), *Research methods for operations management* (2nd ed.). Routledge.

Gadenne, D., Kennedy, J., & McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Buiness Ethics*, *84*(1), 45–63.

Gao, D., Xu, Z., Ruan, Y., & Lu, H. (2016). From a systematic literature review to integrated definition for sustainable supply chain innovation. *Joural of Cleaner Production*, *142*(13), 1518–1538.

Garcés-Ayerbe, C., Rivera-Torres, P., & Suérez-Perales, I. (2019). Stakeholders' engagement and their contribution to eco-innovation: Differentiated effects of communication and cooperation. *Corporate Social Responsibility and Environmental Management*, *26*(12), 1321–1332.

García-Piqueres, G., & García-Ramos, R. (2020). Is the corporate social responsibility-innovation link homogeneous? Looking for sustainable innovation in the Spanish context. *Corporate Social Responsibility and Environmental Management*, *27*(2), 803–814.

Genovese, A., Acquaye, A., Figueroa, A., & Koh, S. (2017). Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications. *Omega*, *66*, 344–357.

Giner, M. E., Córdova, A., Vázqiez-Gálvez, F. A., & Marruffo, J. (2019). Promoting green infrastructure in Mexico's northern border: The border environment cooperation commission's experience and lessons learned. *Journal of Environmental Management*, *248*(1), 1–12.

Glover, J. (2020). The dark side of sustainable dairy supply chains. *International Journal of Operations & Production Management*, *40*, 1801–1827.

Gold, S., & Schleper, M. (2017). A pathway towards true sustainability: A recognition foundation of sustainable supply chain management. *European Management Journal*, *35*(4), 425–429.

Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter organizational resources: A literature review. *Corporate Social Responsibility and Environmental Management*, *17*(4), 230–245.

Gómez-Maturano, J. (2020). Sustainable design of reverse supply chain for solid waste in Mexico. *Journal of Management*, *36*(67), 31–47.

Goodhue, D. L., Lewis, W., & Thompson, R. (2012). Does PLS have advantages for small sample size or non-normal data? *MIS Quarterly*, *36*(1), 891–1001.

Govindan, K., Jafarian, A., & Nourbakhsh, V. (2015). Bi-objective integrating sustainable order allocation and sustainable supply chain network strategic design with stochastic demand using a novel robust hybrid multi-objective metaheuristic. *Computational Operations Research*, *62*(10), 112–130.

Guevera, Z., Molina-Pérez, E., García, E. X. M., & Pérez-Cirera, V. (2018). Energy and CO_2 emissions relationship in the NAFTA trading bloc: A multi-regional multi-factor energy input-output approach. *Economic Systems Research*, *31*(2), 178–205.

Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of Production Economics*, *133*(2), 662–676.

Guoyou, Q., Saixing, Z., Chiming, T., Haitao, Y., & Hailiang, Z. (2013). Stakeholders' influence on corporate green innovation strategy: A case study of manufacturing firms in China. *Corporate Social Responsibility and Environmental Management*, *20*(1), 1–14.

Hagedoorn, J. (2002). Inter-firm R&D partnerships: An overview of major trends and patterns since 1960. *Responsible Policy*, *31*(4), 477–492.

Hair, J., Black, W., Babin, B., & Anderson, R. (2014). *Multivariate data analysis* (7th ed.). Pearson Education.

Hair, J., Celsi, M., Money, A., Samouel, P., & Page, M. (2016). *Essentials of business research methods* (3rd ed.). Routledge.

Hair, J., Hult, T., Ringle, C., Sarstedt, M., Castillo, J., Cepeda, G., & Roldan, J. (2019). *Manual de partial least squares PLS-SEM*. OmniaScience.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed, a silver bullet. *Journal of Marketing Theory and Practice*, *19*(1), 139–152.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, *40*(1), 414–433.

Harms, D., Hansen, E. G., & Schaltegger, S. (2013). Strategies in sustainable supply chain management: An empirical investigation of large German companies. *Corporate Social Responsibility and Environmental Management*, *20*(1), 205–218.

Hazarika, N., & Xiaoling, Z. X. (2019). Factors that drive and sustain eco-innovation in the construction industry: The case of Hong Kong. *Journal of Cleaner Production*, *238*(1), 11–16.

Henseler, J. (2017). Bridging design and behavioural research with variance-based structural equation modelling. *Journal of Advertising*, *46*(1), 178–192.

Henseler, J., Ringle, C., & Sarstedt, M. (2012). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135.

Henseler, J., Ringle, C., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, *20*(1), 277–320.

Horbach, J., Rammer, C., & Rennings, K. (2012). Determinants of eco-innovations by type of environmental impact—The role of regulatory push/pull, technology push and market pull. *Ecological Economics*, *78*(1), 112–122.

Hoskisson, R., Eden, L., Lau, C., & Wright, M. (2000). Strategy in emerging economies. *Academy of Management Journal*, *43*(3), 249–267.

Hsu, C., Tan, K., & Mohamad Zailani, S. (2016). Strategic orientations, sustainable supply chain initiatives, and reverse logistics: Empirical evidence from an emerging market. *International Journal of Operations & Production Management*, *36*(1), 86–110.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. *Psychological Methods*, *3*(1), 424–453.

IEA (2017). Energy policies beyond IEA countries: Mexico 2017, energy policies beyond IEA countries. Paris: OECD.

Javed, S. A., Zhu, B., & Liu, S. (2020). Forecast of biofuel production and consumption in top CO_2 emitting countries using a novel grey model. *Journal of Cleaner Production*, *276*(1), 1–16.

Jiménez-Parra, B., Alonso-Martínez, D., & Godos-Díez, J. L. (2018). The influence of corporate social responsibility on air pollution: Analysis of environmental regulation and eco-innovation effects. *Corporate Social Responsibility and Environmental Management*, *25*(12), 1363–1375.

Kanda, W., Del Rio, P., Hjelm, O., & Bienkowska, D. (2019). A technological innovation systems approach to analyse the roles of intermediaries in eco-innovation. *Journal of Cleaner Production*, *227*(10), 1136–1148.

Kemp, R., & Pearson, P. (2007). *Final report MEI project about measuring eco-innovation*. UM Merit.

Khodakarami, M., Shabani, A., Saen, R., & Azadi, M. (2015). Developing distinctive two-stage data envelopment analysis models: An application in evaluating the sustainability of supply chain management. *Measurement*, *70*(6), 62–74.

König, M., Liu, X., & Zenou, Y. (2018). R&D networks: Theory, empirics and policy implications. *The Review of Economics and Statistics*, *101*(3), 476–491.

Laosirihongthong, T., Adebanjo, D., & Tan, K. (2013). Green supply chain management practices and performance. *Industrial Management and Data Systems*, *113*(8), 1088–1109.

Lee, H., & Schmidt, G. (2017). Using value chains to enhance innovation. *Production and Operations Management*, *26*(4), 617–632.

Leonidou, L., Fotiadis, T., Christodoulides, P., Spyropoulou, S., & Katsikeas, C. (2015). Environmentally friendly export business strategy: Its determinants and effects on competitive advantage and performance. *International Business Review*, *24*(3), 798–811.

Leonidou, L., Katsikeas, C., Fotiadis, T., & Christodoulides, P. (2013). Antecedents and consequences of an eco-friendly export marketing strategy: The moderating role of foreign public concern and competitive intensity. *Journal of International Marketing*, *21*(3), 22–46.

Lin, Z., Wang, S., & Yang, L. (2020). Motivating innovation alliance's environmental performance through eco-innovation investment in a supply chain. *Journal of Cleaner Production*, *269*(1), 12–23.

Linton, J., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, *25*(6), 1075–1082.

Lintukangas, K., Hallikas, J., & Kähkönen, A. K. (2015). The role of green supply management in the development of sustainable supply chain. *Corporate Social Responsibility and Environmental Management*, *22*(2), 321–333.

Liu, Y., Srai, J., & Evans, S. (2016). Environmental management: The role of supply chain capabilities in the auto sector. *Supply Chain Management: An International Journal*, *21*(1), 1–19.

Liu, Y., Zhang, Y., Batista, L., & Rong, K. (2019). Green operations: What's the role of supply chain flexibility? *International Journal of Production Economics*, *214*(1), 30–43.

Liu, Y., Zhu, Q., & Seuring, S. (2017). Linking capabilities to green operations strategies: The moderating role of corporate environmental proactivity. *International Journal of Production Economics*, *187*(1), 182–195.

López-Valeiras, E., Gomez-Conde, J., & Naranjo-Gil, D. (2015). Sustainable innovation, management accounting and control systems, and international performance. *Sustainability*, *7*(3), 3479–3492.

Luthra, S., Govindan, K., & Mangla, S. (2017). Structural model for sustainable consumption and production adoption: A grey-DEMATEL based approach. *Resources, Resources, Conservation and Recycling*, *125*(1), 198–207.

Macchion, L., Moretto, A., Caniato, F., & Danese, P. (2020). Static supply chain complexity and sustainable practices: A multitier examination. *Corporate Social Responsibility and Environmental Management*, *27*(25), 2679–2691.

Marques Kneipp, J., Maffini Gomes, C., Schoproni, B., Frizzo, K., & Perlin, A. (2019). Sustainable innovation practices and their relationship with the performance of industrial companies. *Revista de Gestão*, *26*(2), 94–111.

Matos, S., Schleper, M., Gold, S., & Hall, J. (2020). The hidden side of sustainable operations and supply chain management: Unanticipated outcomes, trade-offs and tensions. *International Journal of Operations & Production Management*, *40*(12), 1749–1770.

Mazda. (2016). Sustainability Report 2016 (accessed 17 February 2021). www.mazda.com/en/publicity/release/2016/201608/160831a.html?link_id=csrn1609022.

Meinlschmidt, J., Schleper, M., & Foerstl, K. (2018). Tackling the sustainability iceberg: A transaction cost economics approach to lower tier sustainability management. *International Journal of Operations & Production Management*, *38*(10), 1888–1914.

Mena, C., & Schoenherr, T. (2020). The green contagion effect: An investigation into the propagation of environmental practices across multiple supply chains tiers. *International Journal of Production Research*, 1–18.

Meqdadi, O., Johnsen, T., & Pagell, M. (2020). Relationship configurations for procuring from social enterprises. *International Journal of Operations & Production Management*, *40*(6), 819–845.

Mylan, J., Geels, F., Gee, S., McMeekin, A., & Foster, C. (2015). Eco-innovation and retailers in milk, beef and bread chains: Enriching environmental supply chain management with insights from innovation studies. *Journal of Cleaner Production*, *107*(1), 20–30.

Nath, S., Eweje, G., & Sajjad, A. (2020). The hidden side of sub-supplier firms' sustainability – An empirical analysis. *International Journal of Operations & Production Management*, *40*, 1771–1799.

Naumov, S., Keith, D., & Fine, C. (2020). Unintended consequences of automated vehicles and pooling for urban transportation systems. *Production and Operations Management*, *29*(5), 1354–1371.

Nieto, J., Carpintero, O., & Miguel, L. J. (2018). Less than 2°C An economic-environmental evaluation of the Paris agreement. *Ecology Economic*, *146*(1), 69–84.

Nissan (2018). Zero emission (accessed 17 February 2021). www.nissan-global.com/EN/ZEROEMISSION/.

Owen, R., Brennan, G., & Lyon, F. (2018). Enabling investment for the transition to a low carbon economy: Government policy to finance early stage green innovation. *Current Opinion in Environment Sustainability*, *31*(1), 137–145.

Pagell, M., & Shevchenko, A. (2014). Why research in sustainable supply chain management should have no future. *Journal of Supply Chain Management*, *50*(1), 44–55.

Peralta, R., Carrillo-Hermosilla, J., & Crecente, F. (2019). Sustainable business model innovation and acceptance of its practices among Spanish entrepreneurs. *Corporate Social Responsibility and Environmental Management*, *26*(10), 1119–1134.

Porter, M., & Kramer, M. (2006). Strategy and society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, *84*(1), 78–92.

Provasnek, A. K., Sentic, A., & Schmid, E. (2017). Integrating eco-innovations and stakeholder engagement for sustainable development and a social license to operate. *Corporate Social Responsibility and Environmental Management*, *24*(1), 173–185.

Rajak, S., & Vinodh, S. (2015). Application of fuzzy logic for social sustainability performance evaluation: A case study of and Indian automotive component manufacturing organization. *Journal of Cleaner Production*, *108*(12), 1184–1192.

Raut, R., Kamble, S., Kharat, M., & Kamble, S. (2015). Decision support system framework for performance based evaluation and ranking system of carry and forward agents. *Strategic Outsourcing: An International Journal*, *8*(1), 23–52.

Reiner, G., Gold, S., & Hahn, R. (2015). Wealth and health at the base of the pyramid: Modelling trade-offs and complementarities for fast moving dairy product case. *International Journal of Production Economics*, *170*, 413–421.

Richter, N. F., Cepeda, G., Roldan, J. L., & Ringle, C. M. (2016). European management research using partial least squares structural equation modeling (PLS-SEM). *European Management Journal*, *34*(6), 589–597.

Rigdon, E. E. (2012). Rethinking partial least squares path modeling: In praise of simple methods: In praise of simple methods. *Long Range Planning*, *45*(1), 341–358.

Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012). A critical look at the use of PLS-SEM in MIS quarterly. *MIS Quarterly*, *36*(1), 3–14.

Roijakkers, N., & Hagedoorn, J. (2006). Inter-firm R&D partnering in pharmaceutical biotechnology since 1975: Trends, patterns, and networks. *Responsible Polily*, *35*(3), 431–446.

Roscoe, S., Subramanian, N., Jabbour, C., & Chong, T. (2019). Green human resource management and the enablers of green organizational culture: Enhancing a firm's environmental performance for sustainable development. *Business Strategy and the Environment*, *28*(3), 737–749.

Sampurna, P., Bahinipati, B., & Jain, V. (2019). Sustainable supply chain management: A review of literature and implications for future research. *Management of Environmental Quality: An International Journal*, *30*(5), 1001–1049.

Santos, J. M., Madrid-Guijarro, A., & García-Pérez-de-Lema, D. (2021). The impact of corporate social responsibility on innovation in small and medium-sized enterprises: The mediating role of debt terms and human capital. *Corporate Social Responsibility and Environmental Management*, *28*, 1200–1215.

Sarstedt, M., Ringle, C. M., Henseler, J., & Hair, J. F. (2014). On the emancipation of PLS-SEM: A commentary on Rigdon (2012). *Long Range Planning*, *47*(1), 154–160.

Scur, G., de Mello, A., Schreiner, L., & das Neves F. J. (2019). Eco-design requirements in heavyweight vehicle development – A case study of the impact of the euro 5 emissions standard on the Brazilian industry. *Innovation & Management Review*, *16*(4), 404–442.

Segarra-Oña, M., Peiró-Signes, A., Albors-Garrigós, J., & Miret-Pastor, P. (2011). Impact of innovative practices in environmentally focused firms: Moderating factors. *International Journal of Environmental Research*, *5*(2), 425–434.

SEMARNAT (2016). Secretaría de Medio Ambiente y Recursos Naturales. Informe de la Situación del Medio Ambiente en México: Compendio de Estadísticas Ambientales, Indicadores Clave de Desempeño Ambiental y de Crecimiento Verde. México. https://apps1.semarnat.gob.mx:8443/dgeia/informe15/tema/pdf/Informe15_completo.pdf.

Shevchenko, A., Levesque, M., & Pagell, M. (2016). Why firms delay reaching true sustainability. *Journal of Management Studies*, *53*(5), 911–935.

Silvestre, B., Viana, F., & Sousa Monteiro, M. (2020). Supply chain corruption practices circumventing sustainability standards: Wolves in sheep's clothing. *International Journal of Operations & Production Management*, *40*, 1873–1907.

Stevens, G. C., & Johnson, M. (2016). Integrating the supply chain… 25 years on. *International Journal of Physical Distribution and Logistics Management*, *46*(1), 19–42.

Sun, M., Wang, Y., Shi, L., & Klemes, J. (2018). Uncovering energy use, carbon emissions and environmental burdens of pulp and paper industry: A systematic review and meta- analysis. *Renewable and Sustainable Energy*, *92*(4), 823–833.

Tan, K., Chung, L., Shi, L., & Chiu, A. (2017). Unpacking the indirect effects and consequences of environmental. *International Journal of Production Economics*, *190*(1), 22–30.

Tatoglu, E., Bayraktar, E., Sahadev, S., Demirbag, M., & Glaister, K. (2014). Determinants of voluntary environmental management practices by MNE subsidiaries. *Journal of World Business*, *49*(4), 536–548.

Tenenhaus, M., Esposito, V., Chatelin, Y., & Lauro, C. (2005). PLS path modeling. *Computational Statistics and Data Analysis*, *48*, 159–205.

Thun, J.-H., & Muller, A. (2010). An empirical analysis of green supply chain management in the German automotive industry. *Business Strategy and the Environment*, *19*(2), 119–132.

Tseng, M., Lim, M., & Wong, W. (2015). Sustainable supply chain management: A closed-loop network hierarchical approach. *Industrial Management and Data Systems*, *115*(3), 436–461.

Vachon, S., & Klassen, R. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, *111*(2), 299–315.

Van Hoek, R. (2001). Case studies of greening the automotive supply chain through technology and operations. *International Journal of Environmental Technology and Management*, *1*(2), 140–163.

Varma, S., Wadhwa, S., & Deshmukh, S. (2006). Implementing supply chain management in a firm: Issues and remedies. *Asia Pacific Journal of Marketing and Logistics*, *18*(3), 223–243.

Wagner, M. (2010). The role of corporate sustainability performance for economic performance: A firm- level analysis of moderation effects. *Ecological Economics*, *69*(7), 1553–1560.

Weng, M., & Lin, C. (2011). Determinants of green innovation adoption for small and medium-size enterprises (SMES). *African Journal of Business Management*, *5*(22), 9154–9163.

Wesseling, J., Farla, J., & Hekkert, M. (2015). Exploring car manufacturers' responses to technology-forcing regulation: The case of California's ZEV mandate. *Environmental Innovation and Societal Transitions*, *16*(1), 87–105.

Wontner, K., Walker, H., Harris, I., & Lynch, J. (2020). Maximising "community benefits" in public procurement: Tensions and trade-offs. *International Journal of Operations & Production Management*, *40*, 1909–1939.

Wu, Z., & Pagell, M. (2011). Balancing priorities: Decision-making in sustainable supply chain management. *Journal of Opertion Management*, *29*(6), 577–590.

Xie, G. (2016). Cooperative strategies for sustainability in a decentralized supply chain with competing suppliers. *Journal of Cleaner Production*, *113*(2), 807–821.

Yasir, M., Majid, A., & Qudratullah, H. (2020). Promoting environmental performance in manufacturing industry of developing countries through environmental orientation and green business strategies. *Journal of Cleaner Production*, *275*, 3.

Ye, Y., Yeung, A., & Huo, B. (2020). Maintaining stability while boosting growth? The long-term impact of environmental accreditations on firms' financial risk and sales growth. *International Journal of Operations & Production Management*, *40*, 1829–1856.

Yu, W., Ramanathan, R., & Nath, P. (2017). Environmental pressures and performance: An analysis of the roles of environmental innovation strategy and marketing cap- ability. *Technological Forecasting and Social Change*, *117*(1), 160–169.

Zarei, M., Carrasco-Gallego, R., & Ronchi, S. (2019). To greener pastures: An action research study on the environmental sustainability of humanitarian supply chains. *International Journal of Operations & Production Management*, *39*(11), 1193–1225.

Zheng, Y., Wang, Y., & Jiang, C. (2019). Corporate social responsability and likelihood of financial distress. *Quarterly Review of Business Disciplines*, *6*(3), 219–236.

Zhu, Q., Sarkis, J., & Lai, K. (2007). Green supply chain management: Pressures, practices and performance within the Chinese automobile industry. *Journal of Cleaner Production*, *15*(11/12), 1041–1052.

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