



# Supplier innovativeness in supply chain integration and sustainable performance in the hotel industry

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## ABSTRACT

This study examines the impact of supplier innovativeness on supply chain integration and sustainable performance, as well as the mediation role of supply chain integration between supply chain innovativeness and sustainable performance. In addition, trust is studied as a determinant factor in supplier innovativeness. A structural equations model was developed to test the hypotheses proposed for the associations between the variables. Data were collected from a sample of hotels in Egypt. The findings indicate that trust is a key determinant of supplier innovativeness. Supplier innovativeness has a direct impact on supply chain integration and sustainable performance. However, the direct effect of supplier innovativeness on sustainable performance disappears when supply chain integration is included in the model. Specifically, customer integration and internal integration are mediating variables in the relationship between supplier innovativeness and sustainable performance. Developing trust in relationships with suppliers, constantly searching for information about customers' needs and establishing a closer relationship with them, and increasing interdepartmental coordination will enhance the effect of supplier innovativeness on sustainable performance. This study is the first to analyze the impact of supplier innovativeness and supply chain integration on sustainable performance in the hotel sector.

## 1. Introduction

Service and supply chain innovativeness is the key to hotels' competitiveness. Firms expect their suppliers to adopt innovativeness due to their internal motivation to produce benefits for their customers (Kim and Chai, 2017). To improve their operational performance, organizations look for suppliers' potential for innovativeness and try to harness it, in order to generate value for their own customers (Inemek and Matthysens, 2013). However, it is not sufficient to consider the effects of supplier innovativeness; it is also important to know whether trust leads to greater supplier innovativeness. Thus, this study considers trust within the relationships between the hotel and the suppliers to be a determining factor in suppliers' tendency to innovate. Trust is considered fundamental for the effective application and implementation of supply chain collaboration (Panayides and Lun, 2009). Trust is identified in the literature as a crucial element in cross-organizational relationships and social networking, in addition to being vital to business success (Leeman and Reynolds, 2012).

When suppliers of services innovate, they can have a positive effect

on buyer-supplier interactions, favoring the impact on supply chain integration (Roy et al., 2004). The global intensification of business and customer demand for better service has significantly increased the need for supply chain integration at its three levels: customer integration, supplier integration, and internal integration (Danese and Romano, 2011). Supply chain integration aims to improve competitiveness by closely integrating internal functions within a company (e.g., different departments within the company) and establishing effective links with suppliers' external operations and customers (Kim, 2009). The purpose of supply chain integration is to coordinate processes throughout the supply chain (Danese and Romano, 2011). New networks of suppliers, distributors, and customers have to be developed. Customers need to understand the benefits of the new services and pricing, and the partners in the alliance have a shared vision.

A hotel supply chain is composed of customers, suppliers, clients, and departments within the hotel. The hotel supply chain offers both products and services, from initial suppliers to end users, through a process that makes it possible to increase value (Kothari et al., 2005). This paper analyzes strategic supply chain management decisions. Strategic

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decisions in the hotel supply chain focus on product innovation and supplier selection in an effort to enhance the strengths and capabilities of a supply chain operating in a highly competitive market with demanding end users (Xu and Gursoy, 2015a).

Few empirical studies have recognized the importance of innovativeness in supply chain integration and its effects on the results (Panayides and Lun, 2009; Seo et al., 2014; Lii and Kuo, 2016). However, the relationship between supplier innovativeness and supply chain integration has not been studied in the literature. Suppliers must be capable of innovating and adapting their services to hotels' needs, which should have an indirect impact on hotels' results. Supplier innovativeness is analyzed with the relationship of competitive capabilities (Azadegan and Dooley, 2010), the impact on buyer-seller relationships (Inemek and Matthyssens, 2013), and the collaboration and agility of the supply chain (Kim and Chai, 2017). However, as a novelty, the present study analyzes the effect of supplier innovativeness on supply chain integration. The effect of supply chain integration and supplier innovativeness on different outcome measures has been analyzed in the empirical literature (Azadegan and Dooley, 2010; Seo et al., 2014; Lii and Kuo, 2016). These studies analyze the effect of supply chain integration on competitive priorities and organizational outcomes. Supply chain performance is measured in various areas, such as customer satisfaction, cycle times, delivery, responsiveness, costs, quality, and services offered (Kothari et al., 2005). According to Palang and Tippayawong (2019), in order to increase supply chain potential and competitiveness, it is necessary to analyze and consider different performance dimensions. However, the influence of supply chain integration and supplier innovativeness on sustainable performance has not been analyzed.

According to Pagell and Wu (2009), supply chain performance should not only be measured in terms of financial results, but also in terms of its social or ecological impact. This study makes the novel contribution of analyzing the influence of supply chain integration on sustainable performance. Sustainable performance refers to the performance achieved by the company from a social and environmental point of view (Gualandris et al., 2014). To achieve good sustainability performance, organizations must pay attention to the supply chain (Paulraj, 2011). As Azadegan (2011) indicates, suppliers' capabilities must be able to directly and indirectly influence the organizational results. Suppliers have to be capable of innovating and adapting their services to hotels' needs. To date, these potential associations have not been investigated. This study seeks to shed light on the interrelationships between trust, supplier innovativeness, sustainable supply chain integration, and sustainable performance. Moreover, no empirical studies have analyzed these relationships in the hotel sector. Xu and Gursoy (2015a) analyze, at a theoretical level, the antecedents, sustainability procedures and practices that should be applied by the supply chain actors in this sector. Hotel supply chain management is part of the hotel's product and service delivery process. In the service delivery process, customers, suppliers, and the different internal departments are part of the supply chain and essential to service delivery. For this reason, it is important to analyze whether the integration of these elements (suppliers, customers, and hotel departments) can improve sustainable performance. The hotel provides services to customers, but it is also necessary to determine whether the hotel's management of its customers, suppliers, and internal processes improves its performance. In this regard, customers and suppliers are part of the hotel's production system, and it is important to find out to what extent their integration allows more sustainable performance. This paper tries to fill this gap in the hospitality literature. Supply chain management processes in hotels are fundamental elements of the process of producing products and services and distributing them to end users (Yoo and Cho, 2021). In addition, little is known about how suppliers and their performance can improve supply chain integration, and how this innovation-related performance leads to more sustainable performance. Moreover, Xu and Gursoy (2015b) demonstrate in the hospitality sector that sustainability has a greater impact on customer satisfaction, loyalty, and

willingness to pay a premium for sustainable hospitality services. Therefore, it is essential to study the extent to which supply chain integration can improve sustainable performance. Furthermore, many hotels choose to outsource activities (Elhoushy et al., 2020), which means that it is also relevant to study the impact of supplier innovativeness in the hotel sector.

First, the paper carries out a review of the literature where the following topics are analyzed: (a) the impact of trust on supplier innovativeness; (b) the influence of supplier innovativeness on supply chain integration; (c) the effect of supply chain integration on sustainable performance; and (d) the direct and indirect effects of supplier innovativeness on sustainable performance. Subsequently, the analyses and results are presented, and the hypotheses are tested. Finally, the discussion includes the theoretical and practical implications and study limitations, as well as proposals for future research.

## 2. Literature review and hypotheses

Trust has been studied in research on hotel outsourcing (Leeman and Reynolds, 2012; Espino-Rodríguez and Ramírez-Fierro, 2019). Trust is defined as the belief that the partners will not behave opportunistically (Yuan et al., 2018). Studies indicate that a supply chain integration strategy produces benefits if there is close and reliable collaboration between supply chain members, such as suppliers and customers (Roy et al., 2004; Panayides and Lun, 2009; Wang et al., 2011; Ojha et al., 2016). The partners can better understand the other party and help to improve supply chain processes through innovative solutions (Panayides and Lun, 2009). Trust involves having confidence in a partner with the expectation that the partner will act in the common interest. This study analyzes inter-organizational trust, conceptualized by Shi and Liao (2013) as supply chain partners' collective perceptions, beliefs, and expectations in reliably predicting the actions taken by partners to deliver on promises. When there is trust among supply chain partners, there is a greater willingness to share information. If there is inter-organizational trust, the hotel thinks suppliers will act in the best interests of its business, and it believes the information they provide. Trust is a multidimensional construct that considers several dimensions: competence, benevolence, and integrity (Chen and Dhillon, 2003). In inter-organizational relationships between hotels and suppliers, the notion of competence includes a supplier's ability to fulfill the promises it makes to the hotel. Integrity suggests that a firm acts consistently, reliably, and honestly when it fulfills its promises. Benevolence is the likelihood that a supplier will put the hotel's interests ahead of its own interests, and it indicates a sincere concern for the welfare of hotels and their business.

Supplier innovativeness is characterized as suppliers' ability to introduce new processes or products (Azadegan and Dooley, 2010). Supplier innovativeness implies the ability of suppliers to develop new ideas and processes and make investments in new services or technologies that provide benefits to their customers (Inemek and Matthyssens, 2013). Supplier innovations increase collaboration with buyers, which leads to closer relationships between supply chain partners (Schiele, 2012). This supplier innovativeness is reflected when suppliers change certain processes by investing in new technologies or developing new services. Thus, this innovation is present, for example, when an external company such as a laundry changes processes in order to provide a more agile and economical service or when suppliers of raw materials change the design of the product or packaging to make delivery to the hotel more efficient and/or environmentally friendly. Supplier innovation in the processes and services offered will benefit the hotel in different ways, and maintenance companies can use more modern equipment to lower energy consumption and reduce costs. All these innovations made by suppliers benefit the hotels because they can acquire a faster, higher quality, and lower cost service. Taking advantage of robots and Industry 4.0 technologies can be another relevant innovation that leads to better efficiency in supply chain operations with highly personalized services

and digital enhancement (Pillai et al., 2021). All of this can have an impact on improving sustainability from an economic and environmental point of view.

According to Transaction Cost Theory (TCE), the presence of trust makes an organization believe that its partner has credibility and, therefore, that it should collaborate with it, even in activities that involve a certain amount of risk (Yeung et al., 2009). Trust means minimizing transaction costs by increasing transparency and organizational learning initiatives (Lane et al., 2001; Wang et al., 2011). According to Wang et al. (2011), this greater transparency and increased organizational learning facilitate information and knowledge exchange, resulting in tacit knowledge transfer between suppliers and customers. A high level of trust between organizations (supplier and hotel) can help suppliers to have greater innovativeness and transmit their knowledge, ideas, and information in a more fluid way. Panayides and Lun (2009) point out that the existence of trust should reduce the possibility of opportunistic behavior by either party, which increases the likelihood of idiosyncratic investments in the relationship, with high levels of specific assets, including innovativeness to improve the supply chain. The presence of inter-organizational trust improves transaction costs and enhances the quality of inter-organizational relationships in hotels, and it can foster a harmonious culture and mutual trust (Shi and Liao, 2013). This should motivate suppliers to invest in technologies and processes that can further improve their services. It can also encourage supply chain partners to consistently share information and resources that can lead to greater innovation.

Hofer et al. (2012) show that when there is trust among the suppliers in the logistics activities, there is a proactive improvement, which implies greater supplier innovativeness. This trust allows the supplier to better understand the customers' needs in order to develop greater innovativeness, incorporating changes that improve the services offered (Deepen et al., 2008). Along these lines, Panayides and Lun (2009) show that greater trust in suppliers positively influences innovativeness in the supply chain. Likewise, Inemek and Matthyssens (2013) demonstrate that the emphasis on long-term commitment and trust in supplier relationships can create a solid foundation for supplier learning, leading to increased innovativeness. Based on the aforementioned, we propose the following hypothesis:

**Hypothesis 1.** Trust in suppliers positively influences supplier innovativeness.

The success of an organization's sustainability depends on the supply chain (Kähkönen et al., 2018). Innovativeness is defined as the capacity to develop new products or processes, implying a greater willingness to face new changes (Azadegan and Dooley, 2010). This allows customers to take advantage of the capabilities of suppliers that innovate and share tasks with them, allowing them to better respond to changes and increase learning (King, et al., 2003). According to Azadegan and Dooley (2010), supplier innovativeness positively affects different dimensions, such as cost, quality, product development, flexibility, and service, which indicates that it can influence the economic and social dimensions of sustainability. The search for innovativeness is related to what can and should be improved, and this has an impact on obtaining and orienting opportunities that favor sustainability (Schaltegger et al., 2014). This study views sustainable performance as a performance measure to operationalize competitive advantage related to: (a) satisfying stakeholders' needs by developing new services or improving existing services that are considered sustainable for society and the environment; (b) the sustainability reputation compared to other hotels; and (c) the consideration of leadership in the development of sustainability, being the first to offer environment-friendly services in the marketplace (Gelhard and Von Delft, 2016).

Collaboration between supply chain members and the development of key suppliers has been identified as an effective means of developing and maintaining supply chain sustainability (Multaharju et al., 2017). Companies should recognize the innovativeness of potential suppliers in

order to improve sustainable performance (Lintukangas et al., 2019). Organizations that innovate are leaders in sustainability, and the capacity to innovate leads to success and a sustainable supply chain (Pagell and Wu, 2009). Product and service differentiation increases the sustainability of the economy and the society through the development of products and innovations that make it possible to redesign the value chain, guided by sustainability criteria (Schaltegger et al., 2014). Thus, for example, Zhu et al. (2012) indicate that collaborations with suppliers positively influence the adoption of technologies that improve the environment and favor sustainability. The innovativeness orientation makes it possible to achieve a sustainable competitive advantage (Zhou et al., 2005). Suppliers' innovation affects the hotel's internal innovation and can positively influence the return on assets or sales and profit growth, that is, especially in the economic dimension of sustainable performance (Hameed et al., 2021). These innovations have a positive impact on the future sales of the hotel (Nicolau and Santa-María, 2013). This increase in sales brought about by innovation can lead to greater sustainable performance as the hotel generates more resources, allowing the hotel to be a leader in sustainability and have a greater possibility of offering services that respond to ethical and social demands. Equipment/furniture manufacturers can innovate by delivering environmentally friendly bedding and washroom products (Shi and Tsai, 2020). Additionally, educational institutions can train employees by offering more innovative education to raise awareness of sustainable practices (Xu and Gursoy, 2015a). This supplier innovation can lead to an increase in sustainability with regard to the environmental dimension.

Innovativeness-oriented relationships tend to be more internally focused and emphasize investment and new commercialization opportunities (Hurley and Hult, 1998). Therefore, an innovativeness-oriented corporate culture makes it easier for companies to develop innovative products because it facilitates a business life that allows sustainable development (Lii and Kuo, 2016). Long-term partnerships and information sharing can be some of the most efficient ways to coordinate stakeholders, maximize the benefits of the entire supply chain, and foster innovation (Xu and Gursoy, 2015b). In this regard, innovation is essential in achieving the hotel's sustainability goals.

Suppliers can help to improve the use of resources, and the customer can also benefit from a social reputation (Gualandris et al., 2014). Supplier innovativeness should add sustainable processes and practices that impact customer sustainability. Shi and Tsai (2020) indicate that stakeholder integration, which includes important aspects of supply chain integration, has an influence on the sustainability dimensions related to environmental, social, and economic performance, through the use of sustainable corporate practices that can be enhanced by suppliers' innovations in sustainability practices. Therefore, suppliers' capacity to innovate and respond to required changes can be viewed as a strategic resource and a source of competitive advantage (Lintukangas et al., 2019). Many hotels outsource part of their production process, especially activities where innovativeness development requires large investments, such as technology-related activities.

Based on these arguments, we propose the following hypothesis:

**Hypothesis 2.** Supplier innovativeness positively influences sustainable performance.

Supply chain integration examines the collaborative relationships between organizations and their suppliers and customers (Flynn et al., 2010). Lii and Kuo (2016) indicate that supply chain integration involves collaboration among strategic supply chain partners and transversal organizational processes. If we adapt the Flynn et al. (2010) definition of supply chain integration to the hotel sector, it could be defined as the degree to which a hotel strategically collaborates with its supply chain partners and cooperatively manages intra- and inter-organizational processes. Inter-organizational processes refer to customers and suppliers, and intra-organizational processes refer to the departments that make up the hotel. The hotel supply chain as an integrated philosophy leads supply chain members to focus on

synchronizing all the activities of the channel to create greater value for the customer (Zhang et al., 2009; Zhao and Hou, 2021).

Supply chain integration enables firms to form strategic alliances, share information, and work cooperatively (Zhao et al., 2011). The objective is to effectively transfer products, services, and information that allow low-cost decision making and provide the most customer value in the shortest possible time (Flynn et al., 2010). Alfalla-Luque et al. (2015) define supply chain integration as the degree to which supply chain members achieve inter- and intra-organizational collaborative management on strategic, tactical, and operational activity levels (and their corresponding information and material flows). It begins with the distribution of suppliers' materials or services and adds value to the product or service, in order to meet the needs of the final customer at a low cost and as quickly as possible. Supply chain management aims to improve competitiveness by closely integrating the internal functions within a company (e.g., different departments within the company) and effectively linking them to the external operations of suppliers and customers (Kim, 2009). Supply chain integration has several dimensions, the two main types being internal integration and external integration (Flynn et al., 2010; Yu et al., 2013; Wong et al., 2013). External integration involves supplier and customer integration. External integration refers to the degree to which a hotel can partner with key members of the supply chain (customers and suppliers) to structure their inter-organizational strategies, practices, procedures, and behaviors into collaborative and synchronized processes (Zhao et al., 2011). Based on the concepts established by Seo et al. (2014), integration (customers and suppliers) can be adapted to the hotel sector. Thus, supplier integration is supported by numerous activities between the central hotel and its suppliers, such as exchanging information and collaborating in jointly planning and developing the services provided. The effective and efficient coordination of suppliers in the process of developing tourism services favors the development of competitive advantages (Zhao and Hou, 2021).

In addition, the integration of customers into the hotel makes it possible to improve the expectations and opportunities of the market, responding more accurately and quickly to customers' needs. Internal integration, on the other hand, focuses on activities within the hotel. It is the degree to which a hotel organizes its own strategies and establishes its organizational practices and processes in collaborative and synchronized processes (Flynn et al., 2010) within functional areas (accommodation, food and beverage, entertainment, maintenance, etc.) in order to meet guests' needs. Hotels improve their performance and sustainable competitive advantage by moving from adversarial to trusting relationships with suppliers and customers (Richards and Font, 2019).

In supply chains, organizations expect the partners who supply to adopt innovativeness because they are motivated to produce benefits (Kim and Chai, 2017). In many cases, this innovativeness can come from external sources, improving core competencies and reducing investments (McIvor, 2005). According to Kim and Chai (2017), in the buyer-supplier relationships, supplier innovativeness has a positive influence on the supply chain. According to these authors, suppliers' openness to innovativeness encourages customers in activities such as cooperation, collaboration, and idea generation. Supplier innovativeness not only improves process and product innovation, but it also provides more opportunities for suppliers and buyers to interact in the supply chain, allowing them to be more integrated. The degree of innovativeness is influenced by the simultaneous collaborations and relationships in the supply chain, both internal and external integration (Seo et al., 2014). Innovativeness is necessary to improve supply chain integration. Suppliers' innovation processes can improve efficiency, with access to resources that allow the hotel to focus on its core competencies, making it better able to perform its activities and tasks and allowing it to improve supply chain integration. Supplier innovativeness is positively associated with information exchange, teamwork for problem solving, and frequent communication between suppliers and

buyers (Jean et al., 2010). Supplier innovativeness can encourage the buyer (e.g., the hotel) to increase the techniques used to improve its customers' needs and foster the integration of operations with the supplier (Lii and Kuo, 2016).

In the effort to improve supply chain integration, innovativeness is an essential element that can stimulate investment in new systems and processes (Rutner et al., 2003). Seo et al. (2014) show that innovation processes increase the three types of supply chain integration. Accordingly, the following hypotheses are suggested:

**Hypothesis 3.** Supplier innovativeness positively influences supply chain integration.

**Hypothesis 3a.** Supplier innovativeness positively influences customer integration.

**Hypothesis 3b.** Supplier innovativeness positively influences supplier integration.

**Hypothesis 3c.** Supplier innovativeness positively influences internal integration.

Supply chain integration plays a crucial role in developing a sustainable competitive advantage (Alfalla-Luque et al., 2015). Effective supply chain management is increasingly recognized as a crucial factor in improving organizational performance (Yoo and Cho, 2021). The process of producing products and distributing them to end users is critical for companies that are part of supply chain management. According to Flynn et al. (2010), internal and external integration play different roles in supply chain integration. Whereas internal integration recognizes that the functions within a company should operate as part of an integrated process, external integration should take into account the establishment of closer relationships with customers and suppliers. The consideration of both perspectives will help to increase supply chain value. Most of the studies on integration and its relationship with performance show a positive effect, regardless of the different performance measures employed (Fabbe-Costes and Jahre, 2008; Kim, 2009; Gimenez et al., 2012). In this regard, supply chain integration can positively affect sustainable performance, as well as other competitive dimensions. Sustainable performance helps the organization to save costs, improve product quality, and enhance its reputation. Supply chain integration plays an important role in improving sustainable performance (Kang et al., 2018). Considering the impact of supply chain management on sustainable performance involves addressing the influences and relationships between supply chain integration and the economic, social, and environmental aspects of performance (Wang et al., 2013). Supply chain management is a critical hotel process for transferring services and information from suppliers to end customers in order to increase the added value of services (Kothari et al., 2005). Fantazy et al. (2010) show that some supply chain practices related to strategic purchasing, which involves integration with suppliers, improve hotel performance, especially those related to customer satisfaction and financial performance, which means they have an impact on the economic and social dimensions of sustainability. This effect on the economic results of the hotel can also be due to the association with other entities in the business context, such as suppliers (Asadi et al., 2020).

Xu and Gursoy (2015b) indicate that for the hospitality sector, long-term partnerships, cooperation, and information sharing may be some of the most efficient ways to coordinate stakeholders and increase the benefits of the entire supply chain, especially sustainability goals. These authors point out that, in order for sustainability initiatives to succeed, it is crucial for all the companies in the supply chain to understand the importance of maximizing sustainability-related benefits for the entire hospitality supply chain, rather than just the benefits of an individual company. In the industry, Zhong et al. (2016) demonstrate that supply chain management practices and supply chain quality improve hotel performance, especially related to employee morale, which fits the social dimension of sustainability. The performance and

competitiveness of tourism companies, especially hotels, depend to a large extent on their ability to respond to the sustainability requirements of their customers by providing new services that are sustainable for society and the environment (Sigala, 2014).

A company's sustainable performance depends on the outcome of each member of the supply chain (Katiyar et al., 2018). Customer integration makes it possible to build long-term customer relationships and improve overall customer satisfaction. With customer integration, the company becomes aware of customers' needs through direct access to their needs and requirements (Gelhard and von Delft, 2016). According to Kang et al. (2018) in the era of sustainability, recognizing customer needs is essential. Organizations that integrate their customers into their operational and supply chain activities can achieve greater profitability in the distribution of quality products and services while maintaining aspects related to social and environmental sustainability. Therefore, greater customer integration will promote a greater flow of information, allowing the organization to identify customer needs in terms of social and environmental concerns (Gelhard and von Delft, 2016). Customer-driven pressures can promote supply chain practices that improve sustainable performance (Pullman et al., 2009). In addition, according to Kang et al. (2018), supplier integration achieved through long-term strategic relationships that include sharing information and developing mutual trust can facilitate the development of sustainability practices. Thus, supplier integration improves sustainable performance.

Internal integration refers to the absence of functional barriers between departments and areas of the company, through shared information, joint decision-making, and teamwork, where there is collaboration between several departments (Flynn et al., 2010; Zhao et al., 2011). Close collaboration and teamwork are essential for the development of new skills and competences related to sustainability (Wolf, 2014). Hussain et al. (2019) show that some important management techniques performed in supply chains and related to lean and green practices have a strong impact on economic, social, and environmental performance. Furthermore, internal integration favors the alignment of different objectives with the strategic priorities, especially those related to sustainability. This internal integration can help to transform the organization into operational practices that enhance sustainability (Kang et al., 2018). Therefore, considering the three types of integration, we propose the following hypotheses:

**Hypothesis 4.** Supply chain integration positively influences sustainable performance.

**Hypothesis 4a.** Customer integration positively influences sustainable performance.

**Hypothesis 4b.** Supplier integration positively influences sustainable performance.

**Hypothesis 4c.** Internal integration positively influences sustainable performance.

### 2.1. Mediator effect of supply chain integration

A mediating variable has a portion that supports the relationship between a dependent variable and an independent variable (Baron and Kenny, 1986). The model we propose establishes that sustainable performance is affected by supplier innovativeness, and that this variable also directly and indirectly influences sustainability performance through supply chain integration, considering its three aspects. Therefore, we propose that supply chain integration mediates the relationship between supplier innovativeness and sustainable performance. This states that supply chain integration allows supplier innovativeness to spread throughout the chain, improving sustainability. Supply chain integration is a key driver in supplier innovativeness. Innovativeness plays an important role in sustainable performance, but it might not create results on its own because supply chain activities, ideas, and

practices would be necessary (Seo et al., 2014). Supplier innovativeness can contribute to improving internal capacities, but it may not have a direct impact on performance (Han et al., 1998). In addition, supplier innovativeness is more likely to improve sustainable performance in an environment where there is internal and external integration with all the members of the supply chain. The teamwork that develops in the supply chain makes it possible to transform supply chain resources to achieve satisfaction and commitment (Shi and Liao, 2013). This teamwork involves greater supply chain integration, which favors a positive relationship between supplier innovativeness and sustainable performance. Where there is high supplier innovativeness, supply chain integration is more likely, which will in turn influence sustainable performance. Seo et al. (2014) demonstrate that innovativeness influences supply chain performance indirectly through supply chain integration. Based on this rationale for sustainable performance, the following hypotheses are proposed:

**Hypothesis 5.** The level of supply chain integration mediates the association between supplier innovativeness and sustainable performance.

**Hypothesis 5a.** Customer integration mediates the association between supplier innovativeness and sustainable performance.

**Hypothesis 5b.** Supplier integration mediates the association between supplier innovativeness and sustainable performance.

**Hypothesis 5c.** Internal integration mediates the association between supplier innovativeness and sustainable performance.

The previous hypotheses allow us to propose the model shown in Fig. 1.

## 3. Methodology

### 3.1. Study setting and sample

The data were collected from 114 four- and five-star hotels in two tourist areas, Sharm El Sheikh and Hurgada, the most popular tourist destinations in Egypt, along with Cairo, and characterized by having an extensive and diverse tourist accommodation offer. The total number of registered hotel establishments is 149, according to the Egyptian Hotel Sector Association. Of the entire population, 114 hotels participated in this research, representing a response rate of 76.5%. Of these 114 hotels, 72 hotels pertain to Sharm El Sheikh and 42 hotels pertain to Hurgada.

The data were obtained through a personal questionnaire administered directly by the researcher, in order to guarantee the representativeness of the universe under study. The researcher made appointments with the hotels to complete the personal questionnaire. In a personal interview conducted by the researcher, the questionnaire was hand-delivered to the interviewee, who answered it without the researcher's direct intervention, except to clarify any doubts or questions. The original questionnaire was written in Spanish and translated into Arabic by the researcher, and then the translation was revised by a certified translator. The target respondent is the top management of the hotel: the director or assistant manager because they have the capacity to make decisions and manage the work processes. Therefore, they would have sufficient knowledge to answer the questionnaire. Thus, an attempt was made to hold the interviews with the general managers or assistant managers, but in some cases, they were not available or did not have time to fill out the personal survey. In those cases, the survey was conducted with the directors or department heads, who sometimes contacted the directors of other departments when they did not know the answer to a question. Of the 114 respondents, 28 were general managers, 59 were assistant managers, and 28 were department heads. Finally, it should be noted that most of the hotels in the sample belonged to international or national chains, with 33 of them being from international chains. The fieldwork was carried out in the second semester of 2018.

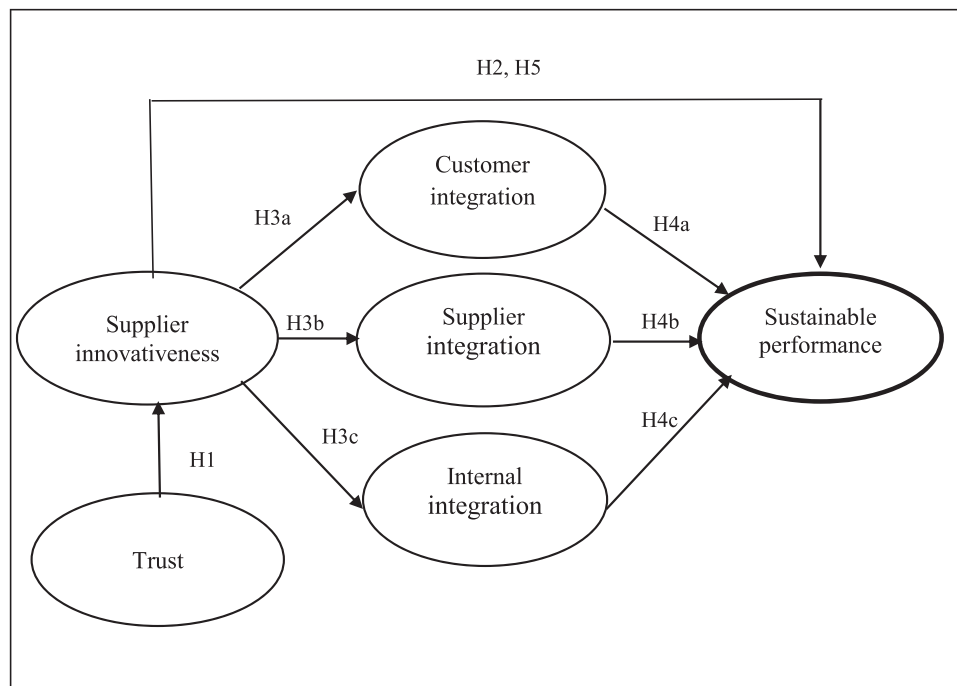


Fig. 1. Conceptual model and hypotheses.

### 3.2. Measurement of the variables

First, trust was measured based on the scales used by Doney and Cannon (1997), Panayides and Lun (2009), and Hofer et al. (2012), which measure trust in supplier relationships. The scale has five items and measures aspects based on trustworthiness and the supplier's concern for the hotel.

An 8-item scale used by Kim and Chai (2017) and Azadegan and Dooley (2010) was employed to measure external supplier innovativeness. Thus, this construct raises questions related to innovativeness in the services and processes offered by suppliers. Customer integration, supplier integration, and internal integration were measured with scales containing 6, 7, and 6 items, respectively. These scales come from Zhao et al. (2013) and Cao et al. (2015), and they especially emphasize collaboration and communication with customers and suppliers. These authors adapted the scales from Narasimhan and Kim (2002) and Frohlich and Westbrook (2001). Finally, sustainable performance is evaluated with the scale employed by Gelhard and Von Delft (2016). This construct analyzes competitive advantage through organizational stakeholder satisfaction, considering human well-being and ecological constraints. The scale consists of 5 items and measures aspects such as the extent to which the reputation of sustainability, is better than competitors' reputation. The items cover three basic dimensions of sustainability: economic, social, and environmental: we are the first to offer environmentally friendly services in the marketplace (economic); compared to our competitors, we more thoroughly respond to societal and ethical demands (social); and we develop new services or improve existing services that are regarded as sustainable for society and the environment (environmental).

All the items in the variables related to supplier innovativeness, supply chain integration, and sustainable performance were measured on Likert scales ranging from 1 to 7, with 1 representing strong disagreement and 7 indicating strong agreement (see Appendix).

## 4. Analysis and results

The current study is exploratory and mainly focuses on testing the supply chain integration model and its relationship with sustainable

performance. Therefore, the PLS-SEM technique, due to its predictive power, is used to analyze the data and the hypotheses proposed in the model through the SmartPLS software version 3.2.8 (Hair et al., 2017). The objective of PLS-SEM models is more related to prediction than to confirmation. PLS-SEM is a technique used both in studies that analyze supply chain management (Sundram et al., 2011; Kumar and Nath Banerjee, 2012; Gualandris and Kalchschmidt, 2014; Kaufmann and Gaeckler, 2015; Katiyar et al., 2018) and in studies in the hotel sector (Amin et al., 2017; Singjai et al., 2018; Kim et al., 2019). One of the advantages of using the PLS method is that it that does not require large samples or normal data distribution. This tool is also ideal when the theory is in the development and assessment stage (Fornell and Larcker, 1981).

### 4.1. The measurement model

The measurement model is designed to measure individual item reliability, internal consistency of the reliability of the constructs, convergent validity, and discriminant validity (Hair et al., 2017). The reliability of a variable describes the variance of an observed variable, comparing it with the non-observed variable by assessing the loadings of the observed variables (Götz et al., 2010). Most of the item loadings are greater than 0.60 (Bagozzi and Yi, 1988). Most of the items are above 0.764. Only one item did not reach the threshold of 0.60 used in this study, and so it was eliminated. Cronbach's alpha and composite reliability (CR) were used to assess the internal consistency of the reliability. Table 1 shows that the Cronbach's alphas for all the constructs range between 0.870 and 0.968, whereas the composite reliability values range between 0.898 and 0.975. Therefore, these indicators show that the scales are reliable and indicate that all the variables exceed the minimum required level of 0.70. In addition, to verify convergent validity, the average variance extracted (AVE) of all the variables was calculated (Fornell and Larcker, 1981). The average variance extracted (AVE) of all the constructs exceeds 0.50, with values ranging from 0.524 to 0.888. This indicates that there is convergent validity of the variables included in the model. To test the discriminant validity, Fornell and Larcker criterion was used. Table 2 shows that the square root of the AVE measure is greater than the correlations between the variables,

**Table 1**  
Measurement model.

Variables	Indicators	Factor loading	t	CR	Composite reliability	AVE
<b>Trust</b>	TR_1	0.902	41.070	0.966	0.973	0.880
	TR_2	0.929	65.904			
	TR_3	0.961	115.959			
	TR_4	0.964	124.803			
	TR_5	0.932	55.499			
<b>Supplier innovativeness</b>	SN_1	0.780	18.906	0.870	0.898	0.524
	SN_2	0.755	10.613			
	SN_3	0.664	10.355			
	SN_4	0.725	8.204			
	SN_5	0.734	14.433			
	SN_6	0.731	14.383			
	SN_7	0.680	12.924			
	SN_8	0.715	15.635			
<b>Customer integration</b>	CI_1	0.776	22.426	0.887	0.917	0.690
	CI_2	0.879	43.011			
	CI_3	0.857	37.160			
	CI_4	0.804	19.172			
	CI_5	0.833	27.000			
<b>Supplier integration</b>	SI_1	0.771	12.647	0.891	0.916	0.610
	SI_2	0.616	6.377			
	SI_3	0.764	12.858			
	SI_4	0.863	32.217			
	SI_5	0.854	27.084			
	SI_6	0.798	16.907			
	SI_7	0.778	17.767			
<b>Internal integration</b>	II_1	0.820	28.432	0.909	0.932	0.733
	II_2	0.870	37.183			
	II_3	0.830	29.905			
	II_4	0.893	47.371			
	II_5	0.866	37.254			
<b>Sustainable performance</b>	SP_1	0.937	108.819	0.968	0.975	0.888
	SP_2	0.976	227.193			
	SP_3	0.907	68.122			
	SP_4	0.975	218.923			
	SP_5	0.915	60.620			

**Table 2**  
Fornell-Larcker criterion.

Variables	TR	SN	CI	SI	II	SP
<b>Trust</b>	<b>0.938</b>					
<b>Supplier innovativeness</b>	0.552	<b>0.724</b>				
<b>Customer integration</b>	-0.084	0.270	<b>0.831</b>			
<b>Supplier integration</b>	0.628	0.622	0.197	<b>0.781</b>		
<b>Internal integration</b>	0.020	0.348	0.825	0.201	<b>0.856</b>	
<b>Sustainable performance</b>	-0.024	0.318	0.777	0.244	0.755	<b>0.942</b>

suggesting discriminant validity.

**4.2. Structural model**

Two structural models were carried out to test the direct effect of supplier innovativeness and sustainable performance (non-mediated model) and the impact of the mediation of supply chain integration on the association between supplier innovativeness and sustainable performance (mediated model). A bootstrap test with 500 samples was carried out (Hair et al., 2017) to obtain the explained variance (R<sup>2</sup>), the

**Table 3**  
Non-mediated structural model.

Hypothesis	B	t	p	f <sup>2</sup>	(R <sup>2</sup> ; Q <sup>2</sup> )	Outcome
<b>Trust à Supplier innovativeness</b>	0.554	8.585	0.000	0.086	0.304;0.150	Supported
<b>Supplier innovativeness à Sustainable performance</b>	0.320	3.582	0.000	0.324	0.102;0.09	Supported
AVE x R <sup>2</sup>	0.1550					
GoF=√AVE x R <sup>2</sup>	0.3977					

f<sup>2</sup> effect, and the path coefficients (β), with the observed t values obtained, as well as the Q<sup>2</sup> values. In addition, to test the hypotheses that contain mediating variables, the direct and indirect effect of the independent variable on the dependent variable was calculated. The R<sup>2</sup> values represent the explained variance of the dependent variables. Trust explains 30.4% (R<sup>2</sup> = 0.304) of the variability in supplier innovativeness, and supplier innovativeness explains 10.2% of the variability in sustainable performance (see Table 3). Moreover, Table 4 shows that supplier innovativeness explains 7.3%, 38.7%, and 12.1% of the variability in customer integration, supplier integration, and internal integration, respectively (R<sup>2</sup> = 0.073; R<sup>2</sup> = 0.384, R<sup>2</sup> = 0.121). Furthermore, the three types of integration explain 65% (R<sup>2</sup> = 0.651) of the variability in sustainable performance.

In addition, the f<sup>2</sup> effect is calculated and used to evaluate whether the omitted construct has a significant impact on the dependent variables. Most of the f<sup>2</sup> effect sizes of the significant variables in the two models (mediated and non-mediated) are higher than the minimum acceptable level of 0.02, with most of the relationships being moderate and strong.

Whereas R<sup>2</sup> measures predictive capacity, Q<sup>2</sup> measures predictive relevance. All Q<sup>2</sup> values are expected to be positive (Hair et al., 2017). Tables 3 and 4 show that all the values are above zero, ranging from 0.04 to 0.538, and so the models have predictive capacity. To measure the

**Table 4**  
Mediated structural model.

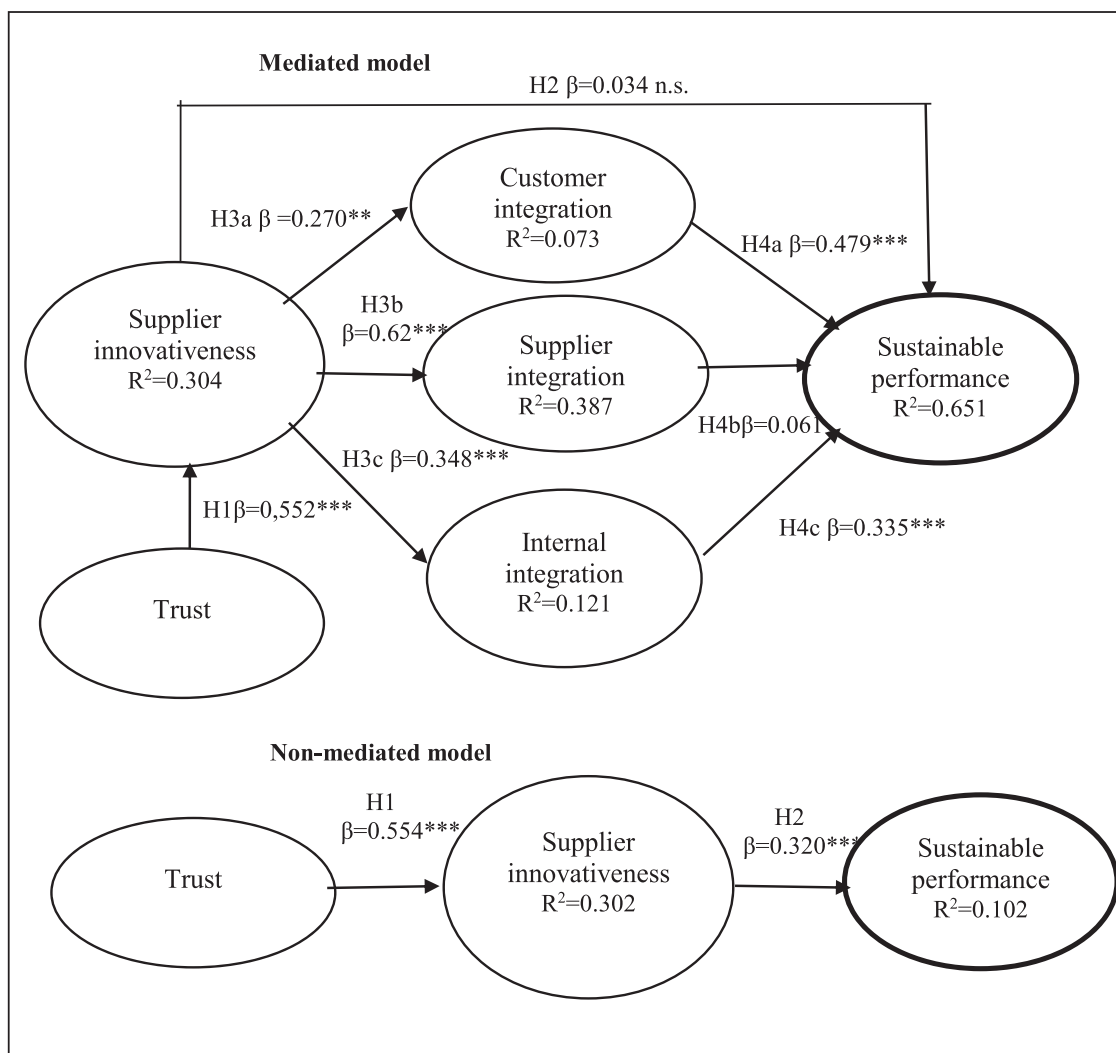
Hypothesis	B	t	p	f <sup>2</sup>	(R <sup>2</sup> ; Q <sup>2</sup> )	Outcome
Trust -> Supplier innovativeness	0.552	8.064	0.000	0.437	0.304;0.143	-
Supplier innovativeness -> Customer integration	0.270	3.097	0.001	0.078	0.073;0.044	Supported
Supplier innovativeness -> Supplier integration	0.622	10.535	0.000	0.631	0.387;0.217	Supported
Supplier innovativeness -> Internal integration	0.348	4.104	0.000	0.138	0.121;0.080	Supported
Supplier innovativeness -> Sustainable performance	0.034	0.494	0.311	0.002	0.651;0.538	-
Customer integration -> Sustainable performance	0.479	5.391	0.000	0.209		Supported
Supplier integration -> Sustainable performance	0.061	0.869	0.193	0.006		Not Supported
Internal integration -> Sustainable performance	0.335	3.374	0.000	0.097		Supported
AVE x R <sup>2</sup>	0.221					
GoF= $\sqrt{AVE \times R^2}$	0.470					

goodness of fit of the two models, we used the Goodness-of-fit (GoF) indicator (Henseler et al., 2016). GoF values range from 0 to 1, with values of 0.10 (small), 0.25 (medium), and 0.36 (large). In both models, the GoF is above 0.36, 0.397 in the non-mediated model and 0.470 in the mediated model, which suggests a good fit.

The first hypothesis (Hypothesis 1) examines the relationship between trust in external suppliers and supplier innovativeness. Table 3 and Fig. 2 show that trust in suppliers has a positive influence on supplier innovativeness ( $\beta = 0.554$ ,  $p < 0.001$ ), and so Hypothesis 1 is supported. The second hypothesis (Hypothesis 2), which proposes that supplier innovativeness positively influences sustainable performance,

is accepted because the standardized  $\beta$  regression weight is significant and positive ( $\beta = 0.320$ ,  $p < 0.001$ ).

To verify the mediating role of supply chain integration, the hierarchical method was used, based on three conditions of Baron and Kenny's (1986). First, the independent variable (supplier innovativeness) has to influence the mediator variable (in each type of integration) and the mediating variable (the supply chain integration types on the dependent variable, sustainable performance). Second, the independent variable (supplier innovativeness) should influence the dependent variable (sustainable performance). Third, if mediation takes place, the relationship between the independent variable and the dependent



**Fig. 2.** Mediated structural model and non-mediated model. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ .



variable should diminish. Therefore, the effect of mediation is assessed by including the mediating variables (customer integration, supplier integration, and internal integration) in the previous direct model. In the mediated model, the results show that there is a positive and significant relationship between supplier innovativeness and supply chain integration (see Table 4). Specifically, supplier innovativeness has a positive and significant influence on customer integration ( $\beta = 0.27, p < 0.05$ ), supplier integration ( $\beta = 0.622, p < 0.001$ ), and internal integration ( $\beta = 0.348, p < 0.001$ ), which also suggests support for Hypotheses 3a, 3b, and 3c. Therefore, Hypothesis 3 is accepted overall.

With regard to the influence of the mediator variables (types of supply chain integration) on sustainable performance, customer integration and internal integration have a positive and significant influence on sustainable performance ( $\beta = 0.479, p < 0.001; \beta = 0.335, p < 0.001$ ), whereas supplier integration does not have a significant influence ( $\beta = 0.061, p > 0.05$ ). These results support Hypothesis 4a and Hypothesis 4c, but not Hypothesis 4b.

In addition, the support for Hypothesis 1 verifies the fulfillment of the second condition. In the direct or non-mediated model, supplier innovativeness is found to have a positive influence on sustainable performance. To identify whether the third condition is met, the relationship between supplier innovativeness and sustainable performance has to be verified in the direct or non-mediated model and the mediated model. Tables 3 and 4 show that the  $\beta$  coefficient goes from being significant in the non-mediated model to being non-significant in the mediated model ( $\beta = 0.554, p < 0.001$  to  $\beta = 0.034, p > 0.05$ ). Therefore, supply chain integration mediates in the relationship between supplier innovativeness and sustainable performance, specifically customer integration and internal integration.

### 4.3. Direct and indirect effect of supply chain integration on sustainable development

In addition to the previous analysis of Baron and Kenny's (1986) test of overall mediation, the direct and indirect effect of each sub-dimension of supply chain integration on sustainable performance was tested individually. Three individual mediation tests were conducted for each of the integration types. Thus, for example, supplier integration and internal integration were removed from the analysis, and the mediating effect of customer integration was assessed. This was done for each type of integration. Based on the supply chain integration study by Seo et al. (2014), a bootstrap analysis of 2000 samples at a 90% confidence level was performed. This type of sampling has also been applied in the work by Qrunfeh and Tarafdar (2013). First, the direct and indirect impact of supplier innovativeness on sustainable performance was calculated, with customer integration as the mediator, then only supplier integration, and finally internal integration. The direct standardized coefficients related to customer integration (coefficient = 0.1858,  $p = 0.1134$ ) and internal integration (coefficient = 0.1653,  $p = 0.2138$ ) were not significant; whereas the direct standardized coefficient related to supplier integration was significant at a significance level of 5%

**Table 5**  
Decomposition of effects of supplier innovativeness on sustainable performance.

Mediators	Standardized coefficients (t- values)		
	Total Effect	Direct effect	Indirect effect
<b>Customer integration</b>	0.6218	0.1858	0.4360
	3.590*	1.5957	3.1847**
<b>Supplier integration</b>	0.6218	0.5276	0.0942
	3.590*	2.395*	0.688
<b>Internal integration</b>	0.6218	0.1653	0.4565
	3.590*	1.2504	3.5600***

\*\*\*  $p < 0.001$ .

\*\*  $p < 0.01$ .

\*  $p < 0.05$ .

(coefficient = 0.5276,  $p = 0.018$ ) (see Table 5). In addition, the indirect effect of supplier innovativeness on sustainable performance, with customer integration as the mediator, was significant, with a standardized coefficient of 0.4360 ( $p < 0.01$ ). The indirect effect when the mediating variable was supplier integration was not significant, with a standardized value of 0.0942 ( $p > 0.05$ ). In contrast, the indirect effect of supplier innovativeness on sustainable performance when the mediator variable was internal integration was significant, with a standardized coefficient of 0.4565 ( $p < 0.001$ ). Therefore, Hypotheses 5a and 5c are supported, whereas Hypothesis 5b is not.

## 5. Discussion

This study empirically investigates whether the trust-based relational exchange determines supplier innovativeness, and how this type of innovativeness directly or indirectly influences sustainable performance through supply chain integration. The findings suggest that trust positively influences supplier innovativeness. This result indicates that the more the hotel trusts its suppliers, the more suppliers will innovate, which is consistent with the results obtained in the study by Panayides and Lun (2009). Relationships based on trust more precisely reflect suppliers' service needs and innovation processes in the supply chain. As Hurley and Hult (1998) indicate, the search for information takes place better in an environment based on trust, improving the capacity to innovate. The results are also consistent with the studies by Irenek and Mattysseens (2013), which demonstrate that strategic relationships with buyers can provide important learning opportunities for suppliers. Furthermore, Hofer et al. (2012) show in the logistics sector that trust enables suppliers' proactive improvement.

Furthermore, the results show that supplier innovativeness does not influence sustainable performance directly, but rather indirectly when supplier integration is introduced. A direct and positive relationship is found between supplier innovativeness and sustainable performance when testing the non-mediated model. This indicates that supplier innovativeness influences the hotel's sustainable performance, but when supplier integration is introduced, the impact is not significant. Supplier innovativeness means that suppliers are open to new ideas and continuously improve processes and services. Some studies have analyzed the impact of innovativeness on supply chain performance (Panayides and Lun, 2009; Seo et al., 2014). These studies reveal a positive impact of innovativeness on performance. Lintukangas et al. (2019) show that supply chain innovativeness influences sustainable performance. Moreover, Eccles and Serafeim (2013) indicate that an increase in innovativeness can improve the organization's sustainable performance. Specifically, the study by Azadegan and Dooley (2010) reveals an impact of supplier innovativeness on competitive priorities, although it does not analyze sustainability as a measure of performance. When analyzing the overall mediated model where supplier integration is introduced, we find that supplier innovativeness does not influence sustainable performance. Because innovativeness is an activity based on acquired capabilities, it may not increase sustainable performance on its own, and so it may not have a direct effect. Therefore, to increase sustainable performance, practical activities and operations related to supply chain integration must take place. These results are consistent with those obtained by Seo et al. (2014), which demonstrate that supply chain integration mediates the relationship between innovativeness and supply chain performance. However, of the three types of integration, the results indicate that customer integration and internal integration are mediating variables in the relationship between supplier innovativeness and sustainable performance, whereas supplier integration is not. In contrast, according to Seo et al. (2014), in a study in the manufacturing sector, supplier integration and internal integration mediate the relationship between innovativeness and supply chain performance. Therefore, in the hotel sector, customer integration and supplier integration are more relevant mediators in sustainable performance, which differentiates this sector from other industrial sectors. Hence, to improve

sustainable performance, there must be greater supply chain integration, especially with customers and internally. [Zhong et al. \(2016\)](#) point out that most of the services in the hotel sector offer a combination of tangible and intangible elements (the experience of staying in the hotel and purchasing its services) and interactions between employees and customers. Therefore, in the hotel supply chain, the customer gives important input to the service processes, which means that customer integration may be more important than supplier integration in mediating between supplier innovation and sustainable performance. Likewise, internal integration stems from the hotel's ability to integrate and coordinate different areas, based on its experience, to develop strategies for the hotel to function as a whole. The hotel has to function in a coordinated manner so that the client perceives a high added value overall, and not the value of an individual department. Thus, internal integration can become more important than integration with suppliers. Hotels have a greater capacity for internal management than for integrating suppliers. The results of the present study show that integration mediates between supplier innovativeness and sustainable performance, which indicates that supplier innovativeness has little value in improving sustainability unless it is accompanied by customer integration and internal integration.

The results indicate that supplier innovativeness has a positive impact on the three types of supply chain integration. The greater capacity of external suppliers to adapt to hotels' needs means that they have better resources to deal with increased customer integration, allowing them to more fully understand the needs of tourists who visit the hotel. Supplier innovativeness also produces more trust and shared information and better communication of external suppliers. In addition, the findings indicate that supplier innovativeness favors the coordination of activities between departments and joint work and interactions between departments. The findings are compared with studies from the industrial sector because no similar studies have been carried out in the hotel sector. Thus, these results are consistent with those obtained by [Lii and Kuo \(2016\)](#), which show that a greater focus on innovativeness has positive effects on supply chain integration. In the same vein, [Jean et al. \(2014\)](#) show that supplier innovativeness creates relationships between customers and suppliers that make it possible to increase competitiveness.

Furthermore, this study shows that greater internal and customer integration has an influence on sustainable performance. However, supplier integration does not influence the hotel's sustainable performance. This result indicates that greater supplier integration does not determine that the hotel will have better sustainability performance. Likewise, although using other variables, [AboelMaged \(2018\)](#) shows that there is no significant impact of environmental supplier collaboration on hotel performance.

Instead, hotels that have more contact with their customers, respond to customers' needs, and continually research the needs to be fulfilled have more sustainable performance. Likewise, more cohesive hotels where there is good coordination between the different areas of the department have better sustainable performance. Hotels that have this type of external integration with customers and internally respond better to social and ethical demands with more sustainable services. Therefore, as [Chapman et al. \(2003\)](#) suggest, the development of effective internal and external relationships through networks, especially with customers, can lead to better performance. Although no studies directly analyze the effect of supply chain integration on sustainable performance, [Lii and Kuo \(2016\)](#) show in the industry sector that supply chain integration positively influences performance. Similarly, [Seo et al. \(2014\)](#) show that supply chain integration improves performance.

### 5.1. Academic and practical implications

In the hotel context, this is the first study to provide interactions between the supply chain and innovativeness and sustainable

performance. These interactions must be understood from a theoretical and practical point of view. From a theoretical point of view, the study contributes to the scant literature on supply chain integration in the hotel sector, where supplier innovativeness and trust are considered antecedents and sustainable performance is the determinant factor, mediated by supply chain integration. This study shows the influence of supply chain integration on sustainable performance. Other studies in the manufacturing sector have analyzed the impact of supply chain integration on organizational performance or competitive capabilities ([Lii and Kuo, 2016](#)). These authors also analyze the impact of innovativeness on supply chain integration, but supplier innovativeness is not analyzed. These studies are carried out in the manufacturing sector. In the hotel sector, there are some studies that analyze the same topics related to supply chain performance and sustainability, although using different approaches. In the hotel sector, [Fantazy et al. \(2010\)](#) analyze supply chain practices with an emphasis on strategic purchasing, and they show that strategic purchasing is positively related to financial performance and customer satisfaction. Our study shows that the impact of supply chain integration improves sustainable performance. Furthermore, supply chain integration mediates the relationship between supplier innovativeness and sustainable performance. This demonstrates once again that supply chain related practices in the hospitality industry are essential for improving performance. Also in the hotel sector, [Xu and Gursoy \(2015b\)](#) show the impact of different dimensions of the sustainability of hotel supply chain actions on customer behavior and satisfaction. However, in our work, we analyze the impact of supply chain integration practices on sustainable performance, with sustainability being an output variable rather than an input variable.

The present study has several practical implications for professionals. The results show that the trust placed in suppliers is a motivating element for suppliers in developing innovations and processes. This will allow them to offer more up-to-date services, which will result in hotels' higher quality and greater satisfaction with their suppliers.

On the one hand, there is a mediating effect of customer and internal integration in the partnership between supplier innovativeness and sustainable performance. Therefore, managers must foster these two types of integration, so that there is an increase in sustainable performance when suppliers have a tendency to innovate. Thus, it is necessary to implement practices related to these types of integration. A constant search for information about customer needs and a closer connection with them, before and after the sale of hotel services, as well as greater interdepartmental coordination, joint planning, and information sharing, will allow supplier innovativeness to have a greater effect on sustainable performance.

Hotels should select suppliers that innovate because this will allow them reach greater supply chain integration. From a practical point of view, this means that supplier innovativeness will improve the capacity for coordination between departments, the detection of customer needs, and the cooperation with suppliers, which will lead to improvements in sustainable performance. This dynamism in the supply chain can encourage the development of new, more sustainable products and services. Successful integration will help to identify consumer preferences. Thus, suppliers should implement practices that improve supply chain integration in the hotel because it has been shown to play a key role in sustainable performance. Hotels should select suppliers that innovate, in order to be better prepared to improve sustainability with new environmentally-friendly products and services while better satisfying the interests of stakeholders.

It is necessary to increase customer relations and offer personalized service because this would help suppliers' innovation to have a greater effect on sustainability. Likewise, this adaptation and integration with the customer improves sustainable performance, which indicates that it is not sufficient to develop sustainable practices, as other studies have shown, but it is also important to integrate with customers by involving them, for example, in designing the service and constantly analyzing their needs. Relationships with suppliers should be deeper and have

greater integration because it is possible that, due to the lack of closed relationships with suppliers, integration with suppliers might not have an influence on sustainable performance. This could be achieved through the hotel's participation in planning the services provided. However, trust in suppliers is important if they are going to innovate. Synchronized internal management between different departments that allows greater integration also seems to be important in determining whether the hotel has better sustainable performance. In this regard, techniques and technologies that help departments to integrate better are welcome. Another practical implication is that the strategic supply chain management decisions analyzed in this paper will condition tactical and operational decisions related to service delivery, planning, resource allocation, and scheduling.

## 5.2. Limitations and future research

The effects of sustainability practices of supply chain members on sustainable performance have not been discussed in this paper. Thus, there is a need for studies in the hotel sector that analyze how practices related to customers and suppliers, as well as within hotel departments, affect sustainability performance. The study analyzes the effect of supplier innovativeness on sustainable performance, based on the premise that suppliers adopt environmentally friendly and sustainable processes, but it is not known what sustainability practices they are carrying out. In this regard, future research should study what innovative sustainable practices providers are enacting, and how they are impacting sustainable performance. Thus, the dimensions of The Hotel Sustainable Business Model (HSBM) developed by Mihalić et al. (2012) could be considered, given that this model explores different best practices in sustainability in the hotel sector.

The surveyed hotel rated the degree of innovativeness, trust, and other questions related to hotel management. This may cause distortions due to social desirability bias because respondents may have a tendency

to answer questions in a more socially desirable way than they would under other conditions and with other types of questions. In this regard, other more qualitative studies that more specifically investigate the questions analyzed here could complement the results of this study. It should also be noted that this analysis covers four- and five-star hotels, which means that future studies should introduce other accommodation levels. Therefore, the results are limited and should be replicated in similar studies in other tourist destinations. Moreover, it is necessary to carry out a study where the key informants are suppliers and customers, in order to obtain different perspectives of the hotels from distinct approaches.

In addition, this study views sustainability as a performance measure to operationalize competitive advantage, that is, a performance measure that makes it possible to position the hotel with respect to its competition. However, sustainability includes three basic dimensions: economic, social-cultural, and environmental (Martínez and del Bosque, 2014). A more complete study should consider these dimensions separately and analyze the impact of each type of integration on each dimension of sustainability.

Another limitation has to do with the fact that, in this study, all the suppliers of the activities are analyzed together. Therefore, it would be interesting to partially analyze the influence of each supplier by type of service to see the scope of each activity. Not all suppliers have the same need to innovate or play the same role in sustainable performance. Moreover, other studies can analyze the impact of supplier innovativeness and supply chain integration on other competitive priorities related to quality, flexibility, cost, or delivery that have not been analyzed in this study. This study reveals that supply chain integration is a key to sustainable performance, both due to its direct effect and because it mediates in sustainable performance. Therefore, there is a need for future studies that can provide a greater understanding of sustainability by studying its antecedents, moderators, and mediators.

## Appendix

Code	Factors
	<b>Trust</b>
TR_1	Our service providers keep promises they make to our hotel.
TR_2	We believe in the information that our service providers provide us.
TR_3	Our service providers are genuinely concerned that our business succeeds.
TR_4	We trust our service providers to keep our best interests in mind.
TR_5	Our service providers are trustworthy.
	<b>Supplier innovativeness</b>
SN_1	In new product and service introductions, our service providers are often first-to-market.
SN_2	In comparison with their competitors, the outsourcing suppliers have introduced more creative and useful products and services in the past five years.
SN_3	The external providers aggressively market their product innovativeness.
SN_4	In new product and service introduction, the service providers are at the leading edge of technology.
SN_5	The external providers are constantly improving their manufacturing processes.
SN_6	The external providers change production methods at a great speed in comparison with their competitors.
SN_7	During the past five years, the external providers have developed many new management approaches (excluding manufacturing processes).
SN_8	When the external providers cannot solve a problem using conventional methods, they improvise with new methods.
	<b>Customer integration</b>
CI_1	We are frequently in close contact with our customers.
CI_2	Our customers give us feedback on our quality.
CI_3	Our customers are actively involved in our product design process.
-	We work as a partner with our customers.
CI_4	We strive to be highly responsive to our customers' needs.
CI_5	We regularly survey our customers' needs.
	<b>Supplier integration</b>
SI_1	We maintain cooperative relationships with our outsourcing suppliers.
SI_2	We help our outsourcing suppliers to improve their quality.
SI_3	We maintain close communication with outsourcing suppliers about quality considerations and design changes.
SI_4	Our outsourcing suppliers are actively involved in our new product and development process.
SI_5	Our key outsourcing suppliers provide input into our product development projects.
SI_6	We strive to establish long-term relationships with outsourcing suppliers.
SI_7	We actively engage outsourcing suppliers in our quality improvement efforts.
	<b>Internal integration</b>

(continued on next page)

(continued)

Code	Factors
II_1	The hotel departments frequently communicate with each other.
II_2	The hotel departments work well together.
-	The hotel departments cooperate to solve conflicts between them, when they arise.
II_3	The hotel departments coordinate their activities.
II_4	The hotel departments work interactively with each other.
II_5	Hotel employees work in teams as members of a variety of areas to introduce to new services.
<b>Sustainable performance</b>	
SP_1	We are the first to offer environmentally friendly services in the marketplace
SP_2	Our competitors consider us a leading hotel in the field of sustainability.
SP_3	We develop new services or improve existing services that are regarded as sustainable for society and the environment.
SP_4	Our reputation in terms of sustainability is better than the sustainability reputation of our competitors.
SP_5	Compared to our competitors, we more thoroughly respond to societal and ethical demands.

Note: The items that are not numbered were eliminated from the analysis due to having factor loadings below 0.50.

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