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# Absorptive Capacity and Supply Chain Integration and Their Impact on Hotel Service Performance

**Tomas F. Espino-Rodríguez * and Mahmoud Gebril Taha**

Department of Economics and Business, University of Las Palmas de Gran Canaria, 35017 Las Palmas, Spain; gebril44@gmail.com

* Correspondence: tomasfrancisco.espino@ulpgc.es

**Abstract:** This paper aims to examine how absorptive capacity affects supply chain integration (SCI) and service performance. The association between SCI and service performance was also studied. Data were collected from four-star and five-star hotels in Egypt. A total of 114 responses were obtained. The PLS-SEM technique and SmartPLS 4.0 software were employed for analysis. The study revealed that absorptive capacity has an impact on SCI and service performance. There is also a positive relationship between SCI and service performance. Specifically, a positive influence of internal integration and customer integration on service performance was found. However, supplier integration shows no significant relationship with service performance. This suggests that enhancing awareness of customer needs and internal coordination improves service performance. From a practical viewpoint, managers must promote a learning culture, foster innovation, and encourage internal and external collaboration. These factors were identified as key components that can improve service performance and lead to the development of competitive advantage, as shown in this paper. In addition, supply chain vitality was found to enhance quality and service, particularly when there is coordination between departments and consideration of customer needs. This study is among the earliest to examine how absorptive capacity affects both supply chain integration and service performance in the hotel industry. The research contributes at a theoretical level by shedding light on the role of absorptive capacity in the development of competitive advantage.

**Keywords:** absorptive capacity; supply chain integration; service performance; hotels



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## 1. Introduction

Coordination among supply chain members is crucial for the survival of the organisation (Tarifa-Fernández et al. 2019). It is also acknowledged in the relevant literature as a significant factor for enhancing firm performance (Rosenzweig et al. 2003; Flynn et al. 2010; Alfalla-Luque et al. 2015). Supply chain integration (SCI) is identified as a central concern within the supply chain literature (Oubrahim et al. 2023). Chang et al. (2016) proposed that supply chain integration enhances core business processes. Integrating activities across multiple functions poses challenges for organisations but can lead to competitive advantage (Miri-Lavassani and Movahedi 2018). With the significance of the supply chain for gaining a competitive advantage having been acknowledged, research ought to concentrate on comprehending the contextual circumstances under which it is most efficient (Tarifa-Fernández and De Burgos-Jiménez 2017). To achieve high SCI, an organisation must manage intra- and inter-organisational processes efficiently via collaboration among its partners (Lee et al. 2016). SCI is a business strategy utilised by companies to increase performance by fostering collaborative relationships among the various functions affiliated with the supply chain (Cheng et al. 2022; Oubrahim et al. 2023).

Various works in the literature analyse supply chain integration variables like supplier innovativeness, innovation, and digital transformation (Seo et al. 2014; Lii and Kuo 2016;

Oubrahim et al. 2023). However, there is insufficient research examining the impact of absorptive capacity, i.e., a set of dynamic capabilities and skills, on enhancing SCI. Absorptive capacity enables recognition of the value of external knowledge, its assimilation, and its subsequent commercialisation (Cohen and Levinthal 1990). In building their absorptive capacity, companies must acquire and manage external information when confronting several adverse changes that threaten their survival (Salam and Bajaba 2023).

Absorptive capacity is based on learning mechanisms like exploration, assimilation, and exploitation (Volberda et al. 2010), making it a crucial dynamic capability that boosts SCI and service performance, ultimately improving competitive advantage. The various dimensions of SCI must be considered in order to ascertain the impact of SCI dimensions on service performance and how they each are affected by absorptive capacity. SCI dimensions pertain to internal integration and external integration (Huo 2012). Thus, for example, Gölgeci and Kuivalainen (2020) suggested that the analysis of a firm's cross-functional alignment, i.e., internal integration, cannot overlook the importance of absorptive capacity.

Few studies have analysed the role of absorptive capacity as a dynamic capability in the context of supply integration (Tarifa-Fernández et al. 2019; Gölgeci and Kuivalainen 2020). Tarifa-Fernández et al. (2019) analysed the moderating effect of absorptive capacity on the relationship between SCI and supply chain performance in agri-food marketing firms. Meanwhile, Gölgeci and Kuivalainen (2020) studied the impact of absorptive capacity on supply chain resilience. No studies examining the direct effect of absorptive capacity on SCI were found in the empirical literature.

The empirical literature on the supply chain within the hotel sector is limited, although some studies have focussed on analysing this (Xu and Gursoy 2015; Zhong et al. 2016; Alreahi et al. 2023). Therefore, given the critical role that the supply chain plays in the hotel industry, it is imperative to examine the variables that determine supply chain integration and how it affects service performance. SCI is considered a crucial operational capability that impacts operational performance (A. Liu et al. 2021). Hotels can improve their supply chain integration and effectiveness by acquiring the necessary skills and capabilities. Supply chain integration involves the strategic collaboration and coordination of the company with its suppliers and customers as well as the management of the company's internal and external processes (Chang et al. 2016). In this context, absorptive capacity is a crucial skill for organisations to achieve effective and efficient supply chain integration. High levels of absorptive capacity enhance SCI and enhance service performance. The impact of SCI on performance is recognised in the academic literature (Flynn et al. 2010; Wong et al. 2017; A. Liu et al. 2021) despite limited research in the hotel industry.

SCI is expected to improve service performance. Therefore, hotels should concentrate on creating dynamic capabilities that will form a basis for the development of SCI and the enhancement of service performance. It has not been studied how absorptive capacity and SCI affect service performance in the hotel industry. This study focuses on the need to cultivate capabilities for internally and externally integrating supply chains and how these dynamic capabilities and SCI enhance service performance. Knowledge and management of information in the hotel industry will largely rely on absorptive capacity. Absorptive capacity reinforces and enhances the hotel's existing knowledge base and can be crucial for its survival and adaptation to the environment (Thomas and Wood 2015). SCI can determine improvements in service performance, as evidenced in other industries. In the hotel sector, information management plays a crucial role in identifying customer needs and adapting to the environment. On the other hand, it is imperative for management to exercise caution while dealing with suppliers, particularly those who provide outsourced services, as the quality of the service may be compromised. It is necessary to assimilate, exploit, and apply this knowledge gathered from external sources beyond the hotel industry in order to enhance performance and customer satisfaction. Consequently, investigating the influence of absorptive capacity on SCI and service performance has great value.

The aim of this paper is to address the gap in the academic supply chain literature. The paper's objectives are summarised as follows:

1. To investigate the impact of absorptive capacity on SCI;
2. To examine the influence of absorptive capacity and SCI on service performance.

This is followed by a discussion of the theoretical underpinnings of absorptive capacity and SCI and the development of the hypotheses. Subsequently, sections analysing the results and also the conclusions along with theoretical and practical implications, limitations, and future research are presented. Therefore, Section 2 presents the literature review and hypothesis. Subsequently, Sections 3 and 4 present the methodology, analysis, and results, respectively. Finally, the conclusions are presented.

## 2. Literature Review and Hypothesis Development

### 2.1. Absorptive Capacity and Supply Chain Integration (SCI)

Absorptive capacity is a fundamental concept that elucidates the knowledge management and market linkage capabilities encompassing customers and suppliers (Gölgeci and Kuivalainen 2020). According to Zahra and George (2002), absorptive capacity comprises a set of organisational routines and processes through which firms acquire, assimilate, transform, and exploit knowledge to produce a higher-order dynamic capability (Wang and Ahmed 2007). Sáenz et al. (2014) stated that absorptive capacity encompasses three interrelated learning processes: exploration, assimilation, and exploitation. Exploration refers to a firm's ability to analyse new ideas and develop new products in collaboration with partners, whereas assimilation enables the firm to comprehend and incorporate knowledge (Sáenz et al. 2014). Assimilation allows the organization to develop a capacity to create practical processes and routines that enhance the analysis, interpretation, and understanding of externally acquired knowledge. (Kale et al. 2019). Exploitation, on the other hand, refers to an application capability to extend and make use of acquired knowledge (Algarni et al. 2023). In brief, absorptive capacity is comprised of four key components: knowledge acquisition, assimilation, transformation, and exploitation. These components facilitate ongoing organisational learning that enables companies to respond in a timely manner, boost their market competitiveness, and enhance innovation capacity (Sancho-Zamora et al. 2022; Kang et al. 2022). As outlined in the definition, absorptive capacity entails a range of routines aimed at cultivating the aforementioned components. The practices and routines to be undertaken include identifying and acquiring external knowledge, consulting with industry experts, interpreting data, integrating technologies, constructing knowledge management systems, executing knowledge management practices and sharing knowledge, as well as creating novel products and services. This will facilitate the consolidation, connectivity, and formalisation of knowledge (Ponce-Espinosa et al. 2022). Absorptive capacity necessitates significant inter-firm coordination, and the adoption of knowledge-related routines permits corporations to more effectively assimilate, integrate, and apply both external and internal knowledge (Khraishi et al. 2023).

Dynamic capabilities represent the organisation's capacity to expand, integrate, build, modify, and reconfigure its resource base, which includes tangible, intangible, and human resources (Amit and Schoemaker 1993; Teece et al. 1997; Helfat and Peteraf 2009). Teece (2019) argued that dynamic capabilities are partly embedded in individual managers and top management teams, who must adopt an entrepreneurial stance in identifying and exploiting opportunities. Absorptive capacity includes routines for creating and managing external and internal knowledge and continuous learning processes (Liu et al. 2013; Gkypali et al. 2017). This capacity is built through the exploitation of diverse external and internal knowledge. It is a boundary-spanning capability that enables the access, processing, and utilisation of information to address contingencies and difficulties. This capacity can be fostered within networks (Gölgeci and Kuivalainen 2020).

In turn, SCI requires capacity building processes such as absorptive capacity. SCI refers to the degree to which the processes of the organisation, customers, suppliers, and other supply chain partners are integrated or encompassed (Oubrahim et al. 2023). Kim (2013) defined SCI as a routine practice of sharing resources and information between departments or external organisations. Flynn et al. (2010) suggested that SCI consists of three

dimensions: customer, supplier, and internal integration. Another classification divides the dimensions into two types: internal and external integration. External integration includes both customer integration and supplier integration (Zhao et al. 2011). Internal integration involves a cross-functional strategy that includes collaboration and shared responsibility for service design, service delivery, sales, and distribution (Wong et al. 2011; Zhao et al. 2011; Lii and Kuo 2016). Accomplishing this goal requires the use of information systems and data exchange that facilitate real-time communication between the company's primary departments (Bodendorf et al. 2023). On the other hand, supplier integration seeks to share and implement organisational practices and strategic knowledge to generate mutual benefits (Kim 2013). In contrast, customer integration pertains to organisational practices aimed at identifying, interpreting, and utilizing customer needs to develop product and service offerings and ultimately increase customer satisfaction (Bodendorf et al. 2023). In order to attain superior levels of customer orientation, a business must exert more effort in obtaining information from its client base. This requires prompt adaptation to dynamic shifts in customer needs (Qu and Liu 2022). Increased customer integration leads to heightened customer value, as it facilitates better detection of needs, improved customisation, and greater customer engagement (Otchere-Fianko et al. 2023). In the hotel context, internal customers encompass various facets, including the utilisation of technologies that facilitate efficient and personalised customer interactions and proactive communication. This provides feedback on how to improve services and identify emerging needs.

Tu et al. (2006) defined absorptive capacity as an organisational mechanism that facilitates the identification, communication, and assimilation of both external and internal knowledge. In this context, internal integration and external integration require the hotel to have the ability to effectively communicate and assimilate an understanding of customers and their needs as well as the know-how to integrate their processes and suppliers, engaging in a more productive collaboration. According to Tarifa-Fernández et al. (2019), performance relies not solely on obtaining information and knowledge but also on the efficiency with which such information and knowledge are assimilated and applied within the decision-making and business processes relevant to customer and supplier integration. Absorptive capacity serves as a mechanism to productively use external knowledge for company benefit. It is a dynamic process that engages in frequent robust interactions within and beyond the organisation (Molina-Morales and Martínez-Fernández 2010; Tzokas et al. 2015). Therefore, absorptive capacity can improve both internal and external integration. According to Kim (2013), sharing effort is a prerequisite for creating synergies in SCI; therefore, a business must develop capabilities for acquisition and assimilation related to absorptive capacity. A high level of absorptive capacity provides firms with stronger learning mechanisms and facilitates more productive and stable communication with suppliers and customers when exchanging knowledge, according to Tarifa-Fernández et al. (2019). Similarly, Alkalha et al. (2019) highlighted the importance of absorptive capacity in the application of supply chain practices for acquiring, assimilating, transforming, and exploiting strategic and operational knowledge to enhance SCI quality.

One of the essential processes within SCI is information sharing to enhance value creation (Kotzab et al. 2023). To share information effectively, absorptive capacity skills are crucial. Thus, it is necessary to assimilate information regarding customers and suppliers from the market before sharing it. Absorptive capacity helps improve organisational compatibility with suppliers by strengthening supplier integration (Sáenz et al. 2014). Knowledge sharing among supply chain partners is crucial for achieving supply chain success (Martínez-Sánchez and Lahoz-Leo 2018). The cultivation of communication skills enables and encourages the exchange of knowledge and other skills, thereby fostering internal integration among the essential functions of the organisation (Wong et al. 2007; Lii and Kuo 2016). Shared information from various departments within the company facilitates teamwork, while a mutual understanding of responsibilities enhances the assimilation and utilisation of knowledge, resulting in more effective decision making and seamless internal integration (Tarifa-Fernández et al. 2019).

Alignment functions and coordination are prominent features of internal integration that are determined by the application and effectiveness of absorptive capacity (Gölgeci and Kuivalainen 2020). According to Martínez-Sánchez and Lahoz-Leo (2018), companies with higher levels of absorptive capacity can identify market changes more quickly because they are more sensitive to capturing new customer needs, anticipating competitor movements, embracing new business areas, etc. The authors suggested that greater understanding of areas such as demand information processing can help companies better focus on customers and improve customer integration. A higher absorptive capacity leads to greater assimilation and acquisition capacity as well as improved transformation and exploitation. Consequently, the hotel can identify customer needs more effectively and achieve better customer integration. In summary, the lack of absorptive capacity could result in the inability to appropriately choose suppliers/customers and establish a satisfactory relationship, ultimately impeding SCI (Tarifa-Fernández et al. 2019).

Based on the above reasoning, the following hypotheses are proposed:

**Hypothesis 1 (H1).** Absorptive capacity positively influences SCI.

**Hypothesis 1a (H1a).** Absorptive capacity positively influences internal integration.

**Hypothesis 1b (H1b).** Absorptive capacity positively influences supplier integration.

**Hypothesis 1c (H1c).** Absorptive capacity positively influences customer integration.

### *2.2. Absorptive Capacity and Service Performance*

The resource-based view of the firm (RBV) acknowledges the importance of firm knowledge as a critical resource for achieving a competitive advantage over competitors (Martínez-Sánchez and Lahoz-Leo 2018). When an organisation exploits assimilated knowledge by converting and implementing it into actions, it enhances efficiency and performance through continuous learning (Sáenz et al. 2014). Absorptive capacity leverages the essential resources inherent in a firm's relationships, enabling their effective deployment to attain a competitive advantage (Martínez-Sánchez and Lahoz-Leo 2018; Bouguerra et al. 2022). Knowledge exploitation correlates with the capture of opportunities and competitive edge in terms of firm performance (Lim and Ok 2023). Kotabe et al. (2011) suggested that a lack of absorptive capacity to internalise knowledge from external sources to fit their own needs and practices does not enhance the performance of new products in the market. Absorptive capacity is a dynamic capacity that determines the degree to which firms can effectively utilize information obtained from their environment. (Yildiz et al. 2021).

One of the crucial aspects of service performance is providing high-quality and personalised service while ensuring prompt delivery of necessary changes to customers. To achieve this, the company needs to effectively process market information to capture both current and future customer needs (Hult et al. 2005). Therefore, absorptive capacity is vital in selecting customers and identifying their needs, which ultimately leads to enhanced customer value (Tzokas et al. 2015). According to F. Liu et al. (2021), absorptive capacity increases flexibility, enabling the company to better adapt to changes in the environment and provide a greater variety of services to customers. According to Martínez-Sánchez and Lahoz-Leo (2018) firms with high absorptive capacity acquire, assimilate, transform, and apply knowledge to obtain a better position and achieve superior performance. A wide range of products is also a determinant factor in achieving superior performance. Also, Tzokas et al. (2015) suggested that a firm's flexibility to respond to market changes can be hindered by obstacles to the development of absorptive capacity. The creation of a diverse array of services requires a fusion of internal and external knowledge, where absorptive capacity is linked to an organisation's ability to innovate, leading to the introduction of more products and services than entities with a lower absorptive capacity (Chen et al. 2009; Tzokas et al. 2015). According to Lew and Liu (2016), knowledge acquisition and assimilation mechanisms may contribute to the organisation's attainment of superior innovation

performance concerning new products and services. Liu et al. (2018), Harvey et al. (2010), and Flatten et al. (2011) demonstrated that absorptive capacity boosts a firm's performance. Therefore, based on the aforementioned literature, we propose the following hypothesis:

**Hypothesis 2 (H2).** Service performance increases with higher absorptive capacity.

### 2.3. Supply Chain Integration (SCI) and Service Performance

Leuschner et al. (2013) reported positive results from the majority of empirical studies that examined the relationship between SCI and performance in their meta-analysis study. However, the studies varied in their performance measurement techniques (Tarifa-Fernández and De Burgos-Jiménez 2017). Ataseven and Nair (2017) found that certain authors utilise one scale to gauge performance, while others employ multiple scales, including flexibility, delivery, productivity, time to market, and efficiency. Organisations have recognised that the development of SCI strategies improves their competitive advantage (Oubrahim et al. 2023). Joint coordination, collaboration, and a culture of cooperation render SCI both inimitable and a source of competitive advantage (Abdallah et al. 2023). Applying the RBV argument to SCI suggests that the integration of processes between supply chain partners and departments comprises a set of resources that could be unique and difficult to imitate, resulting in relational rent (Dyer and Singh 1998). This cooperation among members of the supply chain can enhance service performance and attain a competitive edge (Cao and Zhang 2011). Hence, RBV implies that there exists a favourable correlation between SCI and operational performance.

Developing internal integration allows breaking down functional barriers to improve communication. Teamwork allows for the achievement of joint planning and decision making (Flynn et al. 2010). Internal integration improves processes, reducing duplicated and non-value-added activities (Agyei-Owusu et al. 2022). This leads to companies being able to better fulfil customer needs and achieve operational improvements, resulting in higher profits (Xu et al. 2014). As integration between different functions of a firm increases, so does the quality, flexibility, and delivery performance (Wong et al. 2011; Lii and Kuo 2016).

Huo (2012) suggested that forming strategic partnerships with suppliers can enhance their comprehension of the organisation's needs and, in turn, lead to better service provision. This beneficial situation may lead to a decrease in opportunistic actions, thus resulting in an improvement in service performance. Integration between suppliers and customers fosters collaboration and conflict resolution, ultimately aiding in resolving disagreements between firms in terms of goals (Wong et al. 2011). Previous research has linked supplier integration to improved product quality, flexibility, and delivery (Rosenzweig et al. 2003; Wong et al. 2011). Collaborating with suppliers through information sharing or joint decision making can lead to better outcomes, such as higher quality services and increased flexibility (Wong et al. 2017). Close interactions with key suppliers speeds up the development of new products, enhances delivery processes, bolsters customer satisfaction, and ultimately boosts overall business performance (Chen et al. 2023).

Customer integration enhances collaboration, facilitates streamlined information flow, and promotes shared decision making, resulting in increased responsiveness to demand, improved quality, delivery, and end-customer satisfaction (Alkalha et al. 2019). Moreover, integration with customers provides better insight into their needs, enabling the hotel to enhance its products and services and further improve service performance. Authors demonstrate a positive correlation between customer integration and multiple operation performance factors such as quality, flexibility, and delivery, all related to service performance (Flynn et al. 2010; Wong et al. 2011; Chavez et al. 2015; Chen et al. 2023). Based on the above, the following hypotheses are proposed:

**Hypothesis 3 (H3).** The higher the SCI, the greater the service performance.

**Hypothesis 3a (H3a).** The greater the internal integration, the greater the service performance.

**Hypothesis 3b (H3b).** The greater the supplier integration, the greater the service performance.

**Hypothesis 3c (H3c).** The greater the customer integration, the greater the service performance.

Based on the hypotheses presented above, we propose a model that examines the relationship between absorptive capacity, SCI, and service performance (see Figure 1). The model is based on the resource-based view. The resource-based view suggests that organisational practices can be considered resources for acquiring sustained competitive advantage (Chae et al. 2014). In this sense, absorption capacity is a higher-order capability that should enable SCI and competitive advantage by increasing service performance. The RVB assumes that the hotel emphasises the relevance of integration and collaboration in intra- and inter-organisational supply chain activities to increase service performance and consequently competitive advantage. Therefore, hotels should seek to operate jointly, integrating with their suppliers and with their customers in order to improve externally procured services and meet the needs of the guests who come to the hotel.

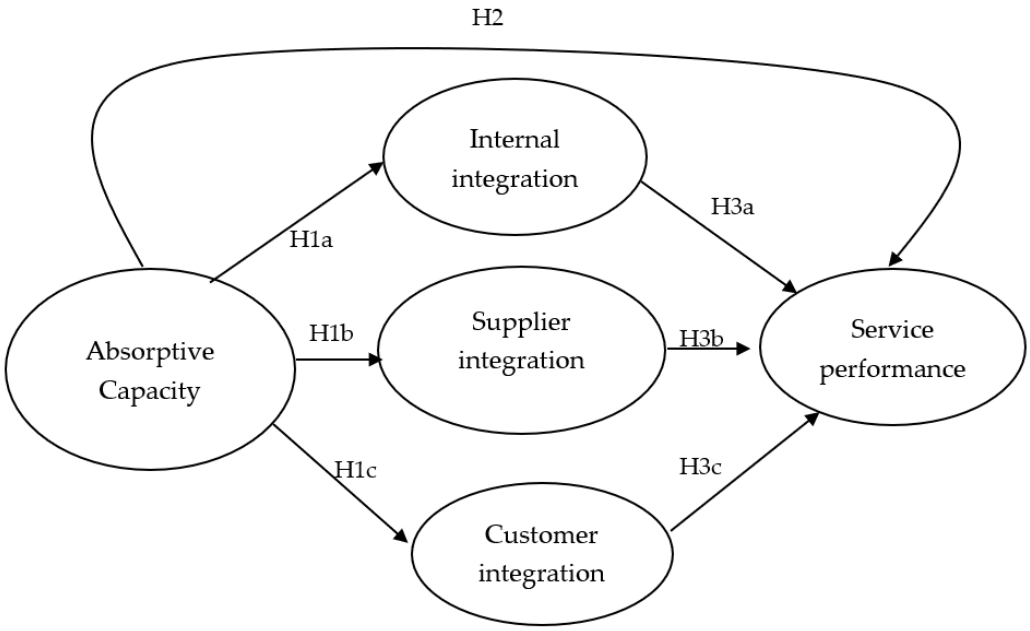


**Figure 1.** Conceptual Model.

## 3. Methodology

### *3.1. Sample*

The study focuses on the Egyptian hotel sector. Numerous tourist areas and clusters exist in Egypt. Specifically, two sun and beach tourism areas were selected: Sharm el Sheikh and Hurghada. The Egyptian Ministry Tourism's databases were consulted to identify 149 hotels classified as four- and five-star accommodations.

The survey was originally composed in English and later translated into Arabic. Prior to the survey, a preliminary test was conducted. To enhance the clarity of the survey items, two researchers and two practitioners reviewed the items. Subsequently, a researcher carried out the personal surveys, and 114 hotels agreed to take them. Specifically, 43 of these hotels hold a four-star rating, while 71 are classified as five-star hotels. This represents a 76.5% response rate, ensuring the population in the studied areas is representative. One of the researchers worked in the Egyptian Ministry of Tourism, which streamlined communication with the hotels and boosted participation. Once the appointment was made, the researcher went to the hotel to carry out the survey with a member of the hotel staff. The researcher arranged appointments with the hotels to administer the questionnaire, which

was completed by hotel managers (28), assistant managers (58), and heads of departments (28), each possessing sufficient knowledge to answer the questionnaire. Initially, the manager or assistant manager was contacted, but in cases where it was not possible to arrange a meeting with them, department heads were consulted. In instances where the latter were unsure of certain answers, they reached out to other colleagues for clarification.

Several papers analysing aspects other than those outlined in this paper (Gebril-Taha and Espino-Rodríguez 2020; Espino-Rodríguez and Gebril-Taha 2022) were extracted from this database. These papers are related to SCI and organisational culture as well as SCI, supplier innovativeness, and sustainability performance.

### 3.2. Measurement of the Variables

A survey was created to evaluate various constructs related to absorptive capacity (AC), supply chain integration (SCI), and service performance (SP). The items in each construct were assessed using a Likert scale ranging from 1–7, with 1 indicating significant disagreement and 7 indicating significant agreement with the statement. Therefore, the type of research undertaken is quantitative.

Absorptive capacity was assessed using an 11-item scale previously employed by Sáenz et al. (2014). This scale encompasses variables associated with the assimilation, exploration, and exploitation of knowledge derived from external sources. Likewise, the evaluation of SCI, composed of internal integration, supplier integration, and customer integration, was conducted using six, seven, and six items, respectively. This scale has been implemented in previous works on SCI (Zhao et al. 2013; Cao et al. 2015). To assess service performance, a 12-item scale designed for the hotel industry was employed. The scale gauges competitive capabilities associated with operations management (Espino-Rodríguez 2016), taking into account factors such as flexibility, delivery, service, and quality. The items associated with each construct can be found in the Appendix A.

## 4. Analysis and Results

The study aimed at exploring the relationship between absorptive capacity, SCI, and service performance. The study tested the hypotheses using the partial least squares–structural equation modelling (PLS-SEM) technique and SmartPLS software version 4.0 (Ringle et al. 2022). PLS-SEM is an appropriate method for analysing data with small sample sizes or non-normal distributions. The analysis consisted of two steps: evaluating the measurement model and assessing the structural model (Henseler et al. 2009).

### 4.1. Measurement Model

The measurement model assesses the reliability of items and constructs as well as convergent validity and discriminant validity (Henseler et al. 2009; Hair et al. 2017).

According to Carmines and Zeller (1979), loadings ought to exceed 0.707. This is not very flexible according to Tenenhaus et al. (2005), who suggested that 0.5 is a satisfactory value. The majority of item loadings surpass 0.707, and variables with loadings below 0.5 were discarded. As a result, for the absorptive capacity variable, 10 items were utilised. All items were used for the service performance variable, while all but two items were used for SCI. Most of the items have a score higher than 0.761. Internal consistency for the constructs was assessed using Cronbach's alpha and composite reliability (CR). As shown in Table 1, the Cronbach's alpha for all constructs ranges between 0.876 and 0.968, while the values of the composite reliabilities range between 0.884 and 0.975. Thus, these values are greater than the minimum required threshold of 0.70. To assess convergent validity, we utilised the average variance extracted (AVE) (Fornell and Larcker 1981). All variables exhibit an AVE exceeding 0.50, with values ranging from 0.561 to 0.769, confirming convergent validity. Regarding discriminant validity, it can be inferred from Table 2 that the square root of the AVE measure (main diagonal) is higher in most of the correlations than the correlations between the constructs, indicating the presence of discriminant validity.

**Table 1.** Evaluation of the measurement model.

| | Items | Loading | Alpha | Composite Reliability | Variance Extracted (AVE) |
|---|---|---|---|---|---|
| Absorptive capacity | AC_1 | 0.556 | 0.912 | 0.927 | 0.561 |
| | AC_2 | 0.789 | | | |
| | AC_3 | 0.680 | | | |
| | AC_4 | 0.811 | | | |
| | AC_5 | 0.756 | | | |
| | AC_6 | 0.766 | | | |
| | AC_7 | 0.816 | | | |
| | AC_8 | 0.756 | | | |
| | AC-9 | 0.731 | | | |
| | AC-10 | 0.795 | | | |
| Customer integration | CIN_1 | 0.763 | 0.887 | 0.917 | 0.690 |
| | CIN_2 | 0.876 | | | |
| | CIN_3 | 0.859 | | | |
| | CIN_4 | 0.810 | | | |
| | CIN_5 | 0.840 | | | |
| Supplier integration | SIN_1 | 0.800 | 0.876 | 0.884 | 0.565 |
| | SIN_2 | 0.720 | | | |
| | SIN_3 | 0.616 | | | |
| | SIN_4 | 0.582 | | | |
| | SIN_5 | 0.842 | | | |
| | SIN_6 | 0.898 | | | |
| Internal integration | IIN_1 | 0.828 | 0.909 | 0.932 | 0.733 |
| | IIN_2 | 0.874 | | | |
| | IIN_3 | 0.827 | | | |
| | IIN_4 | 0.886 | | | |
| | IIN_5 | 0.866 | | | |
| Service performance | SP_1 | 0.824 | 0.972 | 0.975 | 0.769 |
| | SP_2 | 0.784 | | | |
| | SP_3 | 0.868 | | | |
| | SP_4 | 0.898 | | | |
| | SP_5 | 0.915 | | | |
| | SP_6 | 0.889 | | | |
| | SP_7 | 0.924 | | | |
| | SP_8 | 0.897 | | | |
| | SP_9 | 0.907 | | | |
| | SP_10 | 0.922 | | | |
| | SP_11 | 0.913 | | | |
| | SP_12 | 0.761 | | | |

**Table 2.** Fornell–Larcker criterion.

| Variables | AC | CIN | SIN | IIN | SP |
|---|---|---|---|---|---|
| Absorptive capacity | **0.749** | | | | |
| Customer integration | 0.749 | **0.831** | | | |
| Supplier integration | 0.452 | 0.333 | **0.752** | | |
| Internal integration | 0.724 | 0.827 | 0.293 | **0.856** | |
| Service performance | 0.750 | 0.741 | 0.361 | 0.730 | **0.877** |

### *4.2. Structural Model*

After validating the model, we evaluated the structural model using a non-parametric bootstrap resampling test with 500 iterations to determine the explained variance ($R^2$), standardised path coefficients (β) and their significance, as well as the $Q^2$ values and Tenenhaus goodness of fit (GoF) (Hair et al. 2017). The $R^2$ values represent the explained variance of the dependent variables and range from 20.4% to 65.4%, making them significant and greater than at least 10% (Falk and Miller 1992) (see Table 3). Furthermore, to assess predictive validity, we utilised Stone–Geisser $Q^2$, which recommends all $Q^2$ values be greater than zero (Hair et al. 2017). The $Q^2$ values in our model range from 0.175 to 0.552, indicating strong predictive validity. To assess the goodness of fit, we used the Tenenhaus goodness-of-fit (GoF) indicator, which involves calculating the geometric mean of the AVE by the average $R^2$. The resulting value of 0.584 is above the threshold of 0.36, indicating a good fit. Tenenhaus et al. (2005) suggested that, if the value is higher than 0.36, the model has high descriptive power.

**Table 3.** $R^2$ and $Q^2$.

| Variables | $R^2$ | $Q^2$ |
|---|---|---|
| Absorptive capacity | --- | --- |
| Customer integration | 0.560 | 0.544 |
| Supplier integration | 0.204 | 0.175 |
| Internal integration | 0.524 | 0.510 |
| Service performance | 0.654 | 0.552 |

Hypothesis 1 examines the correlation between absorptive capacity and SCI. The results of Table 4 reveal a significant and positive association between absorptive capacity and internal integration, supplier integration, and customer integration (β = 0.724, $p$ = 0.000; β = 0.452, $p$ = 0.000; β = 0.749, $p$ = 0.000). Thus, higher absorptive capacity leads to greater SCI, which supports hypotheses 1a, 1b, and 1c. In addition, hypothesis 2 investigates the relationship between absorptive capacity and service performance. The findings indicate a strong and positive association between the two variables (β = 0.369, $p$ = 0.000). This suggests that the better the absorptive capacity, the stronger the service performance. Consequently, hypothesis 2 is supported. Regarding the impact of SCI and service performance (hypothesis 3), the results demonstrate a positive correlation between internal integration, customer integration, and service performance (β = 0.246, $p$ = 0.005; β = 0.249, $p$ = 0.005). As a result, hypotheses 3a and 3c are supported. In contrast, the data indicate that supplier integration and service performance do not have a significant relationship (β = 0.039, $p$ = 0.274). Therefore, hypothesis 3b cannot be accepted.

**Table 4.** Hypotheses testing.

| Hypotheses | β | *p* | Student's t | Decision |
|---|---|---|---|---|
| Absorptive capacity → Internal integration (H1a) | 0.724 | 0.000 | 16.29 | Accepted |
| Absorptive capacity → Supplier integration (H1b) | 0.452 | 0.000 | 6,67 | Accepted |
| Absorptive Capacity → Customer integration (H1c) | 0.749 | 0.000 | 19.76 | Accepted |
| Absorptive capacity → Service performance (H2) | 0.369 | 0.000 | 3.65 | Accepted |
| Internal integration → Service performance (H3a) | 0.246 | 0.005 | 2.60 | Accepted |
| Supplier integration → Service performance (H3b) | 0.039 | 0.274 | 0.60 | Rejected |
| Customer integration → Service performance (H3c) | 0.249 | 0.005 | 2.57 | Accepted |
| Model Fit | Tenenhaus GoF (GoF) = 0.584, small ≥ 0.1, medium ≥ 0.25, large ≥ 0.36 | | | |

## 5. Conclusions

This study aims to examine the influence of absorptive capacity on SCI and service performance. Our findings suggest that absorptive capacity has a positive effect on SCI. Limited research has been conducted on this relationship in the context of the hotel sector, making it challenging to compare our results with similar studies. However, it is worth noting that the majority of comparable studies used to benchmark our findings have been conducted in other industries, given the near absence of similar studies in the hotel sector. Nevertheless, Bodendorf et al. (2023) demonstrated that the lack of information sharing and planning capabilities are among the primary obstacles to developing SCI. Capacities need to be increased to better comprehend and assimilate external information in order to enhance SCI. The findings align with Martínez-Sánchez and Lahoz-Leo's (2018) study, which demonstrates a positive correlation between absorptive capacity and supply chain agility. Thus, absorptive capacity enhances the ability to respond quickly to market shifts and improves efficiency and effectiveness in decision making, ultimately leading to an increase in SCI. Although many authors did not directly analyse SCI, they did examine essential factors of integration via agility. Alkalha et al. (2019) found that companies can enhance their capacity for absorbing knowledge from supply chain partners and exploiting that knowledge through integrations with both suppliers and customers, leading to improved products and services. The researchers evaluate the positive and significant relationship between absorptive capacity and SCI across all three dimensions. The findings indicate that a hotel's ability to exploit, explore, and assimilate external knowledge can foster stronger partnerships with both customers and suppliers. These capacities are demonstrated by improving and identifying customer needs, leading to enhanced hotel services. Absorptive capacity also promotes communication and coordination among hotel departments, enhancing internal integration. As a result, companies with absorptive capacity can assimilate knowledge and technology, improving the supply chain.

In addition, the findings indicate that absorptive capacity enhances service performance. Although in the hotel sector, as stated above, there are very few studies, Kale et al. (2019) demonstrated that a firm's performance is improved by its absorptive capacity in relation to information assimilation, transformation, and exploitation. In other sectors, such as industry, authors including Tzokas et al. (2015), Flatten et al. (2011), and Wales et al. (2013) proposed and validated that absorptive capacity enhances overall firm performance, leading to competitive advantage. Furthermore, Martínez-Sánchez and Lahoz-Leo (2018) provided evidence that absorptive capacity has a positive impact on firm performance. The results suggest that hotels with a higher capacity for assimilating, exploiting, and exploring knowledge perform better in terms of flexibility, delivery, quality, and service. Therefore, hotels with a better absorptive capacity perform better with regard to quality, customer satisfaction, adaptability, and a more personalised service. This is essential for a competitive advantage, and it contributes to the success and profitability of the business.

The findings demonstrate that the service performance is enhanced through two out of three integration types, specifically internal and customer integration. Scientific research conducted by Lii and Kuo (2016) and Wong et al. (2011) showed that SCI improves operational performance. In a similar manner, Alfalla-Luque et al. (2015) revealed that SCI advances customer satisfaction. These outcomes are consistent with analogous studies, although those were carried out in other sectors like the industrial segment. When a hotel achieves greater supply chain integration, it positively impacts the quality and performance of its services for customers, specifically hotel guests. Through greater customer and internal integration, service quality and performance improve. Viewing customers as partners in the service production process results in enhanced service performance. Internal integration improves departmental coordination by functioning as a cohesive unit within the hotel, ultimately leading to a positive impact on service performance. There is no evidence that improved integration with suppliers enhances service performance. By contrast, El Mokadem and Khalaf (2023) evidenced that supplier integration improves operational performance in manufacturing firms. Conversely, our study on the hotel sector revealed that supplier integration does not lead to an improvement in service performance. This could be due to an over-reliance on suppliers, and interorganisational relationships with suppliers may not result in enhanced service performance. It may also be due to a scarcity of suppliers who meet the specific needs of hotels. Thus, this study, which focused on the hotel sector, indicates that supplier relationships do not significantly influence service performance, as this depends more on internal and market factors related to customers. Therefore, increased integration of the supply chain in a hotel may result in more efficient management of food and beverage supplies, improved coordination in cleaning and room maintenance, and more effective management of human resources. In addition, it could enhance the hotel's capability to meet guests' needs promptly. All of these advantages combined could lead to an enhanced service experience for hotel guests. The results show that absorption capacity improves SCI. This indicates that it allows for better integration with customers and suppliers as well as improved coordination between departments. It is also shown that absorption capacity improves service performance. On the other hand, supplier integration will not improve service performance as much as internal and customer integration. This would indicate that hotels should strengthen their supplier relationships for outsourced activities. On the other hand, detecting the needs of customers and integrating with them improves service performance and enhances competitiveness. These results fulfil the theoretical premises of the resource-based view.

### *5.1. Theoretical and Practical Implications*

From a theoretical perspective, this paper enhances the literature on absorptive capacity by proposing various hypotheses related to SCI and service performance. It presents empirical evidence of a correlation between absorptive capacity, SCI, and service performance while also examining how SCI affects service performance. This study makes a valuable contribution to understanding how absorptive capacity can become a competitive advantage. All of this pertains to the context of the hotel industry, an area which has not yet been sufficiently analysed. The subsequent practical implications are as follows:

(1) There is a correlation between absorptive capacity, SCI, and service performance. As a result, managers should acknowledge this relationship and take steps to boost absorptive capacity. This can be accomplished through the promotion of employee talent development, which enables them to identify, comprehend, and assimilate knowledge. Fostering a culture of continuous learning and improvement is crucial to help employees understand and learn about technological tools that can enhance their knowledge, including artificial intelligence and data management solutions;
(2) Managers should comprehend the significance of absorptive capacity by promoting external and internal collaboration, nurturing innovation and knowledge management, and keeping abreast of market trends. These actions will lead to improved service performance and boost the hotel's business success;

(3) Hotels ought to implement protocols and procedures that fortify robust connections with suppliers and clientele, resulting in an enhancement of the service performance. Equally important, managers should oversee a cohesive and coordinated staff that permits seamless internal integration enabling the provision of exceptional experiences and satisfactory service while simultaneously upholding the hotel's unequivocal reputation and customer loyalty.

### 5.2. Limitations and Future Research

This paper acknowledges limitations that justify the need for further research on the analysed topics, with the objective of producing more valuable insights for the tourism sector. The study should also be extended to other relevant industries within tourism, including restaurants, intermediaries, and service providers. The results obtained are applicable solely to the hotel industry in the selected destination. It is recommended that future research apply these principles to other tourism destinations to compare results. It is essential to explore various other dynamic capacities apart from absorptive capacity, including adaptive capabilities or innovative capacity. Although this study was based on the assumption that absorptive capacity is a higher-order capacity that may affect SCI, further research could investigate how SCI influences the development of absorptive capacity in the opposite direction. A qualitative study may offer insights into these matters.

It is also crucial to examine whether such capabilities moderate the link between SCI and absorptive capacity. In addition, the study's viewpoint was that of managers, which poses a risk of subjective interpretation in the outcome analysis. Therefore, studies are necessary from the viewpoints of both customers and suppliers, with a focus on customer perspective to assess service performance. Finally, conducting longitudinal studies is crucial to accurately understand the cause-and-effect connections presented in the hypotheses.

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## Appendix A

| Code | Factors |
|---|---|
| | **Absorptive capacity** |
| **AC_1** | We and our service providers make joint decisions on cost reduction programmes. |
| **AC_2** | We and our service providers make joint decisions on quality programmes. |
| **AC_3** | We and our service providers make joint decisions on production schedules. |
| **AC_4** | We share the changing tastes of our customers with external suppliers. |
| **AC_5** | We share changes in technology with external suppliers. |
| **AC_6** | We share changes in market structures (mergers, alliances, acquisitions, etc.) with external suppliers. |
| **AC_7** | We share changes in hotel strategies and policies with external suppliers. |
| **AC_8** | Ideas and concepts obtained from external sources are quickly analysed and shared. |

| Code | Factors |
|---|---|
| **AC_9** | We work together across the hotel to interpret and understand external information. |
| **AC_10** | In our organisation, external information is exchanged quickly between the business unit. |
| **--------** | We usually organise and conduct meetings to discuss new ideas. |
| | **Customer integration** |
| **CIN_1** | We are frequently in close contact with our customers. |
| **CIN_2** | Our customers give us feedback on our quality. |
| **CIN_3** | Our customers are actively involved in our product design process. |
| **------** | We work as a partner with our customers. |
| **CIN_4** | We strive to be highly responsive to our customers' needs. |
| **CIN_5** | We regularly survey our customers' needs. |
| | **Supplier integration** |
| **SIN_1** | We maintain cooperative relationships with our outsourcing suppliers. |
| **SIN_2** | We help our outsourcing suppliers to improve their quality. |
| **SIN_3** | We maintain close communication with outsourcing suppliers about quality considerations and design changes. |
| **SIN_4** | Our outsourcing suppliers are actively involved in our new product and development process. |
| **SIN_5** | Our key outsourcing suppliers provide input into our product development projects. |
| **SIN_6** | We strive to establish long-term relationships with outsourcing suppliers. |
| **----** | We actively engage outsourcing suppliers in our quality improvement efforts. |
| | **Internal integration** |
| **IIN_1** | The hotel departments frequently communicate with each other. |
| **IIN_2** | The hotel departments work well together. |
| **-----** | The hotel departments cooperate to solve conflicts between them when they arise. |
| **IIN_3** | The hotel departments coordinate their activities. |
| **IIN_4** | The hotel departments work interactively with each other. |
| **IIN_5** | Hotel employees work in teams as members of a variety of areas to introduce to new services |
| | **Service performance** |
| **SP_1** | We offer rapid introduction of new services quickly. |
| **SP_2** | My hotel offers a broad services line. |
| **SP_3** | Customization services to individual customer needs. |
| **SP_4** | Rapid changes in the current design of services. |
| **SP_5** | Rapid changes in the amount of goods/services. |
| **SP_6** | Level of quality offered to the customer. |
| **SP_7** | Offer a high level of performance in the service. |
| **SP_8** | We offer our service with low defects or complaints. |
| **SP_9** | Speed in providing in the service. |
| **SP_10** | Shortening of queues in the hotel's front-office departments. |
| **SP_11** | Fast deliveries in the services offered by the hotel. |
| **SP_12** | Promptly handle customer complaints. |

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

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