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Research Paper

Innovativeness, Innovation Behaviour and Performance in the Portuguese Hotel Industry

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Abstract: This work investigates hotel innovation activity based on 11 hotel-specific innovation dimensions and antecedents. Results from a sample of 326 Portuguese hotels showed a high level of Innovativeness in the Portuguese hospitality industry. Information and Communication Technology, and Marketing were the leading innovation areas. The moderate level of Innovation Behavior demonstrates the dominance of incremental innovations. Hotel Size, Hotel Stars, Hotel Chain, and Personnel Training are significantly related to Innovation Behavior. Hotel Innovativeness positively impacted hotel Innovation Behavior, and hotel Innovation Behavior positively impacted hotel Performance. These findings provide both scholars and practitioners with relevant insights into hotel innovation in Portugal.

Keywords: Hotel innovation, hospitality, innovation behavior, innovativeness, Portugal

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Introduction

Since the early 1960s up until the COVID-19 pandemic hit the world, the contribution of the tourism industry to the world economy has seen a continuous growth. Such growing importance has brought about stiff competitiveness within the tourism sector, where innovation has become an indispensable factor of viability and survival (Sundbo, Orfila-Sintes, & Sørensen, 2007). Now more than ever, to navigate the uncertain hospitality landscape, hotels need to invent new and innovative strategies to restore consumer confidence (Sharma, Shin, Santa-María, & Nicolau,

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2021) and adopt advanced technologies to build resilience (Osei, Ragavan, Mensah, & Kandappan, 2020). In the recovery context, where innovation and change will hold the central place in firm strategies, it has become vital to understand better the connection between strategy and performance (Ebersberger, Herstad, & Nordli, 2021). Although service innovation has expanded into a large and dynamic research field over the last few decades, with an increased focus on tourism (Hjalager, 2010), different works have suggested that further empirical evidence about innovation in tourism is needed (Hjalager, 2010; Pivčević & Petrić, 2011). Thus providing researchers with a wide range of opportunities to fully understand the innovation phenomenon in the field of hospitality and tourism (Lelo de Larrea, Altin, Koseoglu, & Okumus, 2021). For instance, Pikemaat, Peters and Bichler (2019) highlighted the need for further studies regarding innovations in small tourism enterprises, eco-innovations and the relation between innovation and governance. Also, studies carried out during the COVID-19 pandemic have freshly suggested the need for further research about innovation, for example, regarding the impact of broader technology adoptions (Shin & Kang, 2020) and business mode innovations (Breier et al., 2021). Additionally, Domi, Capellaras and Musabelliu (2020) highlighted past studies calling for more research that considers both the attitudinal and the behavioral dimensions of innovation (Grissemann, Plank, & Brunner-Sperdin, 2013; Sandvik, Duhan, & Sandvik, 2014). Although the relationship between innovation and performance is widely studied in different industries, research regarding the impact of innovation on performance in hotel industry is still "far from exhaustive" (Hjalager, 2010), still in "the infant stage" (Ebersberger et al., 2021), and "still a puzzle" (Martin-Rios & Ciobanu, 2019). While an increasing number of works that have investigated this relationship found a positive relationship between innovation activity and hotel performance (e.g. Campo, Díaz, & Yagüe, 2014; Grissemann et al., 2013; Martin-Rios & Ciobanu, 2019; Orfila-Sintes & Mattsson, 2009; Orfila-Sintes, Crespí-Cladera, & Martínez-Ros, 2005; Pivčević & Petrić, 2011; Tseng, Kuo, & Chou, 2008), other contradictory or inconclusive results have emerged as well (e.g. Pikkemaat & Peters, 2005; Campo et al., 2014). Taking into consideration the scarcity, partly contradictory nature of the results, and also the differences in the measurement of innovation and performance, additional research in this field is needed.

Given the still relatively limited academic research with empirical evidence on innovation in hotels, our research intends to contribute to the growing body of knowledge on innovation in the hotel industry and the tourism industry in general. Empirical data was collected to study the impact of hotel innovativeness on hotel innovation behaviour and the impact of hotel innovation behavior on its business performance. The results provide a contribution on hotels' innovativeness (the attitudinal dimension of innovation), innovation behavior (the behavioral dimension of innovation) and the impact of innovation on hotel business performance.

Additionally, this research provides a relevant contribution regarding the Portuguese hotel industry and its innovation activity, hence laying the foundation for future in-depth studies and for possible cross-country comparisons. In terms of managerial implications, this study gives hotel owners/managers relevant insights about the innovation activity in their industry.

Literature Review

Innovation in Tourism

The majority of innovation studies in tourism used empirical evidence from the hospitality sector, mainly from accommodation businesses. Based on examples from Alpine small- and medium-sized hotels (Pikkemaat & Peters, 2005), and Croatian hotels (Pivčević & Petrić, 2011), previous literature concluded that innovation in tourism is moderate or non-existent (Hjalager, 2002). The lack of innovation in tourism companies is partly explained by its predominately small size, high employee turnover, semi-skilled labour, and lack of cooperation (Hjalager, 2002; Pikkemaat & Peters, 2005). The tourism industry is dominated by micro and small businesses (Hjalager, 2002) that lack the economies of scale and resources to invest in research and development activities, and do not favour cooperation and strategic alliances (Pikkemaat & Peters, 2005). In this respect, the bigger size of a chain and participation within it has been positively related to innovation success (Hjalager, 2002; Orfila-Sintes & Mattsson, 2009). Higher levels of knowledge, abilities, skills, and employee engagement positively impact the introduction of innovations (Grissemann et al., 2013; Nieves, Quintana, & Osorio, 2014). Employees, as the moderators for differentiating services, are considered a critical aspect of innovation, so high employee turnover and the predominance of semi-skilled labour in the tourism sector does not help to increase the level of innovation (Ottenbacher & Gnoth, 2005). However, when it comes to innovation in tourism companies, there is a lot of diversity between countries and within the sector. While Croatian and Alpine hotels have been found to have moderate levels of innovation, some studies have found higher levels of innovation in Spanish tourism companies (Orfila-Sintes et al., 2005; Sundbo et al., 2007), in hotels in Southern Thailand (Leekpai & Jaroenwisan, 2013), and in Swedish hotels (Wikhamn, Armbrecht, & Wikhamn, 2018). Similarly, there is some evidence of inter-sectorial differences within countries and between countries. For example, in a broad study of innovation in services conducted by Evangelista (2000) and based on empirical evidence from Italy, the innovation performance of hotels and restaurants was found to be lower than the innovation performance of travel and transport services which, in turn, is lower than the average of service companies. Hall (2009) showed that the percentage of innovating "accommodations, cafes and restaurants" in New Zealand was comparable to the average of all industries, and in

Australia, it was slightly above the average of all business sectors. According to the comparative study of Sundbo et al. (2007), the most innovative firms among Spanish tourism businesses are hotels, followed by leisure activity companies and restaurants. In Denmark, however, hotels and restaurants are found to be the least innovative, while tour operators and travel agencies are the most innovation oriented. Hence the conclusion that there are higher levels of innovativeness in tourism, and therefore, there is a need to promote innovation in tourism firms and carry out further research on innovation based on different sectors of the tourism industry in different countries (Hjalager, 2002; Sundbo et al., 2007; Zopiatis & Theocharous, 2018).

Innovation in the Hotel Industry

The tourism industry comprises a broad range of activities which include food and beverage, accommodation, events and conferences, adventure tourism and recreation, attractions, transportation, and travel trade and services. The hotel sector is the central activity within the tourism industry and involves a homogeneous set of companies with similar production functions (inputs, outputs and available technology) and a similar market environment (Orfila-Sintes et al., 2005). The highly competitive business environment forces hotels to constantly seek ways to improve quality and enhance their reputation as well as to decrease costs and increase sales. Modern-day better informed, and more demanding consumers constantly pressure tourism firms to develop new products, services, and experiences (Pikkemaat & Peters, 2005). In such a competitive and mature market, it is vital to consider hospitality innovation as a requirement and not merely as a strategic option (Alves, 2013) and, preferably, a requirement that can be met within a sustainable approach (Horng et al., 2018).

However, despite increasing awareness of the need for innovation and new developments in hotels, research and development regarding innovation in the hotel sector is still limited (Ottenbacher & Gnoth, 2005; Pikkemaat & Peters, 2005). According to Ottenbacher & Gnoth (2005), hospitality innovations, ranging from true innovations (totally new services for a new market) to fairly minor modifications to an existing service are, due to their intangible nature, difficult to monitor and evaluate. Futher, hotel industry innovations are characterised as supplier-dominated since innovating is frequently achieved by incorporating technological elements developed by suppliers (Hjalager, 2002). The more traditional ways of observing innovation in firms are not adequate for hotels since research and development is expensive and the number of licenses or patents registered in the hotel industry are few in comparison with other industries (Pikkemaat & Peters, 2005). The predominance of small businesses is a disadvantage in terms of innovation, research and product development (Pikkemaat & Peters, 2005). Additionally, the propensity for innovation of hotels has to be observed in the complex context of three dimensions specific to the hotel industry. These are: (a) *categorisation* (the existence of the "stars"

categorisation to determine service quality; (b) *governance model* (managed by owner, management contract, franchising, etc.), and (c) *chain organisation* (existence of hotel chains with a separate central office) (Orfila-Sintes et al., 2005).

Despite the limited research on innovation in the hotel industry, there has been increasing interest in this topic over the last two decades. Other studies, whilst comparing results from different service sectors (e.g. Chan, Go, & Pinte, 1998; Oke, 2007) have included the hotel industry in their service innovation research. Ottenbacher and Gnoth (2005) examined factors impacting innovation success in hotels. Still, other studies have focused on identifying different types of innovation activities, patterns and strategies (Guisado-González, Guisado-Tato, & Sandoval-Pérez, 2011; Tejada & Moreno, 2013; Presenza, Petruzzelli, & Sheehan, 2019), investigating determinants or factors impacting innovative behaviour (Eid & Agag, 2020; González-González & García-Almeida, 2021) and measuring the level or degree of innovativeness (Orfila-Sintes et al., 2005; Pikkemaat & Peters, 2005; Pivčević & Petrić, 2011). However, investigating the relationship between various aspects of innovation and performance in hotels is a recent subject of interest, as is the relationship between innovation types and performance (Oke, 2007; Orfila-Sintes & Mattsson, 2009; Tseng et al., 2008; Tweneboah-Koduah, Anning-Dorson, & Nyamekye, 2020), and between innovativeness and performance (Grissemann et al., 2013; Leekpai & Jaroenwisan, 2013; Oke, 2007; Pivčević & Petrić, 2011). Martin-Rios and Ciobanu (2019) highlighted the positive impact of innovation strategies on hotels, but only those of a complex nature that combine technological and non-technological items, tangible and intangible sources of innovation (Presenza et al., 2019). Hassi (2019) stressed the importance of empowering management innovation in the hospitality industry, while González-González and Gárcia-Almeida (2021) studied frontline employee-driven innovation in hotels. Additionally, some research has already been carried out about hotel innovation in the context of the COVID-19 pandemic e.g., assessing the utility of COVID-19 safety-related innovations from a shareholder perception perspective (Sharma et al., 2021; Shin & Kang, 2020) and from a business model innovation perspective (Breier et. al 2021).

Innovation Determinants

A variety of determinants can trigger and impact hotel innovation decisions and activity. In the hotel industry, an innovation can come from various sources, such as employee-orientation, technology-orientation, quality-orientation, competitor-orientation, and customer-orientation (Stegerean & Petre, 2013). Innovation activity is widely observed in the context of different factors, called innovation determinants, that can be either company-specific or market related. According to Orfila-Sintes et al. (2005), three hotel-specific characteristics, such as hotel *size*, *star category and governance model* are important determinants of innovation. The importance of size

and star category in hotel innovation has also been supported by Pikkemaat and Peters (2005) as well as Pikkemaat and Weiermair (2007). Additionally, Orfila-Sintes and Mattson (2009) observed the influence of *channel of commercialization* and *focus on hotel specialization* on innovation activity. Orfila-Sintes and Mattson (2009) also highlighted the following three groups of key determinants: *service provider characteristics* (size, use of assets, additional services); *customer competences* (travel motive, booking way, and board preference); and *market drivers* (competitive strategy). Tejada and Moreno (2013) proposed four determinant factors of innovation, such as *size*, *capital structure*, *cooperation* and *dependency on tour-operators*. The impact of hotel size on innovation is frequently examined and usually supports the idea that the larger the hotel, the more innovative it is (Orfila-Sintes & Mattson, 2009; Orfila-Sintes et al., 2005; Pikkemaat & Peters, 2005). However, some contrasting results have also been reported. For example, Pivčević and Praničević (2012) found no statistically significant relationship between hotel size and innovation based on Croatian hotels. Similarly, the findings of Tejada and Moreno (2013) showed a lack of evidence to support the importance of size (in number of employees) as an innovation predictor.

Furthermore, *human capital quality* and *practices* have been related to higher innovation activity in hotels (Chang, Gong, & Shum, 2011; Nieves & Segarra-Cirpés, 2015), and the role of human capital as an antecedent of knowledge creation and innovation is emphasised in the literature (Nieves & Segarra-Cirpés, 2015). Grissemann et al. (2013) concluded that employee engagement, that is, permanent training and empowerment of employees, encourages innovation activities and, in line with the findings of De Jong, Bruins, Dolfsma and Meijaard (2003), emphasising the importance of implementing structured training and investing in the training of employees. The findings of Nieves and Segarra-Cirpés (2015) suggest that employees with high levels of knowledge, abilities, and skills play an important role in introducing innovation. Similarly, Chang et al. (2011) found a significant positive relationship between hiring "multi-skilled core customer-contact" employees and innovation, as well as between training "core customer-contact employees for multi-skills" and innovation. Further, Eid & Agag (2020) found that both institutional pressures and corporate support are determinants of innovative behaviour, having a positive impact on individual employees' innovative behaviour.

Innovation Patterns

A number of studies have aimed to investigate the innovation patterns or configuration of innovation types in the hotel industry. Some have defined, in line with the Oslo Manual, four types of innovation: *product*, *process*, *marketing*, and *organisational innovation* (Pivčević & Petrić, 2011; Tejada & Moreno, 2013; Zach, Krizaj, & McTier, 2018), or made a distinction between radical and incremental

innovations (Martínez-Ros & Orfíla-Sintes, 2009). Hjalager (2002) proposed a model categorising innovation levels in tourism using core competences as the unit of analysis. According to this model, four types of innovations can be identified as follows: *regular innovations*, *niche innovations*, *architectural innovations*, and *revolutionary innovations* (Hjalager, 2002; Pikkemaat & Peters, 2005). Given the supplier-driven nature and importance of human resources for hotels, innovation activities have also been formulated based on the following three different sources: *technological*, *organisational*, and *human capital innovation* (Tseng et al., 2008). For the specific context of the hotel industry, Orfila-Sintes and Mattson (2009) proposed a model of four types of innovation: (1) *management* (quality of management processes); (2) *external communication* (high information-tangible content); (3) *service scope* (service output); and (4) *back-office* (new technologies for productivity improvement). Some authors have also examined innovation performance through the existence of innovation strategies (e.g. Guisado-González et al., 2011) and strategic management processes (Martínez-López & Vargas-Sánchez, 2013).

Innovativeness and Innovation Behaviour

Innovation is "the successful application of new ideas" (Dodgson, Gann, & Phillips, 2013, p.5). Companies adopt innovations because of their contribution to performance and effectiveness through better solutions and further product development (Damanpour, 1991; Tseng et al., 2008). Zaltman, Duncan and Holbeck (1973) divided innovation into two different phases – the initiation phase and the implementation phase, based on Hurley and Hult's (1998) two innovation constructs: 1) *innovativeness*, and 2) the *capacity to innovate*. While innovativeness is the notion of openness to new ideas as part of an organisation's culture, innovation capacity, a term first introduced by Burns and Stalker (1961), indicates the ability of an organisation to successfully adopt and implement new ideas, processes and products. Hence innovation capacity can be measured by the number of innovations an organization is able to adopt and implement successfully (Hurley & Hult, 1998). Innovation capacity, also known as innovation behaviour, shows the extent to which innovation is carried out within companies (Grissemann et al., 2013; Orfila-Sintes et al., 2005; Pikkemaat & Peters, 2005).

Higher levels of innovativeness are associated with higher levels of successfully implemented innovations as innovativeness in a firm's culture facilitates the implementation of innovations resulting in a more successful response to the changing environment, hence leading to competitive advantage and superior performance (Hurley & Hult, 1998). Innovativeness is an organisation's orientation and attitude towards innovation, whereas innovation behaviour is measured by the number of new products and services actually implemented by the company (Grissemann et al., 2013). Although recent tourism studies have tended to analyse these two dimensions

of innovation separately, this distinction between the initial phase of orientation to innovate and the following implementation phase appears to be necessary (Domi et al., 2020). In our work, innovation activity refers generally to different activities and steps taken to implement innovations, innovativeness refers to the kind of organisational culture that encourages the introduction of new services, products, and ideas, whilst innovation behaviour refers to the extent to which innovations are implemented in a company.

There is still a modest amount of research addressing the different aspects of innovation activity in the hotel industry and their relationship with innovation activity and other organisational variables such as size, ownership type, and personnel training (e.g. Leekpai & Jaroenwisan, 2013; Orfila-Sintes et al., 2005; Pikkemaat & Peters, 2005; Pivčević & Petrić, 2011). It has also been well established that innovation activity in hotels intensifies with an increase in size (Jacob & Groizard, 2007; Martínez-Ros & Orfila-Sintes, 2009; Orfila-Sintes & Mattsson, 2009; Orfila-Sintes et al., 2005; Pikkemaat, 2008; Pikkemaat & Peters, 2005) and with a higher hotel categorisation (Orfila-Sintes et al., 2005; Pikkemaat, 2008). Additionally, hotels belonging to chains have shown higher levels of innovation activity (Orfila-Sintes & Mattsson, 2009; Orfila-Sintes et al., 2005), and the innovation patterns between chain hotels and independent hotels tend to differ. The level of innovation activity has also been related to the quality of human resources, such as higher professional leadership (Martínez-Ros & Orfila-Sintes, 2009; Orfila-Sintes et al., 2005; Sundbo et al., 2007), and higher levels of employee training (Orfila-Sintes & Mattsson, 2009; Sundbo et al., 2007). Employee engagement was also found to contribute to innovation activity (Grissemann et al., 2013). Further, Eid and Agag (2020) found that institutional pressures and corporate support both have a positive impact on individual employees' innovative behaviour.

Hotel innovation studies carried out in different countries have shown different levels of innovation. While Alpine hotels (Pikkemaat & Peters, 2005) and Croatian hotels (Pivčević & Petrić, 2011) are little or moderately innovative, hotels from the Balearic Islands of Spain have been associated with higher levels of innovativeness (Orfila-Sintes et al., 2005). However, differences also exist among studies conducted within the same country. Based on hotels from 52 Spanish cities, Campo et al. (2014) reported that the hotel sector is not in the high innovation tendency group. Even if such variations are largely explained by differences in the definition and measurement of innovativeness and innovation activity, such results suggest that innovation in hotels can also be context-specific (country, region) and requires further exploration (Orfila-Sintes et al., 2005; Pivčević & Petrić, 2011). Innovation studies based on the hotel sector have also related innovativeness and innovation behaviour to constructs like market orientation, learning orientation, and entrepreneurial orientation (Chan et al., 1998; Grissemann et al., 2013; Kallmuenzer, 2018; Tajeddini, 2010).

Innovation and Hotel Performance

Firms that have a greater capacity to innovate are able to more successfully develop a competitive advantage, often accompanied by higher levels of performance (Hurley & Hult, 1998). A firm's business performance is usually measured in both financial and non-financial terms. In the context of the hotel industry, financial performance refers to "objective measures" such as the *average occupancy rate*, *lodging index*, and *market share* (Orfila-Sintes & Mattsson, 2009), and non-financial measures refer to "perceptual measures" such as *customer retention* and the *hotel's reputation* (Grissemann et al., 2013). While during recent years, the economic goals of a firm (e.g. profitability, sales growth, earnings per share) have been the most popular way to measure performance, there is a trend moving towards including operational non-financial components such as quality improvement, customer satisfaction, increase in market share, and the pace of introducing new products (Martínez-López & Vargas-Sánchez, 2013).

The adoption of innovation is generally intended to contribute to the performance or effectiveness of the firm (Damanpour, 1991). A firm's innovativeness serves as a variable that links market, learning, and entrepreneurial orientations to business performance (Hult, Hurley, & Knight,, 2004). Although research regarding the impact of innovation on performance in the hotel industry is still "far from exhaustive" (Hjalager, 2010), still in "the infant stage" (Ebersberger et al., 2021), and not conclusive or "still a puzzle" (Martin-Rios & Ciobanu, 2019), some studies have demonstrated a positive relationship between innovation activity and performance in hotels (Campo et al., 2014; Grissemann et al., 2013; Martin-Rios & Ciobanu, 2019; Orfila-Sintes & Mattsson, 2009; Orfila-Sintes et al., 2005; Pivčević & Petrić, 2011; Tseng et al., 2008). The existence of a link between innovativeness and performance (Grissemann et al., 2013; Sandvik et al., 2014), and entrepreneurial orientation, innovativeness, and performance in the hotel context has also received some attention (e.g. Jogaratnam & Tse, 2006; Leekpai & Jaroenwisan, 2013; Tajeddini, 2010). More recently, hotel innovation has also been positively linked to performance through more complex innovation strategies (Ebersberger et al., 2021; Martin-Rios & Ciobanu, 2019).

Although a number of studies have found a positive relationship between hotel innovation and performance, some contradictory and not fully conclusive results have also emerged. For example, Pikkemaat and Peters (2005) found no relation between the degree of innovation and entrepreneurs' satisfaction with the hotel's revenue in small and midsize Alpine hotels. According to Campo et al. (2014), although a hotel's tendency to innovate does not contribute directly and positively to a hotel's short-term performance, it does have an impact on medium and long-term performance. Given the scarcity, and partly contradictory nature of the results and also the differences in measurement of innovation and performance, additional research on this topic is needed in this field.

Methodology

Conceptual Framework and Hypothesis

The framework of our research is organised in three parts. The first part aims to answer the following three research questions: 1) What are the determinants of innovation activity in the Portuguese hotel industry? 2) What type of innovation is common in Portuguese hotels? 3) What is the level of innovation behaviour in Portuguese hotels? First, the hotel innovation determinants impacting innovation activities and hotel-specific innovation areas and innovation types were examined and the degree or level of innovation (innovation behaviour) was measured. The relevant innovation determinants were proposed based on literature review. We had chosen hotel innovation determinants based on the works of Orfila-Sintes et al. (2005), Orfila-Sintes and Mattson (2009), and Grissemann, Pikemaat and Weger (2013). Hotel *size*, hotel *star category*, hotel *chain* and *management* (chain hotels/ hotels managed by management contract instead of by owner) have been previously related to higher innovation activity (Orfila-Sintes & Mattsson, 2009; Orfila-Sintes et al., 2005). *Personnel training* as an innovation antecedent was chosen based on the work of Grissemann et al. (2013) where *ongoing training* was one item included in the Employee Engagement construct ("Our employees get constant further education"). Employee Engagement, meanwhile, was found to positively influence service and management innovation. Also, training was part of the human capital skills in the research conducted by Orfila-Sintes et al. (2005) as well as Orfila-Sintes and Mattsson (2009).

Second, innovation behaviour was measured using 11 functional areas generally used in hospitality (quality management; environmental quality management; information and communication technology; room equipment; maintenance and cleaning; security systems; gastronomy; wellness; animation and leisure activities; architecture and design; marketing) defined by Grissemann et al. (2013) based on the prior works of Orfila-Sintes et al. (2005) as well as Pikkemaat and Peters (2005). Asking hotel managers to rate their innovative behaviour based on these 11 hotel-specific functional areas provides information to evaluate in which areas innovation is most common and relevant, and provides the basis upon which to determine the importance of incremental and radical (breakthrough) innovations in Portuguese hotels. Following Martínez-Ros and Orfila-Sintes (2009), the difference between incremental and radical innovations depends on whether they were introduced for the first time (including learning and exploring) or consisted of modifications, improvements or extensions to previously introduced innovations.

The second part of the conceptual framework addresses the fourth research question: What is the level of innovativeness of Portuguese hotel establishments and how does the level of innovativeness influence innovation behaviour? The level of innovativeness was measured and then the relationship between innovativeness and

innovation behaviour was examined thereafter. The existence of a positive relationship between innovativeness and innovation behaviour is supported by previous research of Hurley and Hult (1998) as well as Grissemann et al. (2013). Both found that higher levels of innovativeness in a firm's culture is associated with a greater capacity for adaptation and innovation (number of innovations successfully implemented). This study investigates whether similar patterns can be found based on evidence from the Portuguese hotel industry, thus we propose:

Hypothesis 1: Innovativeness positively influences the innovation behaviour of Portuguese hotels.

The third part of the conceptual framework investigates the relationship between innovation activity and performance, and thus aims to answer the fifth research question: How does innovation behaviour influence a firm's performance? Higher levels of performance can be achieved through competitive advantage based on greater innovation capacity (Hult et al., 2004). While the assumption of an existing positive relationship between innovation behaviour and hotel performance finds support in several studies, performance has been measured in various ways. These include: increased occupancy rate (Orfila-Sintes et al., 2005; Orfila-Sintes & Mattsson, 2009; Pivčević & Petrić, 2011); profit goal achievement, sales goal achievement, and ROI (Tajeddini, 2010), divided between financial performance, customer satisfaction, and reputation (Chen, Tsou, & Huang, 2009; Grissemann et al., 2013). We thus propose:

Hypothesis 2: Innovation behaviour positively influences hotel performance in Portugal.

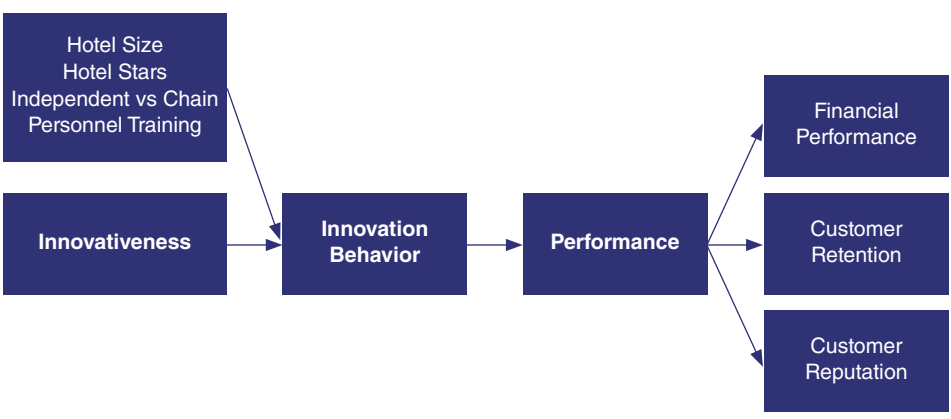

Figure 1. Conceptual framework

Data Collection

To examine the relationship between innovativeness, innovation behaviour and performance in hotels, this study focused on the case of the Portuguese hotel industry. The data collection included two phases, firstly, identifying the population of interest and secondly, collecting questionnaire answers through direct emailing. The official public online register of all Tourist Establishments of Portugal, including 2,085 establishments at the time of the research, was downloaded, including its sub-lists, filtered by stars, location and establishment types or categories (Turismo de Portugal, 2014).

The original Portuguese Tourist Establishments categories (The European Consumer Centres' Network, 2009) are as follows:

- (Traditional) hotel establishments:
  - Hotels
  - Hotel apartments
  - Inns in historic buildings
- Touristic holiday village
- Touristic holiday apartments
- Holiday villas
- Rural tourism:
  - Agri-tourism
  - Country houses
  - Rural hotels
- Resorts
- Camping and caravans
- Madeira country houses
- Madeira tourist villas

This list was narrowed down to 1,759 units based on two different criteria: type (camping parks were excluded) and size (only establishments with 10 or more housing units (rooms or apartments) were contacted. The size criteria of 10 housing units was found to be in accordance with the hotel definition in the AHP (Portuguese Hotel Association) technical dictionary, which states that hotels are establishments providing accommodation in return for payment, with or without offering meals and other supportive services, while having a minimum of 10 housing units (AHP, 2018).

Although not all the establishments listed by the Portuguese Tourism Board (Turismo de Portugal, I.P.) had the special star-classification, 1,616 establishments (91.9%) of the target population did have a star-classification, divided as follows: 123 units (7.0%) with 5 stars; 550 units with 4 stars (31.3%); 572 units with 3 stars (32.5%); 314 units with 3 stars (17.9%); and 57 units with 1 star (3.2%). The list of 143 units with no star category included holiday villas and rural tourism and historic inns.

The empirical data for this research was collected through an online administered questionnaire that was carefully structured using previously validated scales from extant research (Grissemann et al., 2013; Tajeddini, 2010). Some of the questions were adapted from the 2012 Community Innovation Survey (Eurostat, 2012) and a pilot study was conducted, including 6 interviews with hotel managers, with the purpose to improve and validate the questionnaire.

The questionnaire targeted hotel managers and was successfully sent to 1,585 hotels, out of the target population of 1,759 establishments, resulting in 326 responses, thus yielding a response rate of 20.6%. One fifth of the hotels (67 hotels or 20.6%) responded after the first introductory e-mail, 89 hotels (27.3%) after the second e-mail (first follow-up e-mail), 66 hotels (20.2%) after the third e-mail (second follow-up e-mail), 51 hotels (15.6%) after the fourth e-mail (third follow-up) and 53 hotels (16.3%) after the fifth e-mail (the last follow-up). A total of 207 responding establishments were independent hotel units (63.5%), whereas 106 respondents (32.5%) belonged to hotel chains, and 13 respondents (4.0%) were part of a group of diversified businesses. 284 hotels (87.1%) belonged to Portuguese owners and only 42 establishments (12.9%) had a foreign owner.

The stratification of the sample (326 establishments) was similar to the stratification of the population (1,759 establishments) (see Table 1).

Table 1. Tourist establishment type distribution in sample and population

	Hotel sample		**Hotel population**	
Hotel establishment eype	**N**	**%**	**N**	**%**
Estabelecimento Hoteleiro - Hotel				
Hotel	230	70.6	1203	68.4
Hoteis - Apartaemtno	25	7.7	125	7.1
Pousadas	7	2.1	34	1.9
Aldeamento Turistico	9	2.7	51	2.9
Apartamento Turistico	10	3.1	160	9.1
Empreendimento de Turismo de Habitação	9	2.8	35	2.0
Empreendimento de Turismo no Espaço Rural				
Agro Turismo	6	1.8	28	1.6
Casa de Campo	15	4.6	46	2.6
Hotel Rural	15	4.6	77	4.4
Total	326	100.0	1759	100.0

The three main constructs of this research — innovativeness, innovation behavior, and performance — were measured through scales validated in previous works. Innovation behaviour was measured following Grissemann et al. (2013),

asking whether any innovative changes had been implemented in the hotel within the past three years, by presenting 11 innovation areas: quality management, environmental quality management, information and communication technology, room equipment, maintenance and cleaning, security systems, gastronomy, wellness, animation and leisure activities, architecture and design, and marketing. Respondents evaluated their innovation behaviour based on a 7-point Likert scale ranging from 1 (no innovation) to 7 (launch of totally new product/services). Due to the ordinal measurement scale used, a grade or rating of innovation was generated for each hotel. For better understanding and comparison, and for subsequent analysis, a single metric, a grand mean of innovation behaviour, was calculated. The scale incorporated management opinion regarding innovation and new ideas, including the following five statements:

1. Management actively seeks innovative ideas.
2. Innovation, based on research, is readily accepted in our organisation.
3. Innovation is readily accepted by management.
4. People are penalised for new ideas that don't work. (Reversed)
5. Innovation in our organisation is encouraged.

The innovativeness score was calculated for each hotel as a mean of their answers based on a 7-point Likert-scale, where 1 equalled "totally disagree" and 7 equalled "totally agree". Performance was measured based on managers' judgement in terms of financial performance, customer retention and hotel reputation by adopting the validated scale of 8 items from Grissemann et al. (2013). Respondents had to choose the most suitable answer on a 7-point Likert scale, where 1 was equivalent to "totally disagree" and 7 was equivalent to "totally agree". The statements of the performance scale were as follows:

1. We have been profitable.
2. We have achieved profit objectives.
3. We have achieved sales objectives.
4. We have achieved market share objectives.
5. We have improved the loyalty of existing customers.
6. We have attracted a significant number of new customers.
7. We have had a well perceived image.
8. We have had a good reputation.

An independent samples t-test was carried out to compare the level of innovativeness scores, the level of innovation behaviour scores, and the performance scores of early respondents and late respondents. No significant differences were found. In order to evaluate the reliability and validity of the construct, internal consistency (Cronbach's α), composite reliability (CR) and average variance extracted (AVE) were calculated for the scales of innovativeness and performance.

Table 2. Total-item statistics of innovativeness scale

Performance statements	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
1. Management actively seeks innovative ideas.	22.96	13.87	0.65	0.47	0.695
2. Innovation, based on research results, is readily accepted in our organisation.	23.48	13.32	0.61	0.51	0.701
3. Innovation is readily accepted by management.	23.53	12.42	0.67	0.59	0.675
4. People are penalised for new ideas that do not work.	23.04	12.05	0.21	0.10	0.858
5. Innovation in our organisation is encouraged.	23.20	12.05	0.70	0.51	0.664

When calculating CR and AVE, the factor analysis (principal components analysis using varimax rotation with Kaiser normalization) resulted in 8 performance items loading in two factors instead of three. We decided to consider Performance subtypes as Financial Performance and Non-financial Performance instead of three different performance types. Financial Performance composite reliability was .93 and AVE was .77. Composite reliability and AVE for Non-financial Performance were .91 and .71, respectively.

Table 3. Total-item statistics of performance scale

Performance statements	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
1. We have achieved market share objective	39.82	57.20	.77	.81	.928

Table 3 (con't)

Performance statements	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
2. We have achieved profit objectives	40.02	55.30	.80	.85	.926
3. We have achieved sales objectives	39.87	56.53	.84	.82	.922
4. We have been profitable	40.10	56.81	.83	.78	.923
5. We have improved the loyalty of existing customers	39.61	60.84	.75	.70	9.29
6. We have attracted a significant number of new customers	39.57	60.50	.79	.72	.927
7. We have had well perceived image	39.43	61.42	.74	.90	.930
8. We have had a good reputation	39.38	62.46	.71	.90	.932

Finally, the discriminant validity of constructs was checked by confirming whether the AVE values exceeded the square of the correlations between pairwise matched factors (Fornell & Larcker, 1981).

Table 4. Correlation matrix and average variance extracted (AVE)

	AVE	Innovativeness	Financial performance	Non-financial performance
AVE	1			
Innovativeness	.69	1	.19	.29
Financial Performance	.77	.19	1	.64
Non-financial Performance	.71	.29	.64	1

**Correlation is significant at the 0.01 level (2-tailed)

Based on the reliability and validity analysis, we decided to drop one item from the innovativeness scale. Additionally, we concluded that it was suitable to carry out further analysis of performance separately for financial performance and non-

financial performance. Both of the two main constructs showed good reliability and validity and thus were acceptable for further analysis. With the purpose of conducting parametric tests, the aggregated scores of the three Likert scales (Innovativeness, Performance and Innovation Behaviour) were treated as continuous variables, which is acceptable when the items of Likert scale factorially hold reasonably well together as a scale or sub-scale, and is measured using a 5- to 7-point Likert response format (Carifio & Perla, 2007).

Results and Discussion

The two hypotheses were tested through regression analysis. Our sample had a prevalence of smaller units, namely 51% of the establishments had up to 100 beds. More than half (52%) of the respondents were from 4-star and 5-star establishments. Also, aspects such as hotel facilities, customers, employment and training were discussed. Hotels were additionally asked to rate objectives that fostered innovation activities, as well as factors that hampered them, and provide information regarding innovation cooperation.

The three main constructs — Innovativeness, Innovation Behaviour and Performance — were discussed. A grand mean score of Innovation Behaviour was calculated based on hotels evaluating (on scale from 1 to 7, with 1 = no innovation and 7 = launch of totally new products/services) innovation activities in 11 hotel-related areas. Innovativeness and Performance were measured using previously validated scales. Reliability and validity of scales were successfully tested. Additionally, the relationship between innovation determinants (such as hotel size, hotel age, hotel star category, hotel mode of business operation and personnel training) and Innovation Behaviour was studied either through correlation analysis or by applying t-test or one-way ANOVA to compare groups when suitable. A positive association was found between Innovation Behaviour and the following determinants: hotel *size*, hotel *category*, hotel *chain belonging* and *personnel training*.

Before hypothesis testing, the current sample was divided into Small (up to 50 rooms), Midsize (51-150 rooms) and Big (more than 150 rooms) hotels with the purpose of analysing and better understanding the peculiarities, characteristics and innovation activity in different size Portuguese hotels. Although Hotel Size demonstrated a positive relation to the level of Hotel Innovation Behaviour, no significant differences were noted in the innovation activity between small, midsize and big hotels.

The first hypothesis that *Innovativeness of hotels has a positive effect on Innovation Behaviour of hotels* was confirmed through regression analysis (R^2 was 0.198 ($F(1/324) = 80.13$, $p < 0.001$)) (see Table 5).

Table 5. Regression analysis ANOVA and coefficients table

ANOVA [a]

Model	Sum of squares	df	Mean equare	*F*	Sig.
1 Regression	90.043	1	90.043	80.129	0.000[b]
Residual	364.087	324	1.124		
Total	454.129	325			

a. Dependent variable: Innovation Behaviour

b. Predictors: (Constant), Innovativeness

Coefficients (a)

Model	Unstandardised Coefficients B	Std. Error	Standardised Coefficients Beta	*t*	Sig.
1 (Constant)	.777	.354		2.195	.029
Innovativeness	.543	.061	.445	8.951	.000

a. Dependent Variable: Innovation Behaviour

Also, the second hypothesis that *Innovation Behavior of hotels has a positive effect on hotel performance* was confirmed through regression analysis (R^2 was 0.113 ($F(1/324) = 41.41$, $p < 0.001$)) (see Table 6).

Table 6. Regression ANOVA and coefficients table

ANOVA [a]

Model	Sum of squares	df	Mean equare	*F*	Sig.
1 Regression	41.65	1	41.65	41.41	0.000[b]
Residual	325.89	324	1.01		
Total	367.54	325			

a. Dependent variable: Innovation Behaviour

b. Predictors: (Constant), Innovativeness

Coefficients (a)

Model	Unstandardised Coefficients B	Std. Error	Standardised Coefficients Beta	*t*	Sig.
1 (Constant)	4.499	.192		23.442	.000
Innovativeness	.303	0.47	.337	6.435	.000

a. Dependent Variable: Innovation Behaviour

Additionally, it was found that Personnel Training was the most relevant hotel innovation determinant impacting the effect that the level of Innovativeness has on hotel Innovation Behaviour. It was also confirmed that Innovativeness impacted the effect that Innovation Behaviour has on hotel Performance. Furthermore, it was also found that Innovation Behaviour had a bigger impact on hotel Non-financial Performance than on Financial Performance.

The hotel-specific innovation antecedents, such as hotel size, hotel star category, governance and chain structure, and employee training were related to hotel innovation behaviour. A positive relation was found between hotel size and hotel innovation behaviour, thus supporting the findings of previous studies (e.g. Jacob & Groizard, 2007; Martinez-Ros & Orfila-Sintes, 2009; Orfila-Sintes & Mattsson, 2009; Orfila-Sintes et al., 2005; Pikkemaat, 2008; Pikkemaat & Peters, 2005).

The empirical data also confirmed a positive association between hotel innovation behaviour and hotel star category, and between innovation behaviour and being part of a chain. Similarly to Orfila-Sintes et al. (2005), Pikkemaat and Peters (2005), as well as Pikkemaat and Weiermair (2007), hotels with a higher star category showed a tendency towards a higher level of innovation behaviour. Additionally, hotels belonging to hotel chain showed a higher level of innovation than did independent units, thus supporting the previous finding of Orfila-Sintes et al. (2005). In contrast to Orfila-Sintes et al. (2005), no significant differences were found in the innovation behaviour between hotels managed by owners and hotels managed through rental or franchising contracts. Additionally, hotels that offered personnel training to some or all employees during previous years showed higher levels of innovation behaviour, which aligns with previous findings by Orfila-Sintes et al. (2005), Orfila-Sintes and Mattsson (2009), as well as Mattsson and Orfila-Sintes (2014).

Findings

The main findings of this research are as follows:

1. Hotel innovation determinants: bigger hotels, hotels belonging to a chain, hotels with a higher star category and hotels with more personnel training demonstrated a higher level of Innovation Behaviour. Therefore, Hotel Size, Star Category, Hotel Chain and Personnel Training were considered as relevant hotel innovation antecedents.
2. Nearly all the hotels had carried out innovation activities within the past three years. However, the overall level of innovation behaviour was moderate (M = 3.90 of 7.00, SD = 1.18), and mostly comprised incremental innovations. The three dominating areas of innovation were Communication Technology (M = 4.42, SD = 1.49), Marketing (M = 4.40, SD = 1.70) and Wellness (M = 4.13, SD = 1.63), followed closely by Maintenance and Cleaning (M = 4.09, SD = 1.44).

3. The level of innovativeness of Portuguese hotels was high (M = 5.76 of 7.00, SD = 0.97). The level of Innovativeness had a statistically positive significant impact on Innovation Behaviour (R^2 was 0.198, $F(1/324) = 80.13$, $p < 0.001$). The Hotel Innovativeness level together with Personnel Training accounted for a bigger variation in hotel Innovation Behaviour.
4. The level of Innovation Behaviour impacted hotel performance (R^2 was 0.113, $F(1/324) = 41.41$, $p < 0.001$). Hotel Innovation Behaviour together with Innovativeness accounted for a bigger variance in hotel Performance. Innovation Behaviour had a stronger impact on hotel Non-financial Performance than on Financial Performance.

Conclusion and Implications

This research makes an important contribution to the body of literature on hotel innovation. It is also the first large-scale innovation investigation carried out in the context of Portuguese hotels and, as such, provides country-specific information and a basis for cross-country comparison regarding hotel innovation.

Our work contributed to the theory by supporting the call for further research on both the attitudinal and the behavioural dimensions of innovation (Domi et al., 2020). Additionally, the previously used measurement scales of hotel innovativeness (5-item scale) and hotel innovation behaviour (11 innovation areas) were re-validated based on the Portuguese context.

Findings also confirmed that hotel innovativeness positively impacts hotel innovation behaviour and hotel innovation behaviour positively impacts hotel performance.

An interesting finding was that Personnel Training was the only innovation antecedent increasing the impact of Innovativeness on Innovation Behaviour. The positive relation between Personnel Training and innovation had previously been found in the hotel context (e.g. Chang et al., 2011; Grissemann et al., 2013; Nieves et al., 2014). González-González and García-Almeida (2021) found employee creativity being one of the factors positively related to higher number of innovative suggestions, thus resulting in a practical recommendation to encourage employee creativity through training. Hossain, Kannan and Raman (2020) acknowledged the importance and vitality of organisational learning for the productivity and performance of the hospitality industry, thus suggesting that all employees, from the front office to the back office, would benefit from learning practices. Secondly, based on empirical data, a positive relationship between hotel innovation behaviour and performance was confirmed thus contributing to the still growing body of literature related to innovation and performance in hotels. It is important to add that Innovation Behaviour together with Innovativeness had a stronger impact on hotel performance. And Innovation Behaviour had a stronger impact on hotels' Non-financial Performance than on Financial Performance.

This research contributes to hotel innovation literature by providing empirical evidence from the Portuguese hotel sector, thus providing some basis for cross-country comparisons. It is generally suggested that the innovation activity of hotels is country and context specific (Pivčević & Praničević, 2012) and differences in innovativeness in tourism between different countries and destinations might be explained by social factors such as training and professionalism, organisation and local policies rather than by supplier determination or technological systems (Sundbo et al., 2007). Although different approaches and measurement of innovation in hotels do limit the comparison of results, further research with harmonised and comparable regional data on different levels of analysis is encouraged in countries and regions where hotels are important economic contributors and job creators (Ebersberger et al., 2021). So far, hotel innovation research has been dominated by empirical evidence from Spanish hotels (e.g. Martínez-López & Vargas-Sánchez, 2013; Martínez-Ros & Orfila-Sintes, 2009; Orfila-Sintes & Mattsson, 2009; Orfila-Sintes et al., 2005) and Austrian hotels (Grissemann et al., 2013; Pikkemaat, 2008; Pikkemaat & Peters, 2005; Pikkemaat & Weiermair, 2007).

However, some hotel innovation studies have already been conducted based on empirical evidence from elsewhere, for example from Asian hotels (Chan et al., 1998; Hilman & Kalippen, 2015; Leekpai & Jeroenwisan, 2013; Lu & Tseng, 2010), from Croatia (Pivčević & Petrić, 2011), and from Norway (Sandvik et al., 2014). This study makes an important contribution by providing a basic understanding and overview of the innovation activity in Portuguese hotels.

Previous studies have aimed to measure innovation activity by determining innovators and non-innovators (Orfila-Sintes et al., 2005), by calculating the number of innovations or by calculating a mean score of innovations (e.g. Grissemann et al., 2013; Pivčević & Praničević, 2012). With regard to the division between innovators and non-innovators, Portuguese hotels are largely innovators. Only 3 out of 326 hotels (.9%) reported no innovation activity in the 11 hotel-specific areas of innovation, while all the others reported some sort of innovation activity in at least one of the areas of innovation. The innovator rate was high when compared to the results obtained in previous studies (e.g. 86.10% of innovators in the case of Balearic Islands hotels according to Orfila-Sintes et al., 2005). Portuguese hotels showed a high level of "innovativeness" (management attitude) and a moderate level of "innovation behaviour" (the extent to which innovations are implemented). Due to the same measurement approach used as Grissemann et al. (2013), it was possible to make a direct comparison of innovation behaviour between Portuguese hotels and Austrian hotels. Portuguese hotels showed a slightly lower level of innovation behaviour when compared to Austrian hotels, but similarly to Austrian hotels, the two leading areas of innovation in Portugal were also "Information and Communication Technology" and "Marketing". Information and communication technology found support as an

important area of hotel innovation, as in previous studies (e.g. Pikkemaat & Peters, 2005; Pikemaat & Weiermair, 2007). The empirical evidence from Portuguese hotels also demonstrated dominance of incremental innovations rather than radical innovations, a finding which also aligned with previous studies (Kessler, Pachucki, Stummer, Mair, & Binder, 2015).

Finally, this research also contributes more specifically to the existing literature about innovation in Portuguese hotels. As formerly stated, no such large-scale study has been previously conducted in Portugal, therefore the findings of this current research complement existing knowledge and provide a basis for future studies with more specific scope and areas of interest in the hotel innovation context.

The results of this study can also be a valuable source of information for hotel managers and other professionals from the industry. Firstly, it confirmed that hotels with higher level of innovativeness and hotels with better personnel training practices also demonstrates higher levels of innovation behaviour. Thus, it is important for hotels to foster an ambient of learning, openness to changes, and proneness to solution seeking among all employees. Hotel employees is one of the most important resources of a hotel business, therefore continuous staff training is the key to success. Secondly, based on empirical evidence, it was found that innovation behaviour had a stronger relation with hotel non-financial performance compared to the financial performance. Although some of the innovations can have a direct impact on the financial dimension of a hotel, it was concluded that innovations often impact firstly the customer experience and hotel reputation, which thereafter can impact the financial results. When carrying out innovation investments, it is important for hotels to carry out proper cost-benefit analyses, have sufficient economic resources, and also patience to wait for the results over time. Additionally, we can say that in the context of the hotel industry, the emphasis is not so much on breakthrough innovations but instead on gradual improvements, the so-called incremental innovations.

Limitations and Suggestions for Future Research

It is important to acknowledge that this research was subject to some limitations. Firstly, this research's data was collected between December 2015 and December 2016, a period during which relevant changes in the market conditions and in the official register of Tourist Establishments of Portugal occurred. Secondly, we could not obtain more data and extra measures to complement managers' opinions and judgement, thus reducing the risk of common method bias. Thirdly, measuring the impact of innovation activity on performance would have benefited from a longitudinal study to fully evaluate the financial impact of each investment.

For the future, it would be of interest to conduct a research with the same purpose to assess the changes occurring in the Portuguese hotel industry due to the COVID-19 pandemic. The selection of data sources could be diversified, adding

more objective financial data to complement management opinions. Also, more in-depth research on innovation activity (e.g., exploring CIS innovation typology, evaluating impact of more specific factors like "customer orientation", "human capital"; "COVID-19 related requirements") and application of different models of measurement of innovation activity in Portuguese hotels could be interesting. An equally valuable future development would be carrying out a longitudinal study, especially if the main interest would be measuring the impact of innovation activity on hotel performance. Observing hotel's innovations and performance over a longer time period would provide a better understanding of the impact of each investment and it would create better basis for evaluating also the relationship between non-financial and financial performance in the context of innovation in hotels.

Based on this research, the main suggestion for future research regarding hotel innovation is to further develop the understanding of human resources in the context of hotel innovation to complement specific innovation determinants (e.g., hotel size, star category, etc.), and in particular how COVID-19 safety-related concerns (e.g. physical distancing, automations and remote technology solutions) impact the importance of human resources in the context of hotel innovation.

Also, as previously suggested, more studies regarding innovation impact on performance and on different forms of performance, especially to understand the relationship between hotels non-financial and financial performance, are beneficial to provide a better understanding of the full cycle of innovation. Additionally, further country and destination specific hotel innovation studies are welcomed in order to provide the basis for more cross-country comparisons.

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