Proactive Environmental Strategies and Their Impact on Hotel Competitiveness During Crisis: The Case of the Czech Hotel Industry

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Abstract

This research focuses on hotel competitiveness in the Czech Republic. It provides evidence that proactive environmental strategies implemented in hotel operations are a competitive advantage for hotels, especially during a crisis. This research determined the impact of proactive environmental strategies on hotel competitiveness in the period before and during the COVID-19 pandemic. Competitiveness was assessed based on the occupancy rate and hotel experience. Data were obtained through quantitative research, which involved 110 accommodation facilities from the Czech Republic, of which 51 were common hotels and 59 were green hotels. The research yields two groups of results. The first group is the results of testing the dependence between the type of hotel and changes in hotel competitiveness. These results did not confirm the relationship between hotel type according to implementation of proactive environmental strategies and competitiveness based neither on evaluation of hotel experience nor on the occupancy rate. According to these findings, it does not matter whether the hotel is green during a crisis. The second group of results includes concrete values of changes in occupancy in the second and third quarters of 2019 and 2020, as well as specific changes in the clientele. The decrease in occupancy in the second quarter of 2020 compared with 2019 was not as significant as expected. In the third quarter of 2020, the year-on-year change was minimal, and some accommodation facilities experienced an increase in occupancy because Czech visitors embraced domestic tourism. In this case, the absolute indicators show that green hotels had an advantage.

1. INTRODUCTION

Tourism is an economically important industry. This has a significant effect on the general development of tourist regions. Moreover, in micro-regions, it is often an important employment

provider for the local population and enterprises, too (Albert, 2016). However, tourism worldwide faces significant environmental and economic challenges (Camisón, 2020). The problem is that tourism has become a giant industry with a major impact on the natural environment, including increasing its carbon footprint, consuming large amounts of water and energy, and generating enormous amounts of waste and pollutant emissions (Lenzen et al., 2018; Manniche et al., 2017). Complex adaptation decisions need to be made to overcome these challenges, whether the goal is to maintain competitiveness by relieving the company of its environmental responsibility and focusing on short-term policies at the expense of natural capital or take responsibility for the long-term sustainability of ecosystems by implementing environmental strategies, despite an increase in service costs (Camisón, 2020).

Pamfilie et al. (2018) emphasised the idea that not only are customers increasingly demanding and appreciating diversity, but suppliers are also creating various green programmes to support sustainable business. This statement is supported by Rahman & Reynolds (2016), who showed that the number of customers as the main stakeholders interested in sustainable accommodation is constantly growing. In addition to customers, governments are aware of the importance of sustainability, especially in countries where tourism is a major environmental problem. For example, countries where beaches and coastal areas have many large hotel complexes are experiencing problems with the deteriorating state of the environment (Drius et al., 2018). With increasing public interest in the environment, it will be necessary for hotels to adapt to this new trend (Balaji et al., 2019; Varvazovska & Prasilova, 2014). Gössling et al. (2020) stated that even before COVID-19 disrupted the long-established tourism business, accommodation facilities had started to incorporate environmental principles into their strategies. Hotels proactively implement environmental strategies in their management, and not merely because of pressure from customers or governments (Kuo et al., 2021).

However, there are two problems associated with sustainable hotels. The first is the actual sustainability of hotels. Cerutti et al. (2016) and Yadav & Patha (2016) stated that some hotels are merely seeking a green label to increase their competitiveness in the market and that their actual sustainability is unclear. The second is whether environmental strategies contribute to the long-term improvement of competitiveness. However, in the academic literature, authors believe that analyses and studies to confirm this conclusion are still insufficient (Camisón, 2020; Asadi et al., 2020).

The second problem represents a gap in research, which is the subject of our study. From this perspective, there is little research in the tourism sector and no research related to the crisis period. We assumed that proactive environmental strategies (PES) implemented in hotel management increase hotel competitiveness, and given consumers' growing interest in sustainability and the environment, they are a significant competitive advantage for hotels, especially during a crisis. We verified our assumption using available data from Czech hotels. Therefore, this study aims to determine whether the implementation of PES in hotels has an impact on competitiveness. This effect is examined under normal conditions and during the crisis due to the COVID-19 pandemic.

The objective of this study is to provide evidence for hotel managers that the sustainable behaviour of accommodation facilities is a significant competitive advantage in the market, even

during a crisis. This justifies implementing PES in hotel management and contributes to the overall growth of tourism sustainability, which is currently very important.

The remainder of this paper is organised as follows: Section 2 focuses on measuring competitiveness, sustainable business, competitiveness in the hotel industry, and the influence of the Covid-19 pandemic on tourism. Section 3 describes the research details, data collection, and data processing methods. Section 4 includes the impact of environmental principles on competitiveness, testing of the stated hypotheses, and comparison of the results with previous research. Lastly, the conclusion presents the main findings of our study, as well as the limitations of the research.

2. THEORETICAL BACKGROUND

2.1 COMPETITIVENESS AND ITS MEASUREMENT

Competitiveness can be defined as the ability to operate effectively in a competitive environment in which several companies compete and constantly adapt to changes in the economy (Liao et al., 2015; Voronkova et al., 2019). Stawasz (2019) identified factors that affect competitiveness, including the age of the company, sector of companies' operation, innovation, and management. However, Maksimović et al. (2017) emphasised the importance of personalised and quality services and unique experiences, which attract repeat guests and referrals.

Competitiveness is currently a popular topic, but measuring it is relatively difficult. Möbius & Althammer (2020) stated that it should be measured using prices, costs, market share, and productivity. On the one hand, Fraj et al. (2015) examined the comparison of competitiveness of hotels and identified key factors, the current and five-year profitability, gross profit, and the ability to achieve business goals. On the other hand, Millán-García & Gómez-Díaz (2018) suggested using gross operating profit, income per vacancy, and occupancy percentage to compare hotels. In agreement, Marulanda-Valencia & Restrepo-Montes (2020) considered it appropriate to measure competitiveness by occupancy. With the growing use of technology and the Internet, online evaluation is also being used to evaluate hotel competition, as it has a major impact on the brand image (Jiang et al., 2014; Mariani & Visani, 2019).

2.2 COMPETITIVENESS AND PROACTIVE ENVIRONMENTAL STRATEGY

Competitiveness is closely linked to sustainability as it is influenced mainly by economic, social, and environmental factors (Neverauskienė et al., 2020; Zhou & Lu, 2020). Sustainable competitiveness can be achieved through innovation, specialisation, and modernisation (Havierniková & Kordos, 2019). As stated by Fraj et al. (2015) and Iraldo et al. (2017), innovative approaches and PES directly affect an organisation's competitiveness.

PES are environmental protection approaches that companies use to influence employee behaviour through manager role models and to integrate environmental issues into corporate strategies (Reinhardt, 1999). In addition to being proactive, environmental strategies can be reactive. Regardless of this categorisation, the focus was on the commitment to environmental concerns. However, reactive strategies are typically obligatory, and the organisation must

comply with them (Ahmed et al., 2021). In contrast, environmental regulations do not promote proactive strategies. According to Sharma (2000), PES is a coherent pattern of actions to reduce the environmental impact of operations that do not comply with environmental regulations or standard procedures. This management strategy is a top-down process as it is supported by senior management (Kuo et al., 2021). Singjai et al. (2018) added that the introduction of PES does not lead to immediate success; instead, it promotes sustainable organisational performance and reduces operating and maintenance costs over the long term. Leonidou et al. (2013) confirmed the impact of green marketing on cost reduction and highlighted its use to differentiate offers from the competition. The introduction of a sustainability policy reduces costs and differentiates firms, thereby increasing competitiveness (Camisón, 2020; Singjai et al., 2018).

For this increase to occur, the commitment of the company's management and its stimulation of interest and customer feedback are important as they lead to a higher level of awareness, appreciation, and loyalty among customers. Thus, after introducing green strategies, companies become more trustworthy to customers and employees (Iraldo et al., 2017). This means that green strategies affect competitiveness in the internal environment (resulting in increased motivation, involvement, and competencies for employees and a consequent unification with management and growth in labour productivity) and the external environment (resulting in the company becoming differentiated from the competition and gaining more market share and new clients) (Iraldo et al., 2017; Testa et al., 2015).

2.3 SUSTAINABLE HOTEL INDUSTRY

The application of a sustainable concept also has a positive impact on the hotel industry, which involves hotel facilities that are significantly associated with environmental pollution and the consumption of significant amounts of resources such as electricity, heating materials, and water (Amado dos Santos et al., 2020; Asadi et al., 2020). According to Melissen et al. (2016), the hotel sector will account for up to 21% of the ecological footprint of tourism by 2035. Sustainable businesses can be achieved through the concept of zero waste, which is part of the idea of a circular economy, and provides an answer to the question of how to do business without material waste; through the right setting of waste management, sustainable materials, product design, and subsequent disposal of used products without storage (Zaman, 2015).

Accommodation facilities that use the concept of zero waste or have sustainable goals are called green hotels (Gao & Mattila, 2014). Such a label can be given to a hotel that uses eco-management to make decisions, buys local food, and optimises water consumption, waste management, and storage of chemicals and materials. It is also possible to include hotels that aim to minimise their negative impact on the environment through recycling and do not prioritise their profits (Bocken et al., 2014; Amado dos Santos et al., 2020). The green layout of these hotels attracts new consumers, which maintains the competitiveness of these specific hotels (Astawa et al., 2020). This concept can also lead to customer loyalty (Kang & Hustvedt, 2013). This concept must be clearly understood not only by the hotel but also by the customer, as the construction of an ecological hotel is a long-term process that brings results after a lengthy operation (Auliandri & Angraeny, 2017).

Ecotourism (also known as slow tourism–encompassing green hotels) leads to higher

environmental sustainability and better harmony between people and nature (Oh et al., 2016; Xu et al., 2017). Balaji et al. (2019) believed that these reasons would lead to this eco-friendly form of tourism becoming far more popular after the COVID-19 pandemic. Due to the COVID-19 pandemic, people have become more aware that human health and nature's health are closely linked and that they are more aware of the importance of nature and the ecosystem (Zhou & Lu, 2020). Tiong et al. (2021) recommended environmental strategies as a way for hotels to recover from the COVID-19 pandemic.

2.4 THE COVID-19 PANDEMIC AND TOURISM

The global COVID-19 pandemic has caused a crisis in many sectors of the economy and has had an immense negative impact. The tourism industry is among the most affected areas. Unfortunately, long-term quarantine and anti-epidemic measures complicate business operations (Rutynskyi & Kushniruk, 2020). The crisis has confirmed that tourism is heavily affected by the change and uncertain conditions, resulting in reduced travel and hotel occupancy rates (Courtney, 2020; Gössling et al., 2020). The travel industry has suffered heavy losses as tourists try to avoid situations with the risk of infection (Ruiz Estrada et al., 2020). STR (2020) estimated the decline in occupancy in Chinese hotels in January 2020 to be 62%, causing the total occupancy to reach below 10%. A survey by Zhang et al. (2020) of 498 Chinese hotels realised the same result in terms of occupancy but showed a decrease in occupancy of up to 89%. Airoldi (2021) examined the situation in the American hotel industry and discovered a record low in terms of occupancy in 2020, which fell by 33.3% to 44% of the total possible occupancy. This year-on-year decline is thus far the worst that the American hotel industry has experienced. Dobrosielski (2020) believed that it would take at least five years for the U.S. hotel industry to regain its pre-pandemic shape (in terms of occupancy, revenues, and average daily rate). This indicates that the recovery of travel demand will be slow, mainly because of the persistent health risks (Shin & Kang, 2020).

The spread of COVID-19 from China to other countries greatly worsened conditions, especially in the tourism sector, and rectifying this situation has become a major challenge (Ayittey et al., 2020; Ruiz Estrada et al., 2020). Brown et al. (2018) emphasised the need for preparation and timely response if any change occurred. Hotels that are agile and adaptable can gain a competitive advantage. To remedy this situation, it will be essential to reduce health risks using technological innovation that reduces guests' interactions with employees and improves hygiene conditions (Shin & Kang, 2020).

3. RESEARCH OBJECTIVE, METHODOLOGY, AND DATA

The main objective of this research was to determine the impact of the implementation of PES in hotel strategies on their competitiveness, considering the current crisis in the tourism sector caused by the COVID-19 pandemic. The stated objective of this research comes from the assumption that there is a relationship between the use of PES and company competitiveness. This relationship has been confirmed by authors such as Neverauskienė et al. (2020) and Zhou & Lu (2020). Although this relationship also exists in the hotel industry (Sing-jai et al., 2018), there are insufficient analyses and studies to confirm this conclusion (Camisón, 2020; Asadi et al., 2020). Therefore, the authors of this study attempt to extend the knowledge about this

dependence to the hotel industry. The stated assumption is verified using the currently available data in selected accommodation facilities in the Czech Republic. Given the current situation, this dependence is also examined during the crisis (the COVID-19 pandemic). The answer is sought to the question: what is the role of PES in terms of competitiveness in times of crisis?

Whether PES has an impact on competitiveness can be determined from the experience of accommodation facilities that introduce environmental principles to their strategies. According to the findings of secondary data elaboration, there is also a way to measure competitiveness. From the key factors for measuring competitiveness, occupancy was selected, which authors such as Fraj et al. (2015), Millán-García & Gómez-Díaz (2018), and Marulanda-Valencia & Restrepo-Montes (2020) most often stated and recommended. Another reason for choosing the occupancy rate was that the respondents understood it and consented to its publication. Therefore, it can be assumed that in the event of a PES decrease, the competitiveness of the accommodation facility decreases, and conversely, as it increases, the competitiveness of the accommodation facility increases. To assess the competitiveness of individual facilities, it was necessary to determine, first, the changes in their occupancy (separately for green and classic facilities) after the outbreak of the COVID-19 pandemic.

The definition given by GREEN HOTEL ASSOCIATION was used to distinguish the type of accommodation: "Green" accommodation facilities implement environmental measures associated with saving water and energy, reducing emissions, minimising waste, or green shopping, leading to environmental protection, and reducing operating costs (http://greenhotels.com/). Respondents answered questions about their environmental behaviour in the questionnaire, from which they were then classified as either green or common hotels. For research purposes, a relationship between green hotels and hotels that apply PES is assumed.

In connection with the research objectives, the chosen method of competitiveness assessment, and the definition of PES, a research question was set: What impact do PES implemented in hotel strategies have on their competitiveness during the crisis?

Based on this research question, three hypotheses were formulated. The hypotheses work over several periods. The year 2019 is considered to be a year without a crisis in tourism, and the year 2020 a year of crisis. Hypothesis H2 is tested in the second quarter because this quarter was quite specific not only by the crisis but also by government restrictions when services were largely closed. Hypothesis H3 is tested in the third quarter when the hotel industry is still in crisis, but hotels could already operate relatively normally, except for hygiene measures.

H1: H01 The reduction in the competitiveness of hotels is independent of the type of hotel, according to the implementation of PES.

H2: H02 There is no dependence between the year-on-year change in occupancy (in the second quarter of 2019 and 2020) and the type of hotel.

H3: H03 There is no dependence between the year-on-year change in occupancy (in the third quarter of 2019 and 2020) and the type of hotel.

The first hypothesis is tested based on hotel experience, and the second and third hypotheses are tested based on the occupancy rate.

Data collection

Data were obtained through a questionnaire survey focusing on issues related to waste and resource consumption within the accommodation facility. The questionnaire was sent online through Google and consisted of three main sections. The first section included identification questions. The second section investigated the development of the main competitiveness rate (occupancy) before the COVID-19 pandemic (the second and third quarters in 2019) and after the outbreak of the COVID-19 pandemic (the second and third quarters in 2020). The last section examined the impact of PES implementation in hotel strategies on hotel competitiveness. Data were collected from 11 November to 6 December 2020.

Research file

The respondents were members of the Association of Hotels and Restaurants of the Czech Republic (AHRCR, 2020). The basic set consisted of all 1,560 members, mainly because the AHRČR guarantees all its members the certainty of obtaining information in advance, education, mediation of contacts, exchange of experience, promotion of their facilities, and other membership benefits that can increase their competitiveness. The AHRCR (2020) also includes additional 13 accommodation facilities and 4 camps or cottage settlements; however, due to the representativeness of the data, these were not included in the research. After making a quota selection using the quota symbol (the category of accommodation facilities in this association), a set of 1,075 members was determined, specifically from hotels, garni hotels, and boarding houses. For representativeness, the percentage of individually selected types of accommodation facilities based on data from the AHCR was observed. It consisted of 74% of hotels, 23% of boarding houses, and 3% of garni hotels. The term "hotel" was used in the entire research file and the paper. Out of 1,075 accommodation facilities addressed, 142 were inactive (permanently or temporarily closed). The research setting was finally 933 active members. Electronic data collection took place from 11 September 2020 to 6 December 2020. A completed questionnaire was sent by 110 accommodation facilities, which represents a 12% return on responses. Participating accommodation facilities were evenly distributed among the regions of the Czech Republic. It can be stated that most responses (almost 14%) were registered from the capital city of Prague, the South Moravian region, and the South Bohemian region. However, accommodation establishments from the Pilsen region had the least participation in the questionnaire survey, less than 2%. It is important for this research that, in terms of the implementation of PES, 54% of accommodation facilities considered to be green hotels participated, of which 45% sought to gradually implement the ecological concept into existing strategies and 9% acted as green accommodation facilities with an ecological concept in place since their inception. The remaining 46% of accommodation establishments in the study were establishments that operate without environmental measures.

Data processing

The evaluation of the responses from the questionnaire survey was conducted through statistical data processing using SPSS Statistics software and MS Excel. MS Excel was used to process absolute and relative frequencies. The relationship between the two variables was expressed using contingency tables with actual frequencies created using the SPSS Statistics

software. When testing hypotheses on the independence of the two variables, the chi-square test was used to test the independence of the two variables and was performed using the SPSS Statistics software immediately after creating the relevant contingency table. Experience with accommodation facilities was used as the basis for testing the first hypothesis. Following the criterion that at least 80% of the expected frequencies should be higher than 5, and simultaneously, the remaining frequencies should be greater than 2, the lines with answers 1 ('agree') and 2 ('somewhat agree'), as well as lines 4 ('somewhat disagree') and 5 ('disagree') were merged in the first established hypotheses. The 'semi-green' and 'green' accommodation facilities columns have also been merged into the established hypotheses. The meaning of the rows and columns has been retained. After this adjustment, all the tested hypotheses met the expected frequencies. In the SPSS Statistics software, the p-value was also calculated to reject the null hypothesis if its value was less than the specified significance level of 5%.

4. RESULTS AND DISCUSSION

Impact of PES on hotel competitiveness

First, the independence of the reduction of hotel competitiveness and the type was tested based on the experience of accommodation facilities. Table 1 presents their relationship by capturing the actual frequencies used to test the independence of the two variables.

Tab. 1 – Contingency table for the first tested hypothesis. Source: own research

		Type of hotel		Total
		Common hotel	Green hotel	
Degree of agreement with the assertion on reducing hotel competitiveness	1 (Agree)	8	7	15
	3	17	23	40
	5 (Disagree)	26	29	55
Total		51	59	110

According to the results of the tests given in Table 2, the first null hypothesis is not rejected as the p-value is higher than the determined significance level of 5% (0.759 > 0.05). Therefore, based on the experience of hotels, dependence between the variables chosen, i.e. the type of hotel and reduction in hotel competitiveness, cannot be disputed.

Tab. 2 – Testing results of the first hypothesis. Source: own research

	Value	df	Asymptotic Significance (2-sided) p-value
Pearson Chi-Square	0.551[a]	2	0.759
Likelihood Ratio	0.552	2	0.759
N of Valid Cases	110		

a. No cells (0.0%) have an expected count of less than 5. The minimum expected count is 6.95.

Subsequently, dependence between the year-on-year change in occupancy in the second quarter of 2019 and 2020 and the type of hotel was tested. Table 3 expresses this relationship by capturing the actual frequencies. Interestingly, despite the unfavourable assumption of an extreme reduction in occupancy in the second quarter of 2020, the actual reduction was not largely significant because the largest group of the examined hotels has a 60% reduction in occupancy. In other categories, the hotels are evenly distributed (see Table 3).

Tab. 3 – Contingency table for the second tested hypothesis. Source: own research

| | | Type of hotel | | Total |
		Common hotel	Green hotel	
The year-on-year change in occupancy in the second quarter of 2019 and 2020 [%]	0	7	7	14
	20	7	13	20
	40	12	14	26
	60	**17**	**16**	**33**
	80	8	9	17
Total		51	59	110

The testing results shown in Table 4 lead to the conclusion that we do not reject the second null hypothesis. In this case, the p-value is a higher value than the significance level of 5% (0.832 > 0.05). According to the test, it is not possible to demonstrate a relationship between the type of hotel and the year-on-year change in occupancy in the second quarter of 2019 and 2020.

Tab. 4 – Testing results of the second hypothesis. Source: own research

	Value	df	Asymptotic Significance (2-sided) p-value
Pearson Chi-Square	1.469[a]	4	0.832
Likelihood Ratio	1.489	4	0.829
N of Valid Cases	110		

a. No cells (0.0%) have an expected count of less than 5. The minimum expected count is 6.49.

In the third quarter of 2020, the Ministry of Health (2020) loosened measures regarding the pandemic and the situation in the country changed. The third hypothesis was tested by determining the independence between the year-on-year change in occupancy in the third quarters of 2019 and 2020 and hotel type. Table 5 also takes the form of a contingency table showing this relationship using the actual frequencies. In the third quarter of 2020, there was no significant decrease in occupancy, unlike in 2019. For some facilities, occupancy increased, which was somewhat unexpected during the crisis (Courtney, 2020; Gössling et al., 2020; Jiang & Wen, 2020).

Tab. 5 – Contingency table for the third tested hypothesis. Source: own research

		Type of hotel		Total
		Common hotel	Green hotel	
The year-on-year change in occupancy in the third quarter of 2019 and 2020 [%]	0	19	33	52
	20	17	10	27
	40	6	7	13
	60	7	5	12
	80	2	4	6
Total		51	59	110

Based on the test results in Table 6, we do not reject the zero hypothesis in this case, as the p-value is higher than the selected significance level of 5% (0.191> 0.05). According to the test, it is not possible to determine the relationship between the type of accommodation and the year-on-year change in occupancy in the third quarter of 2019 and 2020.

Tab. 6 – Testing results of the third hypothesis. Source: own research

	Value	df	Asymptotic Significance (2-sided) p-value
Pearson Chi-Square	6.111[a]	4	0.191
Likelihood Ratio	6.161	4	0.187
N of Valid Cases	110		

a. Two cells (20.0%) have an expected count of less than 5. The minimum expected count is 2.78.

In addition to examining the occupancy of individual hotel types, the respondents were also asked questions concerning the nature of the clientele of these facilities, specifically the percentage of Czech visitors in their occupancy. The authors were interested in the change in the number of Czech tourists accommodated in Czech hotels in 2020 due to the COVID-19 pandemic, which resulted in measures restricting travel abroad and people fearing to visit other countries. According to the data, 42% of green hotels stated that 80–100% of their visitors in 2019 were Czechs. In 2020, this fact was confirmed by 19% more green hotels, i.e. 61% of green hotels. For 2019, 29% of common hotels (non-green accommodation facilities), which was 13% less than green hotels, stated that 80–100% of occupancy was made up of Czech citizens. In 2020, common hotels with 80–100% occupancy of Czech visitors increased by 20%, bringing it to 49% of common hotels.

This research yields two groups of results. The first group is the results of testing the dependence between the type of hotel and changes in hotel competitiveness, based on both the experience of the hotels and changes in hotel occupancy. The second group of results includes concrete values of changes in occupancy in the second and third quarters of 2019 and 2020, as well as specific changes in the clientele.

However, in the statistical testing of established hypotheses, our research does not correspond with the results of other studies, such as Neverauskienė et al. (2020), Iraldo et al. (2017), and Zhou & Lu (2020). At the significance level of 5%, it did not prove the relationship between hotel

type and competitiveness in the hotel industry. Thus, according to our results, implemented PES had no effect on hotel competitiveness during the crisis.

There are several reasons why all three hypotheses were rejected. One possible reason is outlined by Delmas et al. (2011). They stated that studying the relationship between environmental principles and competitiveness without the company's general organisational skills is inaccurate, as this lacks an important element in the relationship that creates the success of PES. Another reason is that though the Covid-19 pandemic brought a major crisis to the tourism industry, it was not a classic economic crisis as the Global Financial Crisis in 2008. The government's measures almost halted the provision of accommodation services in the second quarter of 2020. This significantly affected both green and common hotels, and thus, the evaluation according to the occupancy rate in the second quarter of 2020 presents a problem. However, in the third quarter of 2020, when government restrictions were lifted, the impact of PES on hotel competitiveness during the crisis has not been confirmed. According to absolute values of occupancy rates, a slight trend confirms that in the third quarter of 2020, green hotels were more competitive. This finding could indicate, similar to Testa et al. (2015), that the implementation of PES in accommodation facilities can influence competitiveness. Still, this fact needs to be further investigated in the hotel industry.

Only our second group of results agree with other studies that have similar absolute occupancy values. Courtney (2020), Gössling et al. (2020), and Jiang & Wen (2020) confirm that tourism has been greatly affected by the COVID-19 pandemic. This has resulted in reduced travel and hotel occupancy. The effects of a lower travel demand have also been examined by Pawlicz (2012), who added that there is not only a reduction in occupancy but also a reduction in hotel yields, which results in lower employment and a deterioration in the living conditions of the local community. Napierala et al. (2020) quantified a specific decrease of 20% in the occupancy of Polish hotels in 2020 compared to hotel occupancy in 2019. After examining the year-on-year change in occupancy, the authors of this article found that occupancy in the second quarter of 2020 decreased by almost 61% compared to occupancy in 2019. In the third quarter of 2020, it decreased merely by 28% compared to 2019. This finding is also confirmed by Thompson (2020), who found that Czech hotels in the higher category, based on star rating, only had 10–20% occupancy in 2020. Likewise, in Budapest, hotel occupancy fell to 30% in the first half of 2020, from an occupancy rate as high as 85% in the first half of 2019. Hungarian tourism relies on foreign tourists, but in 2020, it recorded one of its worst periods (Morrell, 2020). Comparing the development of hotel occupancy in the Czech Republic before the Covid-19 pandemic and after the outbreak of the Covid-19 pandemic, the results of our research correspond to similar research in other countries.

5. CONCLUSION

The main goal of this research is to determine whether the implementation of PES has an impact on hotel competitiveness during the crisis. The objective was to provide evidence for hotel managers on the importance of PES implementation and possible mitigation against the current crisis in the hotel industry, as stated by Tiong et al. (2021).

From the results obtained from accommodation facilities based on their experience and the occupancy rate, the existence of a direct relationship between the reduction of competitiveness and hotel type has not been proven after testing all three hypotheses. According to our findings, it does not matter whether the hotel is green during a crisis. Therefore, the research conducted does not confirm the findings of Singjai et al. (2018) and Iraldo et al. (2017) and provides more proof of the statement of Camisón (2020) and Asadi et al. (2020) that the relationship between environmental principles and competitiveness in the hotel industry must be further examined.

Conversely, the research finds that the decline in occupancy in the third quarter of 2020 was not as deep as expected because Czech visitors embraced domestic tourism. Green hotels had an advantage, as the absolute indicators show.

The research conducted had several limitations. The first limitation is related to the official classification of environmental and sustainable accommodation facilities. As the association of hotels in the Czech Republic did not state whether an accommodation facility is classified as common or green, determining how the research sample compared to the entire industry was impossible. The classification of hotels as green and common was conducted according to respondents' answers regarding their environmental behaviour. However, this classification method is connected with the limitation of self-evaluation by respondents, which may overestimate their sustainable behaviour.

The form of the examined crisis could be considered as the second limitation of this research. COVID-19 brought a very specific situation to the hotel industry, which was completely different from the classic economic crisis of 2008. This specificity brought the following limitations to the research. On the one hand, there is a question of result reliability in the evaluation of the second hypothesis (second quarter 2019/2020) when the occupancy of hotels was artificially reduced by government restrictions. On the other hand, this situation also influenced the research sample size and the overall data reliability. During data collection, the authors often received an automatic response regarding temporary unavailability due to the COVID-19 pandemic from many hotels. This situation significantly affected the number of accommodation facilities involved in the research. For the same reason, it was not possible to collect data from other countries; therefore, the international context is also a limitation of this research.

Further research should focus primarily on extending the research scope of observed hotels and adding data from other countries. It would also be appropriate to examine the situation during different crises other than the COVID-19 pandemic.

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