PJFMA

The costs of sustainability in hospitality investment: Implications for reference ADR pricing using the Hubbart formula.

Hélder Carrasqueira[1]
Carlos Monteiro[2]

Abstract

Purpose: In order to contribute to the knowledge on the subject, in this article we propose to present, the differences between an investment in a hotel without specific environmental concerns, and one that incorporates this positioning from scratch.

Methodology: For this purpose, we will use the Hubbart formula that allows us to establish the reference price of the average daily rate for the sale of the product "room" for the two aforementioned investment hypotheses. The comparison will also be made considering the seasonality in a city destination versus a sun and sea destination.

Findings: we present the differences in the competitiveness and feasibility of investing in sustainability, considering the costs of implementing the investment, its impact on operating expenses, and the dilemma between responding to customers' increased demand for sustainability versus competitive pricing of the hotel room product offering in the market.

Originality: Although there is relative consensus on the need to incorporate sustainability issues, particularly in new hotels to be built, many independent hoteliers or small chains are faced with the problem of estimating the impact on spending and therefore competitiveness in the market. We believe that with this article we contribute to improve knowledge on the subject.

Keywords: Investment; Sustainability; Viability; Hospitality; Hubbart.

---

[1] University of Algarve/ESGHT; Researcher at CiTUR-Center for Research, Development and Innovation in Tourism; PhD in Economics (hcarrasq@ualg.pt).
[2] University of Algarve/ESGHT; Expert in Finance, Banking & Insurance.

Introduction and Objectives

The issues surrounding environmental sustainability have been experiencing a growing assertion and acuteness in recent years. In fact, if initially there might have been some people who thought we were facing a fad when talking about global warming, the increased frequency of catastrophic events (diluvian rains along with extreme droughts, heat waves and large fires or the disappearance of sand from the beaches), have made the issue more acute. Many tourist destinations (such as those of sun and sea or mountains), are now aware that their competitive viability may be at stake, even in the medium term.

During these facts, the environmental awareness of people, in general, and of hotel customers, in particular, has been growing, with studies such as the one by Acierto.com (2021) according to which 6 out of 10 customers tend to opt for suppliers committed to environmental sustainability, and 30% of them are willing to pay more for a hotel that has these characteristics.

In this context, sustainability has become an important factor to add to the communication policy of hotel brands on the one hand; but on the other hand, the hotel and accommodation sector is also identified as being responsible for 10% of the annual CO_2 emissions in the tourism offer (O'Flynn, 2021).

Therefore, more than a communication issue, the industry faces the need to position itself as an effective builder of solutions that contribute to the reduction of the greenhouse effect, to the sustainability of tourist destinations, and to the economic viability of the hotel units themselves.

A review of the websites of major hotel chains found measures that are identified as a commitment to sustainability (Jonas & Confort, 2019). However, most hotels are not owned by large companies, but are either independently owned or part of small chains, particularly in Europe. These chains often face profitability problems and lower brand awareness, so they work in a market where price is a key factor in sales. Therefore, cost control is decisive.

In a speech given at WTM 2021, the CEO of the Radisson Hotel Group mentioned that "many chains have specific programs for sustainability; but this will not bring a real change in the emissions performance of the sector because most hotels in the world do not belong to these big chains, they are individual hotels, and these need guides" (Hosteltur, 2021).

It is, therefore, in this context that the objective of this article arises. To present a contextualization of hotel investment, in this case in a mid-market hotel, and verify if the environmental positioning from scratch makes the unit competitive when compared to a traditional investment that does not observe these requirements.

As we will see in the literature review, there are not many academic studies on sustainability considering the area of implementation costs of sustainable solutions, so this fact also mobilizes us to contribute to this aspect of sustainability research.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

48

1. Literature review

The research around sustainability has been growing since the concept of sustainable development was established (Bruntland, 1987) and its evolution to the perspective of corporate social responsibility, involving the positioning of the company, as a whole, in the theme (Barcellos, 2011). Companies are invited to participate in this positioning, since the negative impacts that tourism can have on tourist destinations (Pons *et al*, 2020; Gursoy, *et al*, 2019). The hotel industry, in turn, identified that is its environmental footprint (Koiwanit & Filimonau, 2021), will have to have an active participation in the development of sustainable practices that help conserve the distinctive natural factors of the offer in which they are inserted (Szromek, 2021; Rosa, 2017).

The common element of sustainability is the promotion of development without affecting the ability of future generations to enjoy the same natural space in a balanced and stable manner (Karunasena & Rathnayake, 2016).

For the hotel industry, customers increased environmental awareness and their willingness to consider the hotel's sustainability positioning in the purchase decision (Moraleda *et al*, 2019) has led hotels to adopt sustainable practices and move towards "green hospitality", supported by analyses that proved their increased competitiveness with this option (Molina-Azorin, J. *et al,* 2015). A survey on the information available on the websites of the top ten global hotel chains (Hotels, 2019), identified 14 policy groups of sustainable practices, the use of environmental certification logos, and alignment with the UN 2030 agenda for sustainability (Carrasqueira, 2021). Hotel positioning within the sustainable development goals to recognize hotels as engaged in this perspective has also been identified (Abdou, 2021). As well as the communication of this positioning as a competitive advantage has emphasized marketing communication and the consequent capitalization in the marketing of hotel units (Mele, 2019).

We can also highlight work on specific forms of sustainability in hospitality, examples of which are: saving energy (Chong, H. *et al*, 2015; Kim, Y. *et al,* 2018) or water (Yoon, H. *et al*, 2021), or the development of sustainability performance measurement indicators (Duric & Topler, 2021).

Also, the point of view of the competitiveness of hotels that adopt sustainability in terms of financial results is validated in several works in which this profitability relationship is confirmed (Aznar, J. *et al*, 2016; Santos, R. *et al*, 2017). In the same line there are works developed on case studies, using the ROI-return on investment calculation as an example of the profitability of investment in sustainability in hospitality (SHA-IFC, 2020). Most of these studies, however, focus on situations or data related to large hotel companies. Those that focus on small independent hotel companies are scarce or somewhat rare (Buffa, F. *et al*, 2018; Abdou, A. *et al*, 2020).

It is in search of contributing to this answer that we developed this research, as mentioned. And because for a small hotel the price with which it is presented in the market is of the utmost importance for its competitiveness, we will resort to the Hubbart formula methodology to find this answer. The formula developed by Ray Hubbart seeks to consolidate all the costs of a hotel (including construction and operating costs) and the respective income, until arriving at the price of the room to be sold. It has been widely used to define the average daily rate over time (Steed & Gu, 2005; Mattimoe & Seal, 2011); El-Nemer *et al*, 2017; Loanata, C. 2021; Vinod, B. 2022). However, we did not

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

49

find this formula as a methodology applied to support an investment decision based on sustainability. We will base the use of it on the methodology.

2. Methodology

To formulate an adequate price for the main hotel product to be sold in the market (the hotel room), it is necessary to have a notion of the hotel's cost structure (Faria, 2016), including its framework in terms of fiscal and financial obligations, the respective revenues, and the profitability to be achieved. Price formation (ADR or average daily rate) is one of the challenges of the hotel business.

In large hotel companies, it is common to have a comprehensive knowledge of this subject; however, this is not often the case with small and medium-sized independent hotels. It's even common to hear about unreliable methods such as: following the prices of peer competitors (identical category and location) and setting the price, depending on the competitiveness against them; following the price of dominant chains and shadow pricing (Kim, *et al*, 2020). This path leaves us at the mercy of strategies that we do not control.

It is therefore recommended to know the appropriate average price for our accommodation in a more organized way. Against this background, we will use the so-called Hubbart Formula (Chi, 2020) - developed in order to answer this question (Jones, *et al*, 2004). The formula projects the desired return, considers the operating expenses and includes the revenue that does not belong to the accommodation.

It can be presented as follows:

$$FH = \frac{[(Expected\ return + Operating\ costs) - Other\ income]}{Projected\ overnight\ stays} = Room\ rate$$

Hubbart's formula can be considered top/down because it starts with the desired profitability, which is particularly important for investors and for those financing part of the investment (for example, a bank), and goes down to the daily rate. It takes into consideration taxes, depreciation, insurance, fixed and variable costs of the operation, and the occupancy rate, which should be realistic and appropriate to the type of establishment/location of the hotel unit. From the calculated expenses and the expected occupancy rate, the average daily rate (ADR) is established, which should be taken as a reference for the intended profitability of the project/investment.

Naturally, the price to be presented to the customer should be adjusted at each moment, taking into account aspects such as seasonality, predictable occupancy rate, competition and internal aspects such as the type of rooms to market and other availabilities. However, it doesn't start this exercise randomly because it has a reference base given by Hubbart's formula.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

50

It is, therefore, through the execution of the same that we will make the comparison between the investment from scratch in a medium category hotel (3 stars or mid-market), having as work basis two situations:

- The hotel designated as A is presented with data inherent to an investment in a "normal" hotel unit, that is, with no specific environmental sustainability concerns. The data presented were obtained for the Portuguese market (Carrasqueira, 2021).

- The hotel designated as B has since its construction been concerned with sustainability, aspiring to apply for certifications that validate it as a "Green hotel". This option has increased costs in the initial investment (Rah, 2019) and reduction in expenses (namely utilities such as lower energy and water consumption (Simões, 2022). Note that we could list here other areas such as waste management, plastic disposal, use of local suppliers, social concerns, etc.; however, it is at the level of energy, water, and other utilities such as gas consumption that the main reduction in emissions is obtained. In the following, the analysis that falls on hotel B will have this concern at the centre of the analysis. More specifically, in the model followed, the expected investment costs increase by 12.5% (World Green Building Council, 2013) and positive returns are obtained in terms of efficiency in the use of resources - as mentioned, we will limit ourselves to utilities consumption - which represent on average 7.8% of global sales (JLL, 2021); the savings obtained are 20% of this value (IFC, 2020), compared to the hotel without environmental concerns, a value deducted in the unit cost per room. In addition, there is a 12.5% change in "Depreciation, taxes and insurance" expenses, derived from the increase in the investment value of hotel B (depreciation of the investment increase and increase in taxes and insurance arising from the property values).

It should also be noted that we begin by inform that the base data for this study relating to hotel A and those inherent to hotel B were presented to two specialists qualified for the Portuguese market, both with the category of planning directors, in a construction company with hotels in its portfolio and a real estate consultancy that supports investments in hotels, having both collaborated under the guarantee of maintaining anonymity. They classified the data as acceptable for applying a model that will work with 2023 occupancy rates now that they are close to pre-pandemic values.

The data was entered into the Microsoft Excel program to allow the various simulations.

3. Appreciation and discussion of results

The average occupancy rate we used for the three-star hotels, is relative to the urban/city tourism area - Lisbon (79,1%), and in the case of the destination with a strong seasonal slant, the Algarve was chosen - tourism based on "sun and sea", southern Portugal, the main tourist region of the country (67,9%) - with the data having been taken from the information from the National Statistics Institute (INE, 2023).

Unit costs per room, for Hotel A, were obtained from historical data of similar units, and the following formula was applied:

$$\frac{\textit{Total costs of the accommodation department}}{\textit{Number of occupied rooms}}$$

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

51

Thus, for Hotel A the unit cost in the city is 12€ and in the "sun and sea" destination is 16€.

For Hotel B, considering the expected 20% savings in utilities consumption, as mentioned above, it is estimated that the unit cost per room in the city is 11.11€ and in the "sun and sea" destination is 14.84€.

This resulted in the following table that frames the analyses performed.

Table 1 - Base data for hotels A and B

	Hotel A		Hotel B	
	City	Sun and Sea	City	Sun and Sea
Total Investment	4.625.000 €	4.625.000 €	5.203.125 €	5.203.125 €
Equity	1.250.000 €	1.250.000 €	1.406.250 €	1.406.250 €
Bank loan	3.375.000 €	3.375.000 €	3.796.875 €	3.796.875 €
Intended ROE	12%	12%	12%	12%
Income Tax	21%	21%	21%	21%
Interest Rate	5%	5%	5%	5%
Depreciation, Taxes and Insurance	270.000 €	270.000 €	303.750 €	303.750 €
Undistributed operating costs	558.000 €	558.000 €	558.000 €	558.000 €
F&B results (revenue)	25.000 €	25.000 €	25.000 €	25.000 €
Other results (expenses)	45.000 €	45.000 €	45.000 €	45.000 €
Number of rooms	90	90	90	90
Days of the year (n)	365	365	365	365
Estimated occupancy rate	79,1%	67,9%	79,1%	67,9%
Unit cost of accommodation	12,00 €	16,00 €	11,11 €	14,84 €

Note: data for Hotel A taken from the publication Hotelaria Internacional (Carrasqueira, 2021); data for Hotel B, adapted by the authors of the paper according to the methodology.

Following, we present in the next table, an example of the execution of Hubbart's formula applied to Hotel B, taking into account the assumptions inserted in table 1, in this case regarding the investment in the destination of sun and sea. It is intended, therefore, to share the result of the research method in an applied way. Once the data is entered, the main factor that determines the ADR is the denominator of the formula (projected overnight stays), which in this case is represented by the occupancy rate.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

52

Table 2 - Application of Hubbart's formula to hotel B

(Example: Investment in "Sun and Sea" destination)

	ADR per Room - Hotel B – Sun and Sea			
	Net Profit (1)			**168 750 €**
	Net Profit=Equity * ROE	1 406 250 €	12%	168 750 €
	Earnings Before Taxes (2)			**213 608 €**
	Earnings Before Taxes= Net Profit/(1-Income Tax)	168 750 €	79%	213 608 €
(+)	**Loan * Interest Rate (3)**	**3 796 875 €**	**5%**	**189 844 €**
(=)	**Earning Before Interests and Taxes (2+3=4)**			**403 451 €**
(+)	**Depreciations, Taxes and Insurance (5)**			**303 750 €**
(=)	**Earnings Before Fix Costs (4+5=6)**			**707 201 €**
(+)	**Undistributed Operating Costs (7)**			**558 000 €**
(=)	**Operating Departments Earnings (6+7=8)**			**1 265 201 €**
(+)	**Operations Earnings excluding accommodation (9)**			**-20 000 €**
	Food & Beverage		25 000 €	
	Minor Departments		-45 000 €	
(=)	**Accommodation Earnings (8-9=10)**			**1 285 201 €**
(+)	**Accommodation Direct Costs (11)**			**306 292 €**
	[number of rooms*365*occupancy rate*unit cost per room]			
(=)	**Accommodation Revenue (10+11=12)**			**1 591 494 €**
	Rooms Rented (13)			**20 640**
	[number of rooms*365*occupancy rate]			
	Average Daily Rate (ADR)			**72,5 €**
	(Accommodation Revenue/Rooms Rented)			

Note: the value of the occupancy rate in this example is 67,9%, average in 2023 for three star/mid-market hotels, in the Algarve, south of Portugal, subject to a high seasonality; the unit cost of accommodation is 14.84€.

Inserted the data in the model for hotels A and B, and for the two tourist destinations, we obtain the values in the following table.

Table 3 - ADR results for hotels A and B

3 Stars Hotel			
	Occupancy Rate (2023)	ADR – Hotel A	ADR – Hotel B
City Hotel	79,1%	58,4 €	60,6 €
Sun and Sea Hotel	67,9%	70,1 €	72,5 €

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

53

Thus, the first point to note is that, for the construction of a greenfield hotel, ADR will always be penalized by the increase in investment costs aiming at sustainability.

The penalty for the city hotel, with a high occupancy rate is lower, i.e., 2,2€ per room (from 58,4 to 60,6€). In an average stay of three days, the customer must pay an additional 6,6€.

Table 4 - Average stay price for hotels A and B

3 Stars Hotel			
	Average Stay (2019)	Average Stay Price Hotel A	Average Stay Price Hotel B
City Hotel	3 days	175,2 €	181,8 €
Sun and Sea Hotel	5 days	350,5 €	362,5 €

The situation of the hotel whose investment is in the sun and sea destination and with a lower occupancy rate, presents a difference of €2.4 per room (from €70.1 to €72.5), and this value can be seen as a loss of competitiveness compared to the competition. The average stay increases to five days, so the customer will have to spend an extra €12 on the reservation.

From the results, we extract that: the investment in the hotel built in a sustainable perspective, with "Green" certification concerns, has higher costs and leads to a higher ADR.

Should this factor be decisive for a negative investment decision?

The answer is clear to us, based on the work of Aznar, J. *et al,* (2016); Santos, R. *et al,* (2017); SHA-IFC, (2020). Following we believe that it would be a mistake in the current scenario, not to opt for the investment with a sustainability profile, for the following reasons:

- At present, demand tends to penalize non-sustainable hotels; therefore, the hotel will be better positioned in terms of future trends;

- It is easier to fit the hotel into an international brand, if applicable;

- It is easier to sell the physical property of the hotel to an investment fund, if the hotel is sold & leased back;

- In terms of initial financing, the hotel is also better placed in terms of attracting investors if it has a sustainable positioning;

- Sustainability tends to be an increasingly present factor in the evaluation made by customers;

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

54

- A sustainable hotel is synonymous with an ethical commitment to improving the performance of the sector in relation to environmental goals and the tourist destination where it is located.

Therefore, there are good reasons why even in a situation in which the investment in the hotel built with a sustainable perspective has higher costs, the choice should be for sustainable investment.

Conclusions

Hubbart's formula shows that the average price per room to market (ADR) of a mid-market hotel, when it is built with an environmental sustainability concern and likely to be approved in a certification as a "green hotel", has a loss of competitiveness in the market compared to a hotel without this concern. The same is more evident in destinations that suffer from seasonality, which generate lower average occupancy rates, as in destinations of sun and sea, with a high season and a low season.

Since many of the promoters of this investment profile are independent hoteliers, should they choose the apparently more competitive option, sticking to the less expensive traditional investment? We think not.

In the case of the hotel located in a city with a high average occupancy rate, as in the model presented, the increase in the average price per room is likely to be absorbed by the commercial management, due to the "Green hotel" profile (e.g., image and positioning gains). In the case of the hotel in a destination with high seasonality, reasons were invoked in the discussion to justify that, even with higher costs, the correct strategic positioning will be the option for a sustainable construction, adapting to the demand trends.

However, we recognize that for the small investor, usually the referred independent hotelier, there can be a dilemma when confronted with data from 2022 regarding the attitude of customers when booking a hotel (EHC, 2022) which indicate: 65% of the demand asks for sustainable hotels, but only 23% are willing to pay a higher price for the costs of sustainable accommodation, at the time of purchase.

In this context, knowing these data, a complementary attitude to public policies is required, i.e., government authorities should be called upon to develop a "friendly" tax policy to compensate for these costs of sustainable greenfield investment in the first years of operation. They will thus contribute to accelerate the process of transition to the desirable new model of sustainability.

We hope, therefore, to have given a contribution so that mid-market hotels, generally little studied and many of which are led by independent hoteliers, may also increasingly integrate the necessary positioning of sustainability. We suggest as future studies the application of the methodology to other countries/markets and other hotel categories.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

55

Study limitations

The work was developed on the Portuguese market and on hotels classified in the mid-market segment. We suggest for future studies the application of the methodology to other countries/markets and other categories of hotels. Let us also consider that the Hubbart formula has a high potential for constructing analyses based on data that enable measurable results to support decision-making, in order to make the advantages of this inevitable change clearer.

Bibliography

Abdou, A., Hassan, T. & Séraphin, M. (2020). A Description of Green Hotel Practices and Their Role in Achieving Sustainable Development. *Sustainability*, *12*(22), 9624, https://doi.org/10.3390/su12229624.

Acierto.com (2021 07 March). La eficiencia energética de los hoteles, clave para un sector muy tocado. Hosteltur, https://tecnohotelnews.com/2021/03/eficiencia-energetica-hoteles-clave/

Aznar, J. P., Sayeras, J. M., Galiana, J., & Rocafort, A. (2016). Sustainability commitment, new competitors' presence, and hotel performance: The hotel industry in Barcelona. *Sustainability*, *8*(8), 755.

Buffa, F., Franch, M. & Rizio, D. (2018). Environmental management practices for sustainable business models in small and medium sized hotel enterprises. *Journal of Cleaner Production*, Volume 194, Pages 656-664, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2018.05.143.
Carrasqueira, H. (2021) *Hotelaria Internacional*, Atual Editora. ISBN 978-989-694-669-2.

Chi, C., (s/d). Hotel Room Pricing and Yield Management. https://apps.aoi.wsu.edu/onlineMedia/pdf_version/hbm491_04_art(c131).pdf, accessed on 16-03-2020.

Chong, H. & Ricaurte, E. (2015). Hotel Sustainability Tool 2015: Energy, Water, and Carbon:
Hotel Sustainability Benchmarking Tool, *Cornell Hospitality Report,* Vol. 15, No. 9.

Duric, Z & Topler, J. (2021). The role of performance on environmental sustainability indicators in hotel competitiveness. *Sustainability*, 13 (12), 6574; https://doi.org/10.3390/su13126574.

EHC (2022). cited por *TecnoHotel*, As 5 exigências sustentáveis exigidas pelo hóspede da Eurostars, 18-08-2022 - Eurostars Hotel Company's Study.

El-Nemr, N., Canel-Depitre, B., & Taghipour, A. (2017). Determinants of hotel room rates. In *Marketing Trends Congress. Luxury Industries Conference London 2017*.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

56

Faria, A. (2016). Noventa anos de normalização setorial: O sistema uniforme de contabilidade para a indústria do alojamento (USALI), available at https://www.occ.pt/fotos/editor2/anarfariaehc.pdf, accessed on 23-07-2021.

Fuentes-Moraleda, L., Lafuente-Ibáñez, C., Muñoz-Mazón, A., & Villacé-Molinero, T. (2019). Willingness to pay more to stay at a boutique hotel with an environmental management system. A preliminary study in Spain. *Sustainability*, *11*(18), 5134.

Gursoy, D., Bogan, E., Dedeoglu, B & Caliskan, C. (2019). Residents' perceptions of hotels' corporate social responsibility initiatives and its impact on residents' sentiments to community and support for additional tourism development. *Journal of Hospitality and Tourism Management*, Volume 39, June 2019, Pages 117-128.

INE (2023). Inquérito à Permanência de Hóspedes na Hotelaria e outros Alojamentos. Order no. PED-657803415, information made available by technical services on 20-03-2024.

Jonas, P. & Confort, D. (2019). Sustainable Development Goals and the World's Leading Hotel Groups, *Athens Journal of Tourism*, Vol. X, n. 6 (1). pp. 1-14. doi:10.30958/ajt.6-1-1.

Jones, P. & Lockwood, A. (2004). *The management of hotel operations*, Ed. Thomson, UK.

Karunasena, G., Rathnayake, U. & Senarathne, D. (2016). Integrating sustainability concepts and value planning for sustainable construction, *Built Environment Project and Asset Management*, vol. 6, no. 2, pp. 125–138.

Kim, Y.; Barber, N. & Dae-Kwan, K. (2018). Sustainability research in the hotel industry: Past, present, and future. *Journal of Hospitality Marketing & Management*, Volume 28, 2019 - Issue 5, Pages 576-620., https://doi.org/10.1080/19368623.2019.1533907

Kim, J., Jang, S., Kang, S. & Kim, S. (2020). Why are hotel room prices different? Exploring spatially varying relationships between room price and hotel attributes. *Journal of Business Research*, Volume 107, Pages 118-129, ISSN 0148-2963, https://doi.org/10.1016/j.jbusres.2018.09.006.

Koiwanit, J.& Filimonau, V. (2021). Carbon footprint assessment of homestays in Thailand.
Resources, *Conservation and Recycling*, Volume 164, January 2021, 105123

Loanata, C. (2021). Evaluation of hotel room rental rates at adiwana arya villas during the adaptation/new normal period. in *1st international hospitality entrepreneurship and innovation conference (inheic) 2021* (68).

Mattimoe, R. & Seal, W. (2011). Pricing in a Service Sector Context: Accounting and Marketing Logics in the Hotel Industry. *European Accounting Review* , Volume 20, 2011 - Issue 2, https://doi.org/10.1080/09638180.2010.493657.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

57

Mercade-Mele, P., Molina-Gomez, J., Garay, L. (2019). To Green or Not to Green: A Influência do Marketing Verde no Comportamento do Consumidor na Indústria Hoteleira. *Sustentabilidade*, *11*, 4623.

Molina-Azorin, J., Tarí, J., Pereira-Moliner, J. López-Gamero, M. & Pertusa-Ortega, E. (2015). Os Efeitos da Qualidade e Gestão Ambiental na Vantagem Competitiva: Um Estudo de Métodos Mistos na Indústria Hoteleira. *Tour. Gerenciar*, *50*, 41-54.

O'Flynn, C., Seymour, V., Crawshaw, J., Parrott, T., Reeby, C., & Silva, S. R. P. (2021). The Road to Net Zero: A Case Study of Innovative Technologies and Policy Changes Used at a Medium-Sized University to Achieve Czero by 2030. *Sustainability*, *13*(17), 9954.

Pan, C. (2007). Market demand variations, room capacity, and optimal hotel room rates. *International Journal of Hospitality Management*, Volume 26, Issue 3, September 2007, Pages 748-753.

Rah, H. (2019). The Hotel Sector Can Profitably Embrace Sustainable Development. NAOIP Corporate, https://www.naiop.org/en/Research-and-Publications/Magazine/2019/Summer-2019/Development-Ownership/The-Hotel-Sector-Can-Profitably-Embrace-Sustainable-Development, acedido a 28-06-2022.

Rosa, F. & Silva, L. (2017). Sustentabilidade Ambiental em Hotéis, Contribuição Teórica e Metodológica. *Revista Brasileira de Pesquisa Turística*, *11*, 39-60.

Santos, R., Méxas, M. & Meiriño, M. (2017). Sustainability and hotel business: criteria for holistic, integrated, and participative development. *Journal of Cleaner Production*, Volume 142, Part 1, Pages 217-224, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2016.04.098.

SHS-IFC (2020). *Business case for sustainable hotels Report*. Sustainable Hospitality Alliance. https://sustainablehospitalityalliance.org/resource/business-case-for-sustainable-hotels/

Simões, K. (2022, 21 april). O papel transformador que a Hotelaria pode assumir na Sustentabilidade. Publituris-JLL, https://www.jll.pt/pt/estudos-e-tendencias/investimento/o-papel-transformador-que-a-hotelaria-pode-assumir-na-sustentabilidade, accessed on 28-06-2022.

Steed; E. & Zheng, G. (2005). An examination of hotel room pricing methods: Practiced and proposed. *Journal of Revenue and Pricing Management,* volume 3, pages369–379.

Vinod, B. (2022). Hotel Pricing. In *Revenue Management in the Lodging Industry: Origins to the Last Frontier* (pp. 81-104). Cham: Springer International Publishing.

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

58

Yoon, H., Sauri, D. & Rico, A. (2022). The water-energy nexus in hotels and recreational activities of a mass tourism resort: the case of Benidorm. *Current Issues in Tourism*, 25:4, 592-610, DOI: 10.1080/13683500.2021.1893283

How to cite this article:

Portuguese Journal of Finance, Management and Accounting. ISSN: 2183-3826. Vol 10, Nº 19, March 2024

59