



ENVIRONMENTAL MANAGEMENT DISCLOSURES, ONLINE CUSTOMER RATINGS AND GREEN LEADER HOTEL PERFORMANCE

Abstract

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Purpose – This study analyses the influence of two important hotel capabilities, namely environmental management disclosures (EMDs) and online customer ratings (OCRs) on the performance of green leader hotels from a resource-based view perspective.

Methodology/Design/Approach – Data from a sample of 202 green leader hotels from 25 top travel destinations worldwide, from a content analysis of TripAdvisor, were used to examine the association between these capabilities and hotel performance.

Findings – The findings suggest that environmental management disclosures and online customer ratings play a significant role in enhancing the performance of green leader hotels. These strategic capabilities represent the level of green leader hotels' commitment towards environmental sustainability and customer satisfaction; and should be managed efficiently to ensure long-term business sustainability. Disclosing environmental management disclosures and online customer ratings on social media platforms is critical for enhancing hotel performance.

Originality of the research – This study contributes to the sustainable hospitality management literature by recognising the influence of environmental management disclosures and online customer ratings on green leader hotel performance from a resource-based view theory.

Keywords Environmental management disclosures; online customer ratings; hotel performance; resource-based view, green leader hotels

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INTRODUCTION

Environmental sustainability has become a global issue, and businesses are increasingly concerned about long-term sustainability (Aksoy et al., 2022; Jie et al., 2023). The focus of the existing literature has been on environmentally sensitive industries, such as mining, manufacturing, and chemical industries, while limited attention has been given to service industries like finance and hotel industries (Parker & Chung, 2018). As the finance industry is highly regulated, it is interesting to focus on the hotel industry, where environmental management disclosures (EMDs) are voluntary (Elalfy & Weber, 2019). The hotel industry is making a significant contribution to the global economy but has been affected by increasing environmental issues, such as pollution and climate change (Baloch et al., 2023). The industry faces increasing pressures to adopt sustainable practices due to the growing environmental awareness and consumer demand for environmental-friendly services. This has motivated many hotels to implement environmental management practices and disclose those practices to inform their stakeholders through various channels, such as annual reports, websites and online platforms such as TripAdvisor. These disclosures, known as environmental management disclosures (EMDs), offer a valuable tool to enhance transparency with stakeholders, build long-term customer trust and improve hotels' competitiveness. Nevertheless, the effectiveness of EMDs in influencing customer behaviour and enhancing hotel performance remains underexplored. In this study, environmental management practices refer to a product, process, service, policy, or technology that a hotel develops and/or adopts with the objective of minimising its environmental impact. Therefore, environmental management disclosures (EMDs) in this context refers to the act of providing information related to the environmental management practices.

Environmental management disclosures (EMDs) have traditionally been available in annual or stand-alone reports in a hardcopy format, but the advent of the internet allows the EMDs to be published on corporate websites, third-party websites, and social media platforms. For the hotel industry, online platform such as the TripAdvisor website play a vital role in shaping consumer decisions through customer ratings and reviews, which are widely regarded as key indicators of satisfaction and engagement. The website has been widely used by tourists to find travel-related information, such as hotel details (including environmental management disclosures - EMDs), bookings, reviews, and ratings (including online customer ratings - OCRs) (Sayfuddin & Chen, 2021). These information are considered more reliable and credible as they were evaluated by a third party, namely TripAdvisor Green Leaders Program for environmental management disclosures (EMDs) and customers who had stayed at one particular hotel listed in the TripAdvisor website for the online customer ratings (OCRs). Online customer ratings (OCRs) refer to the average rating of hotel quality rated by the customers based on several dimensions such as location, rooms, value, cleanliness, services and sleep quality. Ratings and reviews not only reflect customer experiences but also significantly influence a hotel's visibility and reputation, ultimately impacting its performance. Evidence from the extant literature has shown a significant role of either environmental management disclosures (EMDs) (Al-Wattar et al., 2019; Assaf et al., 2012; Ramanathan et al., 2016) or online customer ratings (OCRs) (Kim et al., 2015; Ögüt & Taş, 2012; Sayfuddin & Chen, 2021) in improving hotel performance. The EMDs published on the TripAdvisor website reduce information asymmetry of potential

customers about the hotels' commitment towards environmental sustainability (Manes & Tchetchik, 2018). Generally, customers who are concerned with environmental sustainability are more likely to book a hotel with greater EMDs, which subsequently increases the hotel's performance. Moreover, active engagement of the hoteliers with customers on the TripAdvisor website is vital to ensure that reasonable OCRs can be sustained in the long-term business, as the OCRs are a powerful tool for online sales, promotions, and reputation improvements for the hotel industry (Schuckert et al., 2015). Despite this importance, limited research has investigated the collective role of environmental management disclosures (EMDs) and online customer ratings (OCRs) in influencing hotel performance. Most prior studies have recognised the importance of EMDs and OCRs, individually. Both EMDs and OCRs represent critical hotel capabilities that help to improve hotel performance, as explained by resource-based view perspective. Furthermore, the number of customer reviews, an emerging proxy for measuring hotel performance, has been largely overlooked in prior studies, which predominantly focus on financial outcomes. This gap is further accentuated by a lack of online platform-specific analysis, particularly focusing on TripAdvisor, which serves as a dominant platform for consumer decision-making in the hospitality industry.

Specifically, this study examines the association between two organisational capabilities, namely, environmental management disclosures (EMDs) and online customer ratings (OCRs), and green leader hotel performance from 25 top travel destinations worldwide on the TripAdvisor website. It proposes these strategic capabilities as beneficial towards improving hotel performance, particularly the green leader hotels performance. The green leader-certified hotels, as designated on TripAdvisor, represent a unique group of establishments that have committed to implementing environmental sustainability practices. TripAdvisor launched the GreenLeaders Program in 2013 to acknowledge the hotels' commitment to environmental sustainability. Hotels that meet any green leader level will display their badges on their hotel list pages (TripAdvisor, 2014). These hotels serve as a valuable context for studying the relationship between environmental management disclosure, online customer ratings, and hotel performance. However, existing literature has paid insufficient attention to this specific category of hotels, leaving a gap in understanding how environmental sustainability initiatives and customer perceptions align to influence outcomes in this segment. Drawing upon the resource-based view theory, this study examines the extent of environmental management disclosures (EMDs) by the green leader hotels based on a comprehensive, valid, and reliable checklist that was designed specifically for the hotel industry and was based on a comprehensive review of environmental management literature and several practical environmental assessment tools (Basuony et al., 2018). These capabilities are vital in directing hotel strategic moves towards better performance in the future.

The remainder of the paper is structured as follows: Section 1 discusses the literature review on environmental management disclosures, online customer ratings and hotel performance, along with the theoretical framework and hypothesis development; Section 2 outlines the research methodology used; Section 3 presents the results of the study; Section 4 offers a discussion of findings; and finally, Section 5 highlights the conclusion of the study.

1. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

1.1. Resource-based View Theory

Resource-based View theory posits that companies with valuable capabilities perform better (Ramanathan et al., 2016). Companies gain competitive advantage by constantly reorganising various resources to generate new capabilities or change existing ones (Eisenhardt & Martin, 2000). Drawing upon resource-based view theory, Garay and Font (2012) found a positive association between a hotel's eco-friendly behaviour and financial performance. The hotel's unique capabilities enhance business competitiveness and, hence, financial performance. Moreover, the capability of hotels to adapt to new green technologies in energy conservation, pollution control, and eco-friendly activities will help the hoteliers strategise toward improved financial performance (Choi et al., 2019). The natural environment can be viewed as an intangible asset and capability, reflecting the relationship between companies and the natural environment (Božič & Cvelbar, 2016). Therefore, environmental management disclosures (EMDs) in the current study represent an important hotel capability to improve performance, in line with climate change campaigns that form parts of sustainable development goals. Furthermore, improvement in other key business areas, such as product quality and stakeholder relationships, are vital to ensure sustainable competitive advantages. As explained by Ramanathan and Ramanathan (2013), the ability of hotels to utilise available resources is manifested via the levels of online customer ratings (OCRs), which indicates the importance of OCRs as an essential capability related to customer-oriented information. Following that, this study views environmental management disclosures (EMDs) and online customer ratings (OCRs) as two essential capabilities that may influence the hotel's non-financial performance, as the resource-based view theory explains.

1.2. Hotel Performance

In today's industrial revolution 4.0, the Internet has become a preferred medium for marketing and sales purposes for many businesses, including the hotel business (Öğüt & Taş, 2012). According to Marcussen (2008), online hotel booking revenues have increased, and hotel accommodations have become the second-largest sales item among online travel sales. The emergence of travel social media platforms like TripAdvisor, Booking, and Expedia have allowed electronic word of mouth conversations, which can influence customer intention and purchase behaviour, especially in hotel booking decision-making.

Therefore, hoteliers must proactively manage social media effectively, as it significantly influences hotel performance (Kim et al., 2015). Social media also complements traditional annual reports in providing financial and non-financial information to stakeholders, as it overcomes the limited information accessibility issues of traditional annual reports (Akmese et al., 2016; Ramananda & Atahau, 2020). Social media enables the dissemination of information faster and broader than any other media, reducing information asymmetry between hoteliers and stakeholders (Blankespoor et al., 2014). To meet the changing needs of customers, hotels have transformed their operations, communication, and information disclosure from traditional offline services to online services using the Internet.

In this context, the criteria for measuring hotel performance become diverse, including indicators from the Internet. Measuring hotel performance involves assessing both financial and non-financial indicators. Financial indicators evaluate monetary aspects of hotel operations and policies, while non-financial indicators focus on forward-looking metrics like employee satisfaction, bed occupancy, customer satisfaction, number of complaints and returning customers, and improved capabilities for new products and services. Non-financial indicators are the real value drivers that predict a hotel's future performance (Lee et al., 2015; Mjongwana & Kamala, 2018). Measuring non-financial performance has become more accessible with the advent of electronic word of mouth platforms like TripAdvisor. TripAdvisor only allows customers who have stayed at a hotel to post a review, making the number of reviews a proxy for measuring non-financial performance. A higher number of reviews indicates higher hotel bed occupancy, which signifies higher performance. According to Mariani and Borghi (2020), a higher number of reviews is associated with higher financial performance. Using the number of reviews on TripAdvisor as a proxy simplifies the challenges of accessing confidential information about hotel online sales data. Stakeholders can access this information directly and use it to make informed decisions. The number of reviews is publicly accessible on electronic word of mouth platforms, making it a reliable way to measure hotel performance. Due to data confidentiality and accessibility constraints, this study utilises the number of reviews on the TripAdvisor website as a proxy for measuring hotel performance. This metric represents the only publicly accessible measure of hotel performance available on the TripAdvisor platform.

1.3. Environment Management Disclosures (EMDs) and Hotel Performance

Environmental management disclosure (EMDs) is crucial for hotels to communicate their past, present, and future environmental management practices and performance to their stakeholders (Berthelot et al., 2003). The hotel industry's environmental resource conservation efforts (ERC), environmental policy and training (EPT), and environmental public relations efforts (EPR) fall under the scope of environmental management practices (Choi et al., 2019). Disclosure of environmental management disclosure (EMDs) reduces information asymmetry, lowers the cost of external financing, and improves reputation (Healy & Palepu, 2001). Additionally, voluntary EMDs legitimise environmental management practices and prevent social and government sanctions (Berthelot et al., 2003). TripAdvisor, an external third party, publishes EMDs that can be used as a benchmarking technique for external competitive comparison. It assists hotels in identifying best practices, comparing internal processes to ideal standards, and improving their performance. The environmental management disclosure (EMDs) benchmarking can help hoteliers identify the best practices by comparing their EMDs with their competitors. It also serves as an external strategy to attract customers and help hoteliers plan and control their strategic processes. Overall, environmental management disclosure (EMDs) can be seen as one of the essential hotel capabilities that may influence the hotel's performance.

Studies have found that extensive reporting on environmental, social, and financial issues leads to better hotel performance (Assaf et al., 2012; Ramanathan et al., 2016). Improving environmental practices enhances environmental quality and boosts business performance (Yu & Chiu, 2021). For example, Assaf et al. (2012) revealed a positive relationship between triple bottom line disclosure and Slovenian hotel performance. According to Assaf et al. (2012), environmental disclosures has a slightly greater impact on hotel performance compared to social and financial disclosures. Ramanathan et al. (2016) examined the influence of operations, marketing and environmental capabilities, and diversification strategy on hotel performance in the UK. By using archival data and information from websites, Ramanathan et al. (2016)'s results confirmed that environmental capabilities have a significant positive effect on hotel performance. The above findings indicate that hotels were expected to improve their environmental capabilities and increase environmental information disclosure to improve hotel performance. However, Joseph et al. (2014) reported a low level of social and environmental-related information disclosed on hotels' websites compared to economic-related information, signalling that hotels did not fully utilize their websites to provide awareness about their sustainability-related practices. As Zhong and Gao (2017) highlighted a reduction of information asymmetry between companies' management and their stakeholders through the disclosure of social- and environmental-related information on social media, it is of interest to examine the EMDs disclosed by the global green leader hotels on TripAdvisor's website. The study hypothesizes that hotels with a greater extent of EMDs demonstrate higher performance. Therefore, it is essential for hotels to disclose environmental management disclosure (EMDs) to improve their environmental practices and business performance. Therefore, this study hypothesises:

H1: Hotels with a greater extent of environmental management disclosures (EMDs) demonstrate higher performance.

1.4. Online Customer Ratings (OCRs) and Hotel Performance

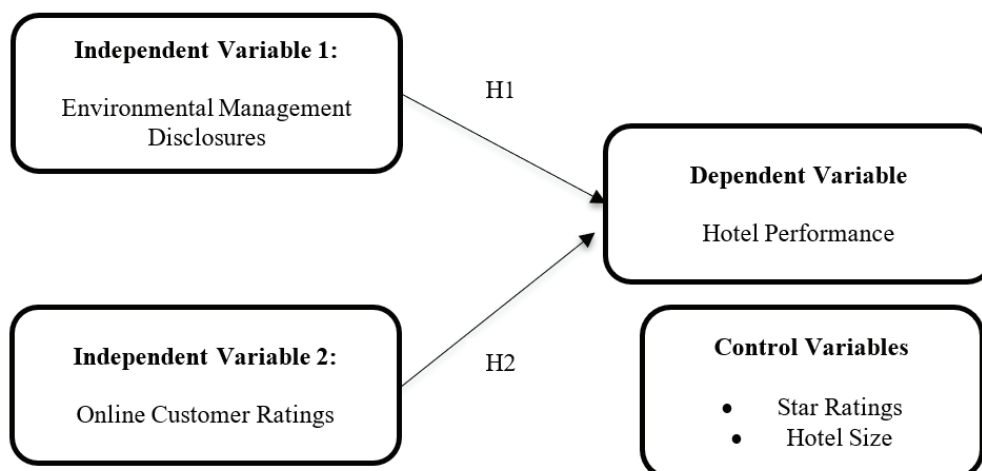
Online customer ratings (OCRs) are essential for the hospitality industry to understand their customers better and improve their performance (Geetha et al., 2017). With the advent of industrial revolution 4.0, OCRs play a significant role in driving the industry's performance (Xie et al., 2014). OCRs reflect customers' average evaluation of a particular hotel based on specific hotel attributes such as service, location, price, room, and cleanliness (Öğüt & Taş, 2012). Building relationships with stakeholders is crucial to forming a competitive advantage (Rodriguez-Diaz & Espino-Rodriguez, 2006). If a company incorporates corporate social responsibility into its strategic planning, it should involve its stakeholders through multiple initiatives and activities (Cheng & Ahmad, 2010). The emergence of industrial revolution 4.0 offers many online corporate social responsibility communication possibilities, such as through corporate websites or social media (De Luca et al., 2022). Hotels' websites link to social media sites such as Facebook, Twitter, TripAdvisor, and Booking.com. This promotes stakeholder engagement related to social and environmental activities (Ettinger et al., 2018). As the most critical stakeholder, customers expect hotels to become more active on social media, where they can learn about the hotels' products, services, and various business activities, including social and environmental-related activities (Culnan et al., 2010). TripAdvisor, as one of the popular social media platforms in the hotel industry, allows hotels to disclose relevant information online, such as OCRs and star ratings. Through online customer ratings (OCRs), hoteliers can identify potentially profitable market trends and opportunities, reduce the problem of asymmetric information between hoteliers and prospective customers, and build good relationships with customers while engaging with them on social media platforms.

The online customer ratings (OCRs) provided on the TripAdvisor website can be considered as customer information analysis. The information allows organizations to communicate more efficiently with prospective customers, tailor-made products/services that suit customer requirements, enhance the retaining and fulfilling of customers' needs, and identify and use the opportunities of unique products/services (Maelah et al., 2019). A favourable rating may reflect substantial efforts to care for customers. Therefore, hoteliers should focus on improving hotel attributes with lower OCRs by analysing the data collected from OCRs. By improving service quality, hoteliers can better respond to customers' requirements and maintain a good relationship with them. This is vital as OCRs represent an important hotel capability that may drive the hotel's performance. Hotels with higher OCRs indicate that the products/services they provide meet the customers' needs, which can be regarded as strategic resources or capabilities to improve the competitiveness of the hotels. Higher hotels' financial performance has been documented in several literature (e.g., Sayfuddin & Chen, 2021; Mariani & Borghi, 2020). Similar findings revealed in the literature that link OCRs with hotels' non-financial performance (e.g., number of online reviews to represent online sales) (e.g., Ye et al., 2009, 2011; Öğüt & Taş, 2012) emphasize the function of OCRs as a proper signalling mechanism in the online hotel market to alleviate the adverse effects of the information asymmetry problem. Furthermore, Kim et al. (2015) indicated that the overall ratings were the most salient predictor of hotel performance, which should be managed as a critical strategy for improving hotel performance. In summary, online customer ratings (OCRs) are vital to the hospitality industry as they reflect customers' evaluation of hotel attributes. By analysing online customer ratings (OCRs), hoteliers can identify market trends and opportunities, improve service quality, and maintain good relationships with customers. Higher OCRs can improve hotels' financial and non-financial performance, making them more competitive in the market. Following that, this study hypothesises:

H2: Hotels with greater online customer ratings (OCRs) demonstrate higher performance.

Figure 1 shows the research model of this study that examined the influence of environmental management disclosures and online customer ratings on green leader hotel performance, along with the control variables on the association.

Figure 1: Research Model of This Study



2. RESEARCH METHODOLOGY

202 sample hotels with publicly available data on the TripAdvisor website were selected from the population of green leader hotels (1 to 5-star category) in the top 25 destinations/ cities of the world according to the 2018 TripAdvisor Ranking (refer to Table 1 for detailed sampling procedures).

Table 1: **Sampling Procedure**

Number of selected cities	25
Less: Number of cities which do not have green leader hotels	14
Final number of selected cities	11 cities
Total number of green leader hotels in the 11 cities (France, United Kingdom, Italy, Greece, Spain, New York, Mexico, Portugal, Peru, Brazil, Australia)	269
Less: Number of hotels which information currently unavailable on Tripadvisor website	67
Final sample of hotel	202 hotels

The definition and measurement of research variables used in this study are presented in Table 2.

Table 2: **Definition and Measurement of Research Variables**

Variables	Definition	Measurement	Source
Dependent Variable			
Hotel Performance	The results that a business achieves in a hotel	Logarithm of the number of reviews for a particular hotel that appeared on the TripAdvisor website	Öğüt and Taş (2012); Ye et al., (2009, 2011);
Independent Variables			
Environmental Management Disclosures (EMDs)	The set of information items that relate to a company's past, current and future environmental management activities and performance	Total EMDs items disclosed by a hotel on the TripAdvisor website based on a 21- EMDs items in the checklist	Berthelot et al., (2003); Choi et al., (2019);
Online Customer Ratings (OCRs)	The average rating (from 1 to 5, e.g., the worst to the best) of reviews	Average of overall ratings of a hotel on the TripAdvisor website	Xie et al., (2014)
Control Variables			
Star Ratings (SRs)	Hotels' star-rating level given by an official organisation based on the quality of the hotel	A hotel's star ratings (categories: 1-5 stars) given by the TripAdvisor	Ye et al., (2011)
Hotel Size (HS)	Hotel size refers to the number of rooms	Logarithm of the number of rooms listed on hotel website	Öğüt and Taş (2012); Kim et al., (2013); Xie et al., (2014)

Data collection was started from March 2020 to December 2020. Data for this study was manually collected from the TripAdvisor website and hotels' website for the year 2020. This is based on the most recent available data at the time of research. EMDs were measured via content analysis based on a checklist of 21 items by Choi et al. (2019), whereby '1' or '0' was coded to indicate the presence or absence of EMDs, respectively, in each category. To ensure the reliability and validity of the collected data, two coding rules were established:

1. Disclosure, with more than one possible classification, was classified as the practice most emphasized in the disclosure (Milne & Hackston, 1996).
2. Redundant disclosure was scored once only (Guthrie et al., 2006).

Subsequently, a test-retest analysis was conducted on 60 sample hotels to determine the reliability of disclosure scores derived from a single coder. A remarkably high correlation between scores from the first round (Week 1) and the second-round coding process (Week 3) indicated the maintenance of coding consistency from a single coder over time (Milne & Adler, 1999). The following log-linear regression model (Model 1) for the performance of hotel i was developed to evaluate the impact of environmental management disclosures (EMDs) and online customer ratings (OCRs) on hotel performance:

$$\text{Model 1: } \log(\text{Hotel Performance}_i) = \beta_0 + \beta_1(\text{EMDs}_i) + \beta_2(\text{OCRs}_i) + \beta_3(\text{SRs}) + \beta_4(\text{HS}) + \varepsilon_i$$

Where $\text{Hotel Performance}_i$ represented the performance of hotel i (measured by the number of hotel reviews) and the dependent variable; EMDs_i and OCRs_i represented hotel i 's environmental management disclosures and online customer ratings respectively, which were the independent variables; hotel star rating and hotel size were used as control variables; ε_i was a residual; and β_1, β_2 represented the relation between the independent variables and the dependent variable. The Statistical Package for the Social Sciences (SPSS) software was used to analyse the data.

3. RESULTS

3.1. The Extent of Environmental Management Disclosure (EMDs) on Social Media

A general overview of data presented in Table 3 that describes the extent of environmental management disclosure (EMDs) on social media indicated a relatively low level of disclosures. This may be due to the regulators' lack of mandatory disclosure requirements. Without some form of regulatory intervention, reliance on voluntary disclosures is unlikely to be high quality or sufficient (Bissoon, 2018). This phenomenon could also be explained by the fact that some hotels have yet to fully disclose their environmental management practices on social media platforms. However, they have implemented some environmentally friendly practices. Passetti et al. (2018) support this, noting that companies implement more internal activities than external disclosure. Therefore, regulators can consider enacting laws to compel environmental management disclosure (EMDs). Moreover, green leader hotels should also consider using social media platforms to disclose their environmental management practices to the stakeholders owing to their benefits (Zhong & Gao, 2017).

Table 3: Number and Percentage of Disclosing Hotels for Respective EMDs Items on TripAdvisor in 2020

No	Environmental Management Disclosures (EMDs)		Number and Percentage of Hotels with ‘1’ score (disclose the respective EMDs item)	
			n	%
Environmental resource conservation efforts (ERC)				
1	Resetting temperatures	ERC1	157	77.7
2	Energy-saving products	ERC2	160	79.2
3	Energy consumption monitoring system	ERC3	121	59.9
4	Water saving devices	ERC4	188	93.1
5	Alternative water sources for certain applications	ERC5	32	15.8
6	Tracking water usage	ERC6	200	99.0
7	Refillable amenity dispensers	ERC7	46	22.8
8	Recycling bins	ERC8	163	80.7
9	Avoids using disposable items	ERC9	135	66.8
Environmental policy and training (EPT)				
1	Implementing environmental policies successfully	EPT1	6	3.0
2	Clear environmental policies	EPT2	0	0
3	Incorporating environmental management into corporate policy	EPT3	0	0
4	Employees’ fully understand	EPT4	0	0
5	Frequent workshops for environmental education	EPT5	0	0
6	Employee environmental training programmes	EPT6	201	99.5

No	Environmental Management Disclosures (EMDs)		Number and Percentage of Hotels with ‘1’ score (disclose the respective EMDs item)	
			n	%
Environmental public relation efforts (EPR)				
1	Cooperation with non-governmental organisations (NGOs)	EPR1	35	17.3
2	Supports local communities’ environmental construction	EPR2	89	44.1
3	Lead in providing environmental awareness activities	EPR3	0	0
4	Educating customers on environmental issues	EPR4	202	100.0
5	Notices to remind customers to conserve resources	EPR5	0	0
6	Systematically evaluate customers’ reviews	EPR6	85	42.1

As shown in Table 3, many hotels focus on environmental resource conservation efforts (ERC) rather than environmental public relations (EPR) and environmental policy and training (EPT). This may imply that many green leader hotels focus on the operational level of environmental management practices (short-term saving activities). It is still far from the hotels achieving a higher level, such as a tactical or strategic level, emphasising the longer term, as it involves a higher cost (Kang & Hahn, 2018). Most of the hotels reported information about customer education on environmental issues (100%), employee environmental training programmes (99.5%), tracking water usage (99%), water-saving devices (93.1%) and recycling bins (80.7%). In terms of environmental resource conservation efforts (ERC), emphasis was given to water (ERC4, ERC6) compared to other resources such as energy (ERC1-ERC3) and consumables (ERC7, ERC9). More balanced efforts could be undertaken to achieve sustainability, such as using rainwater harvesting, solar energy, and refillable amenities for selected applications, as this will help hotels minimise the consumption of non-renewable resources and subsequently reduce operating costs. For environmental policy and training (EPT), most hotels provide employee environmental training programmes (EPT6). However, none of the hotels disclosed clear environmental policies (EPT2), incorporated environmental management into the corporate policy (EPT3), employees fully understand (EPT4), and frequent workshops for environmental education (EPT5). Several challenges, such as budget constraints and lack of expertise, might hinder the successful implementation of environmental policies, with only three per cent of the hotels reported on this item (EPT1). These challenges also limit the frequency of workshops for environmental education (EPT5). Without sufficient knowledge of environmental matters, it is difficult for hotels to make clear environmental policies (EPT) and incorporate environmental management into corporate policy (EPT3). As for environmental public relations (EPR), all sample hotels disclosed information on educating customers on environmental issues (EPR4). Several hotels also engaged with local communities (EPR2) and non-governmental organisations (EPR1) in environmental-related initiatives. Perhaps these efforts support the stakeholders' interest that urged hotels to operate sustainably.

3.2. Environmental Management Disclosure (EMDs), Online Customer Ratings (OCRs) and Hotel Performance

In general, all data used in this study conformed to a normal distribution under the standards of absolute skewness value of less than 2 and kurtosis value of less than 7, as proposed by West et al. (1995)¹. Table 4 shows the multiple regression analysis results that examine the influence of environmental management disclosure (EMDs) and online customer ratings (OCRs) on green leader hotel performance. It can be seen that the adjusted R^2 is 0.564 with a significant F-value, indicating that the overall regression is acceptable. The tolerance value (more than 0.10) and the VIF value (less than 10) of the predictors used in this study also indicated that the multicollinearity assumption was not violated. Both hotel capabilities, namely EMDs and OCRs, have positive coefficients and are significant in explaining the green leader hotel performance. Therefore, Hypothesis 1 (environmental management disclosures have positive influence on hotel performance) and Hypothesis 2 (online customer ratings have positive influence on hotel performance) are supported. Two control variables included in Model 1, namely hotel star rating shows an insignificant association with hotel performance, while hotel size indicates a significant positive association with hotel performance.

¹ Specifically: Hotel Performance (skewness = -0.553, kurtosis = 0.806); EMDs (skewness = -0.484, kurtosis = 0.199); OCRs (skewness = -0.052, kurtosis = -0.251); SRs (skewness = -0.487, kurtosis = 0.219); HS (skewness = -0.947, kurtosis = 1.238).

Table 4: **Multiple Regression Results**

Model 1: $\log(\text{Hotel Performance}_i) = \beta_0 + \beta_1(\text{EMDs}_i) + \beta_2(\text{OCRs}_i) + \beta_3(\text{SRs}) + \beta_4(\text{HS}) + \varepsilon_i$				
	Coefficients (B)	P Value (sig.)	Collinearity Statistics	
			Tolerance	VIF
Constant	1.105	0.000		
Environmental Management Disclosure (EMDs)	0.023	0.010*	0.988	1.012
Online Customer Ratings (OCRs)	0.132	0.028*	0.933	1.072
Star Ratings (SRs)	-0.010	0.687	0.871	1.149
Hotel Size (HS)	0.674	0.000**	0.859	1.164
Adjusted R ²	0.564			
F-Value	65.909**			
N	202			

Notes: ** Significant at 0.01 level; * Significant at 0.05 level.

Considering that different cities have different sizes in terms of Growth Domestic Product (GDP) ranking and popularity rankings on TripAdvisor, additional analyses (refer Table 5) were performed to test the robustness of the findings revealed in the current study by taking into consideration these two elements. There are two main reasons for including the size of the city in terms of GDP ranking as a control variable. Firstly, the developments of the economy and e-commerce are currently imbalanced around the world. More developed big cities, and many of them are in developed countries, have both higher levels of economic and e-commerce development than smaller cities. Following that, bigger cities have more resource advantages, which allow them to provide better infrastructure and services for both hotels and tourists. Consequently, tourists may prefer to visit destinations and book hotels in bigger cities. Therefore, the city size may influence hotel performance and needs to be further analysed. Another reason for including city size as a control variable is the issue of generalisation. While most prior literature investigated this topic by analysing hotel data from a single country, this study included multiple cities from different countries. The inclusion of the popularity of the city based on ranking as another control variable is important as rankings are a highly valuable source of information, whereby ranking in the top positions can draw the attention of potential customers (Martin-Fuentes et al., 2018). Tourists may tend to visit destinations and book hotels from cities with higher popularity. Thus, the city's popularity may influence the hotel's performance and needs to be analysed further.

Table 5: **Multiple Regression Results (Additional Analysis)**

Model 2: $\log(\text{Hotel Performance}_i) = \beta_0 + \beta_1(\text{EMDs}_i) + \beta_2(\text{OCRs}_i) + \beta_3(\text{SRs}) + \beta_4(\text{HS}) + \beta_5(\text{CITY_GDP_Rank}) + \varepsilon_i$				
Model 3: $\log(\text{Hotel Performance}_i) = \beta_0 + \beta_1(\text{EMDs}_i) + \beta_2(\text{OCRs}_i) + \beta_3(\text{SRs}) + \beta_4(\text{HS}) + \beta_5(\text{CITY_popularity_Rank}) + \varepsilon_i$				
	CITY_GDP_Rank (Model 2)		CITY_popularity_Rank (Model 3)	
	Coefficients (B)	P Value (sig.)	Coefficients (B)	P Value (sig.)
Constant	1.100	0.000	1.088	0.000
Environmental Management Disclosure (EMDs)	0.024	0.011*	0.023	0.010*
Online Customer Ratings (OCRs)	0.134	0.027*	0.137	0.035*
Star Ratings (SRs)	-0.008	0.728	-0.010	0.671
Hotel Size (HS)	0.671	0.000**	0.677	0.000**
CITY_GDP_Rank	-0.002	0.789		
CITY_popularity_Rank			-0.001	0.852
Adjusted R ²	0.562		0.561	
F-Value	52.493**		52.476**	
N	202		202	

Notes: ** Significant at 0.01 level; * Significant at 0.05 level.

CITY_GDP_Rank = cities' GDP ranking, CITY_popularity_Rank = cities' popularity ranking.

Table 5 presents the multiple regression results that include the city's GDP and popularity ranking on the TripAdvisor to control the different cities' effects. The size of the city is represented by the CITY_GDP_Rank in Model 2 and the popularity of the city

is represented by the CITY_popularity_Rank in Model 3. The specifications of Model 2 and Model 3 are included in Table 5. All the 11 cities were coded from “1” to “11” based on the city GDP ranking in Wikipedia and TripAdvisor popularity ranking. For example, the number “1” was given to the city which has the largest size and highest popularity while “11” was given to the city which has the smallest size and lowest popularity. Table 6 gives the ranking of both GDP and popularity ranking.

Table 6: Cities' GDP and Popularity Ranking

	GDP ranking	Popularity ranking	No. of Hotels
New York City, New York	1	6	46
London, United Kingdom	2	2	55
Paris, France	3	1	42
Rome, Italy	4	3	12
Barcelona, Spain	5	5	19
Sydney, Australia	6	11	5
Playa Del Carmen, Mexico	7	7	8
Cusco, Peru	8	9	1
Lisbon, Portugal	9	8	7
Rio de Janeiro, Brazil	10	10	2
Crete, Greece	11	4	5

As shown in Table 5, both cities' GDP ranking and popularity ranking were insignificantly related to hotel performance. These findings further support the idea that the earlier results were robust. After controlling the cities' GDP and popularity's effect, the hypotheses of this study (H1 and H2) are still supported. This study also compared the means of hotel performance, EMDs and OCRs in those 11 different cities. Figure 2 to Figure 7 show the means line charts outlined according to cities, ranked by GDP ranking and popularity ranking. Among these cities, some cities showed similar levels on both line charts, while others did not. The most notable city is Playa Del Carmen, which has the highest level of EMDs and total number of reviews to represent hotel performance, among all 11 cities under study. For other cities, the results seem to vary, as the relationship between environmental management disclosures (EMDs), online customer ratings (OCRs) and green leader hotel performance was not affected by the different size and popularity of cities under study.

Figure 2: Hotel Performance Comparison in 11 Cities listed by Cities According to GDP Ranking

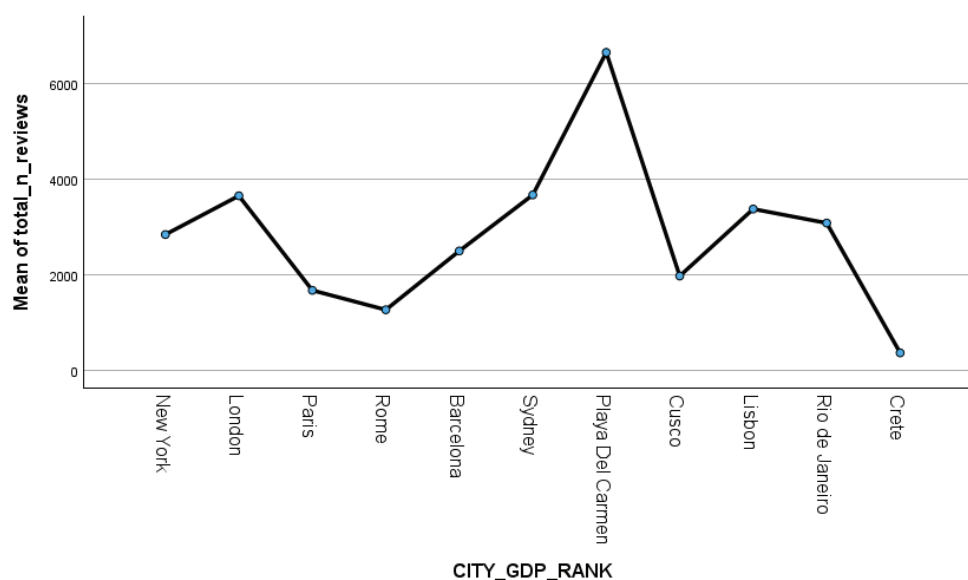


Figure 3: Environmental Management Disclosures (EMDs) Comparison in 11 Cities listed by Cities According to GDP Ranking

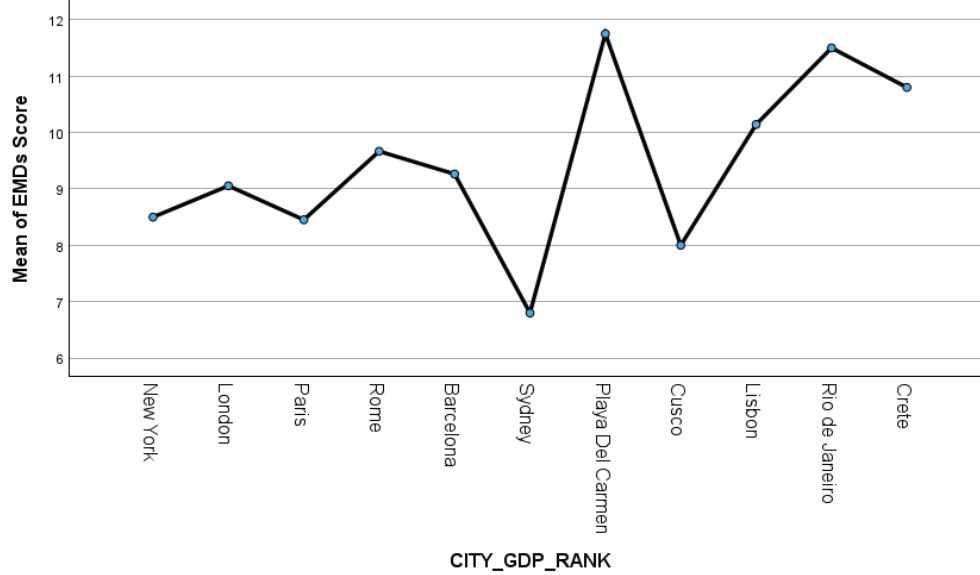


Figure 4: Online Customer Reviews (OCRs) Comparison in 11 Cities listed by Cities According to GDP Ranking

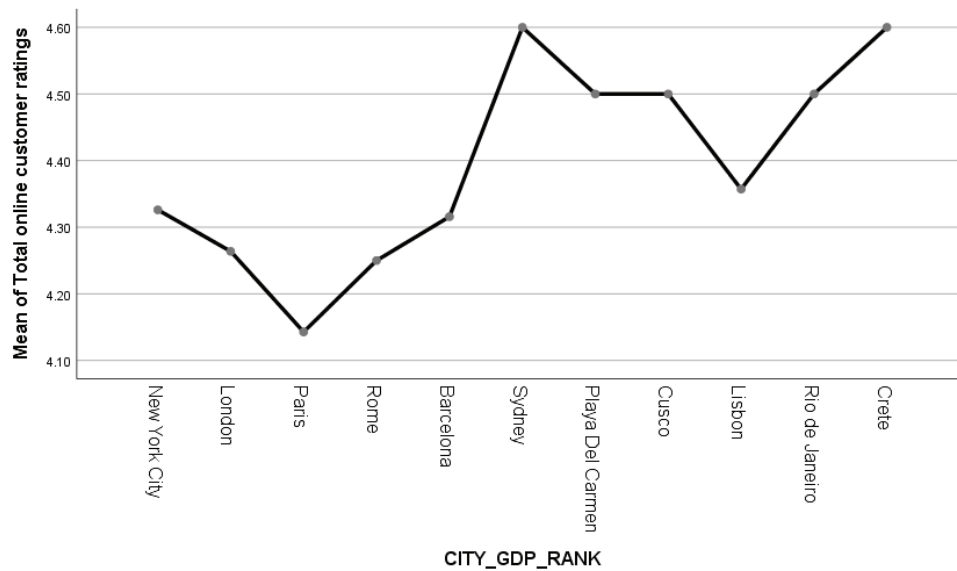


Figure 5: Hotel Performance Comparison in 11 Cities listed by Cities According to Popularity Ranking

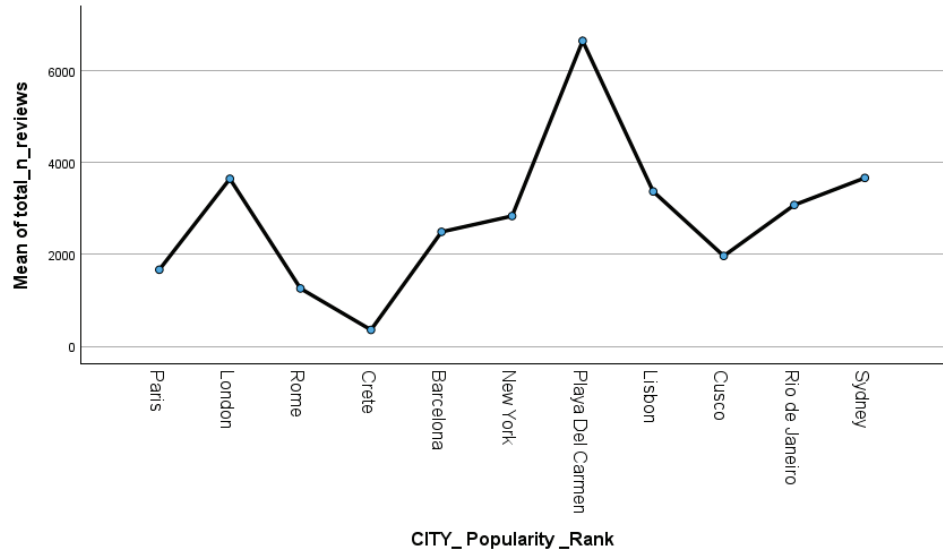


Figure 6: Environmental Management Disclosures (EMDs) Comparison in 11 Cities listed by Cities According to Popularity Ranking

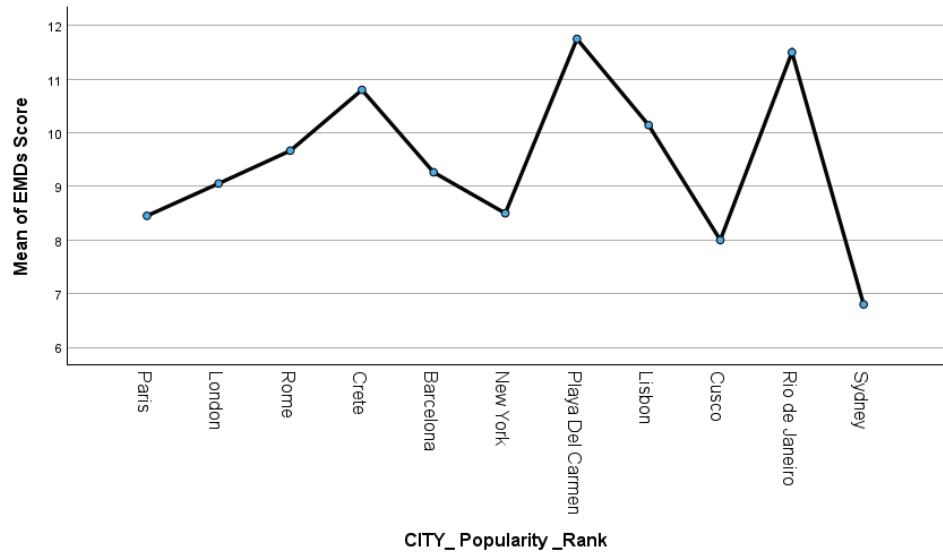
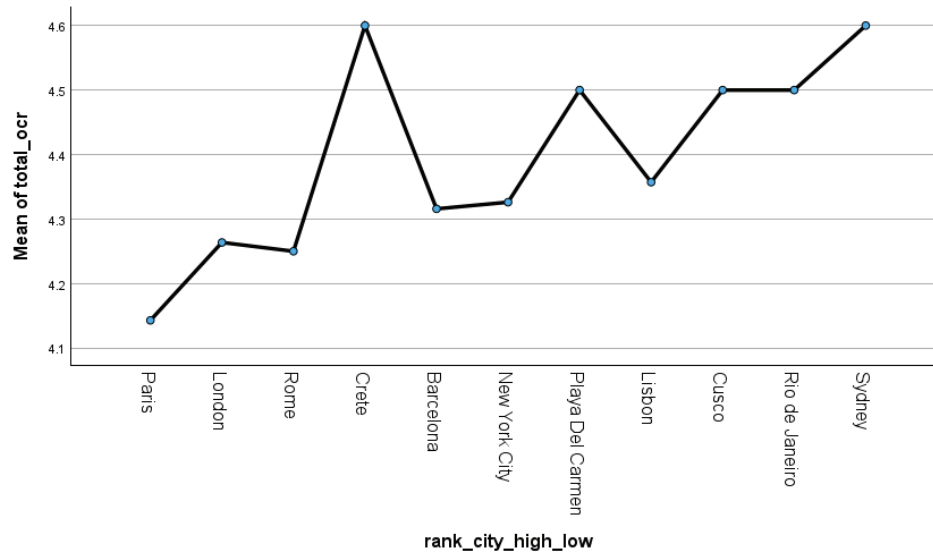


Figure 7: Online Customer Reviews (OCRs) Comparison in 11 Cities listed by Cities According to Popularity Ranking



4. DISCUSSION

This study examined the impacts of environmental management disclosure (EMDs) capability and online customer ratings (OCRs), which represent customer relationship-building capability, on the green leader hotel performance in the 11 cities from top travel destination worldwide. The descriptive analysis of EMDs revealed a low level of environmental management information by the sample hotels, despite their designation as green leader hotels. This situation is alarming, as it may undermine the credibility of the green leader hotels' label and raise concerns about these hotels' commitments towards environmental management initiatives. The results suggest that considerable efforts are still needed to enhance environmental management initiatives among the hoteliers. It is possible that while some hotels have implemented selective environmental management initiatives, they have failed to adequately communicate these efforts to their stakeholders. This lack of transparency indicates a need for collaboration among hoteliers, government regulators, policymakers and various stakeholder groups to work on improving the transparency of communication between different stakeholders. Furthermore, the low level of EMDs may also indicate a lack of robust internal systems and processes for monitoring, measuring and reporting on the hotels' environmental management initiatives. Overall, improving transparency and communication is important for reinforcing the credibility of green leadership in the hospitality sector.

This study dictated the significant influence of environmental management disclosures and online customer ratings on green leader hotel performance, highlighting the importance of developing these two strategic capabilities in the sustainable hospitality context. It suggests that hotels leveraging strategic capabilities in environmentally sustainable practices and publicly disclosing their environmental management practices can enhance their performance. The findings align with Ramanathan et al. (2016), who reported improved hotel performance associated with higher levels of EMDs in the UK. It also in line with Kusa et al. (2023)'s findings, which suggest the critical role of environmental management practices on one- and two-star hotels' performance in Poland. Efficient environmental management requires additional costs, such as purchasing energy-saving products, installing environmental protection facilities, innovation, and employee training. Nevertheless, the costs can be offset by savings in other aspects, such as lower energy consumption, water saving, and efficient use of resources (Ramanathan et al., 2016).

EMDs serve as a clear and effective signal of a hotel's commitment to environmental sustainability. By disclosing environmental management practices, hotels convey transparency and accountability, which resonate strongly with environmentally conscious customers. This signalling mechanism creates trust and motivates customers to share their experiences online, evidenced by increased review activity (a proxy for hotel performance in this study) on platforms such as TripAdvisor. The heightened visibility of sustainable practices, often certified by "Green Leader" badges on TripAdvisor, appeals to eco-conscious travellers. As customers actively seek environmentally responsible establishments, EMDs becomes a decisive factor influencing booking behaviour, encouraging customers to engage more frequently through reviews. These results support the resource-based view (RBV) theory, highlighting the value of EMDs as a strategic resource. Hotels that effectively communicate their environmental management practices capitalise on this resource to build a sustainable competitive advantage. The resulting increase in TripAdvisor reviews is a reflection of the hotel's ability to leverage this intangible asset to engage customers and enhance performance. To summarise, environmental management disclosures (EMDs) play a significant role in improving operational efficiency, enhancing hotel reputation and attracting environmentally conscious travellers, which can subsequently lead to better overall hotel performance. It is typically a long-term strategy, where its impacts may not be immediately visible; instead, the benefits may manifest in the hotel's performance over time.

Findings of the current study also acknowledged the importance of online customer ratings (OCRs) as one of the hotels' strategic capabilities in promoting hotel performance, supporting Xie et al. (2014) and Kim et al. (2015) in the United States, Manes and Tchetchik (2018) in Europe and Ye et al. (2009, 2011) in China. OCRs reflect customers' firsthand experiences, capturing their satisfaction and perceptions of service quality. Higher ratings are associated with increased bookings, revenue and overall performance, thus support hotels to achieve long-term sustainable development (Noordin et al., 2014). OCRs also provides actionable feedback for hoteliers through detailed reviews that highlight areas for improvement, which enabling the hotels to address shortcomings and enhance their service quality. This corresponds to resource-based view (RBV) theory, which emphasises that relationship-building capability with stakeholders is crucial for a business to achieve sustainable development (Rodriguez-Diaz & Espino-Rodriguez, 2006). From the lens of the RBV theory, OCRs represent a valuable and intangible resource that contributes to sustained competitive advantage; whereby high ratings are a reflection of superior service quality and a driver of improved hotel performance, measured by the number of hotel reviews. By consistently delivering exceptional experiences that lead to positive ratings, hotels strengthen their reputation, attracting more guests and fostering long-term success (Barney, 1991).

While extant studies relied on a single country, this study examines the green leader hotels from 11 cities and countries worldwide, covering both developed and developing countries. According to Ögüt and Taş (2012), hotel star ratings and OCRs could be seen as two distinct quality indicators for hoteliers, whereby customers tend to partially disregard the hotel star rating when evaluating hotels because they can substitute this information with the OCRs. This implies that consumers find OCRs to be more convincing and an objective indicator of the intrinsic quality of the hotels as they have additional information in the form of written reviews. Meanwhile, a bigger hotel stands a better chance of generating economies of scale (as it has more rooms to sell) and economies of scope (as it can offer a wider variety of services in the same establishment) (Claver-Cortés et al., 2007), that may subsequently improve hotel performance.

CONCLUSION

This study investigated the influence of environmental management disclosure and online customer ratings on green leader hotel performance in 11 global cities, providing insights from resource-based view theory. This study found a low level of environmental management disclosures (EMDs) reported by green leader hotels in a social media platform known as TripAdvisor. It also acknowledged the significant roles of environmental management disclosures (EMDs) and online customer ratings (OCRs) as strategic hotel capabilities that help to improve hotel performance, supporting the resource-based view theory.

Theoretical and Practical Implications of the Study

This study offers several theoretical and practical implications. From a theoretical viewpoint, this study contributes to the body of literature in the field of sustainable hospitality management by integrating environmental management disclosures (EMDs) and online customer ratings (OCRs) into a comprehensive framework, offering a useful perspective on their combined impact on hotel performance. It provides evidence of the application of resource-based view theory in explaining the relationship between environmental management disclosures and online customer ratings on hotel performance. Our study provides more generalised results by suing data from 11 cities based on top travel destinations worldwide. By introducing the number of TripAdvisor reviews as a proxy for hotel performance, this research adds to the existing evidence that examine the non-financial dimension of hotel performance, which have received limited attention in prior literature. Additionally, this study fills an important gap by focusing on green leader-certified hotels, an underexplored yet strategically important hotel segment, and provides platform-specific insights into the role of TripAdvisor as a third party accreditor for the hotels' environmental sustainability practices.

From a practical perspective, these findings may provide input for government regulators and policymakers in different countries to develop a new regulation and policy or revise the existing EMDs regulations and requirements to improve the level of EMDs among the hotels. The absence of standardised EMDs guidelines for the hotel industry may contribute to the low EMDs level. Moreover, the findings of this study also provide insights for hoteliers, particularly those managing green leader hotel establishments, on how to align their environmental sustainability practices with customer expectations and enhance their online presence. The results highlight the importance of fostering customer engagement through increased reviews on platforms like TripAdvisor and optimising EMDs to build trust and credibility. By offering strategic guidance on leveraging environmental sustainability initiatives and customer satisfaction to drive hotel performance, this research supports hotel managers in making informed decisions. Hoteliers may strategise their business to achieve sustainability by considering EMDs and OCRs, as these tools help improve hotel performance. In line with industrial revolution 4.0, hoteliers should reap the benefits of using social media platforms to engage with their stakeholders. This is important for the hotels to build or maintain a good reputation regarding environmental capabilities, relationship-building capabilities, and sustainable competitive advantage. Therefore, hoteliers should manage the information disclosed on social media carefully, as it is the key function for the hotel to improve performance. Identifying and managing the strategic hotel capabilities is vital to ensure business sustainability in the dynamic business environment. The hoteliers should track the changes in the industry regularly and maintain their engagement with stakeholders on social media platforms, as these platforms facilitate two-way communication between the hoteliers and the stakeholders. They should be using social media's full potential for communication with stakeholders to reap its full benefits that help toward higher hotel performance.

Limitations of the Study and Suggestions for Future Research

This study has several limitations, which may provide directions for future research. Firstly, this study examined two hotel capabilities only, based on the availability of data on TripAdvisor website. Therefore, future research could include other capabilities, such as human resources, supply chain management and technological innovation capabilities, explored through primary data collection from questionnaire or interview approaches. Secondly, this study uses a proxy for hotel performance based on publicly available online data. Future research could explore alternative indicators, such as Revenue Per Available Room (RevPAR) and Average Daily Rate (ADR), to test the robustness of the results, contingent upon the accessibility of relevant data from the respective hotels. Perhaps, a comparative analysis between financial (e.g. Revenue Per Available Room: RevPAR and Average Daily Rate: ADR) and non-financial hotel performance (e.g. number of hotel reviews) may give useful insights for hoteliers to sustain their business operations in the dynamic business environment. Moreover, sample of this study only include green leader hotels while exclude a large proportion of non-green leader hotels. Future research could also expand samples to include both green leader hotels and non-green leader hotels to determine any difference in environmental management disclosures (EMDs) reported (if any).

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