

EXPLORING SUSTAINABILITY-RELATED ISSUES IN HOTEL BUSINESS: A CASE OF THAI PUBLIC COMPANIES

Siravat Teerasoponpong, Sainatee Chernbumroong, Varattaya Jangkrajarn**
Department of Management and Entrepreneurship,
Faculty of Business Administration, Chiang Mai University,
Chiang Mai, Thailand.

ABSTRACT

Purpose – This paper aims to analyze and compare the inclusion of sustainable development issues in the hotel business through the companies' annual and sustainability reports. Two groups of hotel operators, the group listed in the Thailand Sustainability Index (THSI) and the Non-THSI listed, were used for comparison.

Design/Methodology/Approach – The analysis of sustainable development issues in the hotel business was conducted by utilization of the text analysis technique. The analysis divides into two parts. First, the sustainability-related keywords were extracted from existing research. The keywords are to be used as search keywords in the text analysis. In text analysis, the data used in this study comes from published annual reports and sustainability reports of the public companies in a service sector listed in the Stock Exchange of Thailand (SET). The search keywords are then used to match the keywords found in the reports in terms of a cooccurrence between a pair of keywords. The frequency of keywords' cooccurrence should reflect the focused areas of sustainable development in the hotel business.

Findings - The analysis reveals sustainable-related issues in the hotel business. The frequency of associated keywords also indicates the difference in the degree of the inclusion of sustainability issues among hotel operators.

Research limitations/implication - The approach presented in this research can be applied to different areas of study using a different set of data. Nonetheless, the availability and consistency of the input data are to be concerned.

Practical implications – In the context of the hotel business, understanding the status and progress of sustainable development can lead to a proper direction of sustainable development. A redundant investment can be avoided. Moreover, a benchmark among the same industry is also possible and can be beneficial to the formulation of business strategy.

Original/value – This paper proposes a combination of techniques, bibliometric analysis, and text analysis, and utilizes both academic and business knowledge to comprehend the current situation of sustainability-related issues in Thailand's hotel business.

Keywords Hotel industry, Sustainability, Bibliometric analysis, Text analysis, Occurrence analysis

INTRODUCTION

The hospitality industry is one of the most important sectors which has an extensive impact on local economies and the global market. Indirectly, it influences consumer behaviors and business practices (Scott et al., 2019). However, its influence also brings about significant environmental, social, and governance challenges (Bae, 2022). Recently, attention to the concept of sustainability within the hotel industry has become increasingly important (Chung, 2020; Jones & Comfort, 2020). Like other industries, sustainable development in the context of the hotel business considers the balance between economic growth, environmental preservation, and social responsibility (Ruggerio, 2021).

The degree of sustainability integration in hotel operations varies significantly among business sectors, locations, and even within the same geographical area (Jones et al., 2014). Thailand's hotel industry is a case in which the importance of sustainability integration is emphasized due to the sector's significant impact on the nation's economy and environment (Tong-On et al., 2021).

The Stock Exchange of Thailand (SET) introduced the Thailand Sustainability Investment (THSI) index in 2015, which serves as a standard for sustainability performance among publicly listed companies (Sanoran, 2023). Companies listed in the THSI are expected to demonstrate best practices and serve as models for other businesses and attempt to integrate sustainable operations. This research reveals the sustainability efforts of hotel operators, both listed in the THSI and those not listed.

This study applies an innovative combination of bibliometric and text analysis techniques to identify and analyze sustainability-related issues through keywords in companies' annual and sustainability reports. This approach provides a comprehensive understanding of the focus areas of sustainability practices and the extent of their integration into hotel operators' strategies.

While this research is academically valuable, it also brings practical implications for businesses in the hospitality sector. Understanding the status and progress of sustainable development allows hotel operators to streamline their sustainability efforts, avoid redundant investments, and benchmark their practices against industry standards.

METHOD

This research employs a three-stage methodology aimed at assessing the progress of sustainable development in the hotel industry, necessitating a thorough analysis of pertinent data. The first stage revolves around defining the boundaries of this analysis, which, in this context, are marked by keywords relating to sustainability and the hotel industry. Utilizing VOS viewer software, this stage involves determining the frequency of these associated keywords within the bibliometric data sourced from the SCOPUS database. Keywords that surface at least 50 times are earmarked for further examination. The search parameters used to extract bibliometric data from the SCOPUS database are outlined in

Table 2.

Table 2 Search criteria of bibliometric data

Database:	Scopus
Search scope:	Title, Abstract, Authors' keywords, Indexed keywords
Keywords:	(TITLE-ABS-KEY (hotel) AND TITLE-ABS-KEY (sustainable) OR TITLE-ABS-KEY (green) AND TITLE-ABS-KEY (development)) AND PUBYEAR > 1999 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ENVI") OR LIMIT-TO (SUBJAREA , "ENGI") OR LIMIT-TO (SUBJAREA , "ENER") OR LIMIT-TO (SUBJAREA , "COMP") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "EART") OR LIMIT-TO (SUBJAREA , "AGRI") OR LIMIT-TO (SUBJAREA , "DECI") OR LIMIT-TO (SUBJAREA , "MATE") OR LIMIT-TO (SUBJAREA , "MATH"))
Years of publication:	2000 - 2023
Number of documents:	1,397

The identification of these keyword weights will play a crucial role in delineating the scope of the ensuing text analysis. Importantly, during the text analysis in the third stage, combined keywords (such as 'sustainable development', 'environmental management', and 'sustainable tourism') that were identified in this phase will be disaggregated into individual words. The ensuing algorithm will then autonomously calculate the frequency of cooccurrences between each keyword pair identified within the primary data sources, namely, the annual and sustainability reports. Thus, the initial definitions of the keywords will be retained throughout this process.

In the second stage, the focus is on identifying target companies that will serve as the sources of sustainability data. Publicly listed companies are generally required to publish an annual report, known as the 56-1 report, with an option to publish a sustainability report as well. While the annual reports are publicly accessible, not all hotel operators provide sustainability reports, which are essential data sources for this study. Hence, careful selection of target companies is crucial.

The Stock Exchange of Thailand (SET) advocates for the issuance of sustainability reports. As such, all publicly listed companies can create these reports to inform investor decisions. However, only companies meeting specific criteria, including participating in the SET's annual sustainability assessment, and achieving an ESG score of at least 50% in all dimensions, can be included in the Thailand Sustainability Index (THSI). Consequently, this research includes both THSI-listed and non-THSI-listed companies, with additional selection criteria like market capitalization and industry ranking being taken into consideration.

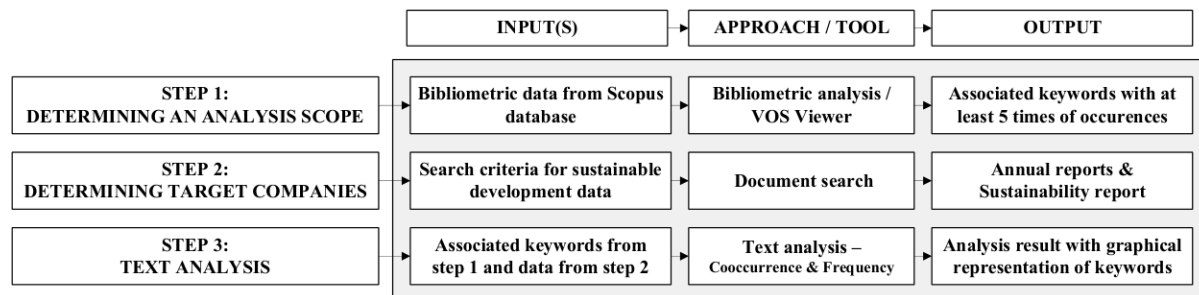


Figure 2 Research Methodology

Following the definition of the research scope and the selection of target companies, the third and final stage of this study gets underway. This stage is centered on scrutinizing sustainability-related keywords that correspond with the scope delineated during the initial stage. The material for this analysis is sourced from the annual and sustainability reports of the companies that fulfilled the criteria set out in the second stage. In this phase, a method of text analysis is implemented to determine the frequency of all related keywords within the annual and sustainability reports of the selected companies. This investigation covers the period from 2019 to 2022, during which these reports are publicly available.

To visually represent the data, graphical illustrations are utilized. These graphics display the frequency of the identified keywords in the reports and facilitate a comparative analysis of sustainable development facets between THSI-listed and non-THSI-listed companies. It should be noted that the frequency of a particular keyword can signal the degree of emphasis a company places on that aspect of sustainability. The overview of the research methodology is presented in Figure 2.

RESULT AND DISCUSSION

This section encompasses three components of the findings, each aligning with the research procedures delineated in the preceding section. The initial segment divulges the research scope, predicated on the keywords with a minimum occurrence frequency of 15 times in extant literature. The subsequent segment exhibits the roster of the handpicked companies. Finally, the third component uncovers and deliberates upon the outcomes of the text analysis.

- **Determining an analysis scope using keywords**

Drawing from the research procedure detailed previously, this part of the study shares the findings yielded by a bibliometric analysis, executed using the VOS Viewer software. This software is highly recognized for its excellence in carrying out bibliometric analysis (Effendi et al., 2021). The analysis furnished two

categories of data: bibliographic information that measures the regularity of keyword appearances and their interconnections, along with data that reveals the importance and the number of occurrences for all recognized keywords.

Figure 3 offers a visual representation of the bibliographic information gathered using VOS Viewer, highlighting the keywords that will direct the analytical parameters in the third stage of this study. It further signals potent connections between major clusters like sustainable development, hotels, and sustainability, and smaller ones such as energy efficiency, energy conservation, sustainable tourism, and tourism development. These correlations potentially shed light on the focus areas and sustainable development within the realm of the hotel business and the broader tourism sector. Leveraging the data sourced from VOS Viewer,

Table 3 contains a selection of the top 10 keywords (out of a pool of 95) along with their corresponding weights, indicating their overall link strength and frequency of occurrences.

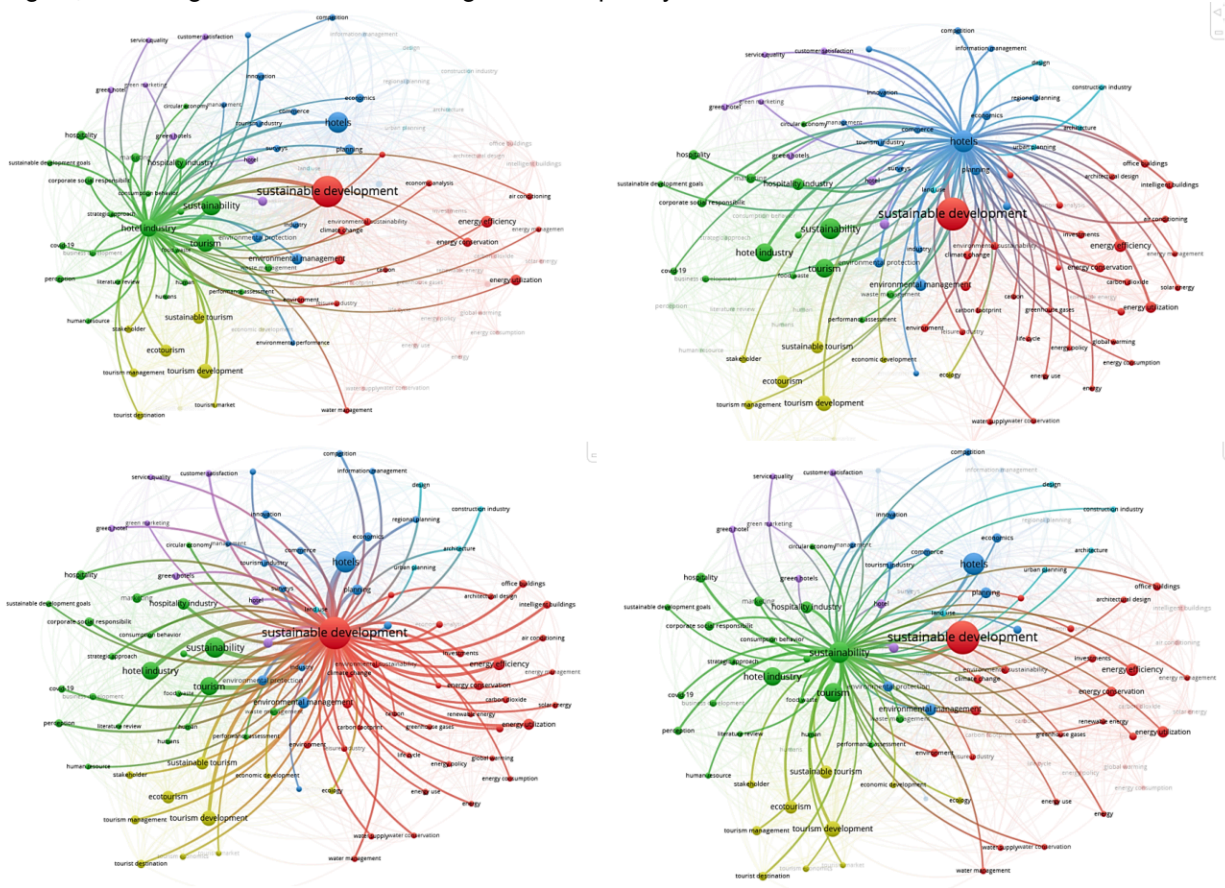


Figure 3 Bibliographic of sustainability-associated keywords in the hotel business.

However, rather than relying exclusively on the top 10 keywords based on their frequency or weight, this research turned the attention to keywords that, while perhaps less frequent, bore a higher degree of relevance to the sustainable development practices within the hotel industry.

Subsequently, the keywords chosen to define the text-analysis framework in the third phase were meticulously selected from the results of the bibliometric analysis due to their pertinence to sustainable

development. The chosen keywords include: 'sustainable', 'development', 'water', 'sustainability', 'wastes', 'intelligent', 'eco', 'energy', 'innovation', 'green', 'carbon', 'food', 'circular', 'efficiency', 'utilization', 'environmental', 'management', 'planning', 'conservation', 'protection', 'social', 'responsibility', 'governance', 'emission', 'solar', and 'information'. Despite their lower frequency or weight, these words are more representative of sustainable initiatives in the hotel sector.

As part of the text analysis process, compound keywords such as 'sustainable development', 'environmental management', and 'sustainable tourism' were dissected into their components. Subsequently, an algorithm was employed to autonomously compute the cooccurrence frequency of each keyword pairing in the primary data sources, namely, the annual and sustainability reports. This approach ensured the preservation of the original keyword definitions throughout the entire analysis.

Table 3 Examples of top 10 keywords with the relatively highest frequency of occurrences.

id	label	cluster	weight<Links >	weight<Total link strength>	weight<Occurrences >
651 3	sustainable development	1	94	577	629
332 5	hotels	3	92	264	274
644 3	sustainability	2	92	213	238
328 6	hotel industry	2	85	178	189
682 7	tourism	2	87	173	196
683 8	tourism development	4	76	128	133
188 8	ecotourism	4	71	85	89
207 8	energy efficiency	1	69	82	82
658 6	sustainable tourism	4	73	82	90
225 4	environmental management	3	84	71	73
322 7	hospitality industry	2	72	67	72

- **Identifying target companies**

The next stage of this research entails the identification of our target corporations for examination. Six public companies have been earmarked for this purpose. These comprise three entities listed on the Thailand Sustainability Investment Index (THSI) - namely, CENTEL, MINOR, and SHR - and three entities not listed on the THSI - DUSIT, ERW, and OHTL. The selection of these companies was guided by a dual criterion: their market capitalization and their assets. The leading three companies in both the THSI-listed and non-THSI-listed categories, as assessed on these parameters, were selected. The details of this process are encapsulated in

Table 4.

Table 4 List of selected companies

Company Name	Symbol	Market Cap (USD 000'000)*	Total Asset (USD 000'000)*	THSI Indexed
Central Plaza Hotel PLC	CENTEL	\$1,793.57	\$1,520.50	Yes
Dusit Thani PLC	DUSIT	\$605.93	\$613.78	No
The Erawan Group PLC	ERW	\$284.14	\$746.29	No
Minor International PLC	MINT	\$5,157.11	\$10,344.27	Yes
Ohtl PLC	OHTL	\$204.47	\$171.39	No
S Hotels and Resorts PLC	SHR	\$287.49	\$1,032.57	Yes

*Conversion rate of currency from Thai Baht to USD is approximately 35 Baht / 1 USD.

The data extracted about these companies extends beyond mere measurement of their size. It also provides insights into their capability to service their clientele, which largely includes top-tier multinational corporations with stringent sustainability mandates for their operations. In this light, the profiles of these chosen companies are reflective not only of their scale but also of their capacity to fulfill sustainability-oriented obligations.

- **Text analysis for identifying sustainability-related issues**

Once the scope and source data have been established, the final stage involves implementing a text analysis methodology to scrutinize the content of the annual and sustainability reports of the selected companies. This phase employs a Python-based algorithm, specifically designed to identify and tally the occurrences of the main keywords within these corporate reports. The outcomes of this process are then visually illustrated via a graphic representation, in addition to a tabulated account of the frequency of keyword appearances.

- **The co-occurrence analysis result**

The co-occurrence analysis of keywords presents significant insights into the prevalent themes of sustainability within the hotel industry.

Table 5 represents the top 30 co-occurrence keywords found across the annual and sustainability reports of all six companies.

Table 5 Top 30 co-occurrence keywords

Keyword 1	Keyword 2	Co-occurrence Frequency	Keyword 1	Keyword 2	Co-occurrence Frequency
hotel	management	309	sustainability	environmental	29
sustainable	development	229	sustainable	environmental	28
hotel	sustainability	98	hotel	environmental	27
tourism	industry	77	hotel	energy	24
sustainability	management	74	energy	environmental	23
hotel	development	54	hotel	sustainable	23
environmental	management	51	management	hospitality	20
development	management	48	hotel	tourism	14

sustainable	management	48	sustainable	industry	14
energy	management	44	tourism	hospitality	14
sustainable	tourism	36	development	environmental	13
development	sustainability	34	hotel	efficiency	11
energy	efficiency	33	tourism	management	11
sustainable	sustainability	33	development	efficiency	10
hotel	industry	30	industry	management	10

Primarily, the frequent cooccurrence of 'hotel' and 'management' underscores the incorporation of sustainability into strategic operations. Secondly, the high pairing frequency of 'sustainable' and 'development' emphasizes the industry's commitment to sustainable practices. Thirdly, the pairing of 'energy', 'efficiency', and 'environmental' with 'management', 'hotel', and 'development' respectively, points towards a strong focus on resource conservation and environmental stewardship. Finally, the regular pairing of 'tourism' and 'industry' suggests that sustainable discourse extends beyond hotels to the broader tourism sector. These results highlight the multidimensional nature of sustainability in the hotel sector, offering valuable insights for academics, practitioners, and policymakers alike.

- **The sustainability-related issues**

Text analysis was conducted on the annual and sustainability reports of six Thai hotel companies (CENTEL, DUSIT, ERW, MINT, OHTL, and SHR) to reveal key sustainability-related themes. The prominence of these themes across the firms was determined based on the frequency of sustainability-related keywords in the annual and sustainability reports. The top 10 keywords are shown in Figure 4.

'Management' was found to be a common theme across all companies, indicating that a strong focus on sustainable management practices was prevalent. 'Development' and 'governance' were also recurring keywords, suggesting that a commitment to developing sustainable strategies and ensuring governance for sustainability was shared among the companies.

However, distinctive emphases were also noted. For CENTEL and MINT, 'food' emerged as one of the top keywords, suggesting a potential focus on sustainable food practices. This could encompass areas such as sustainable food sourcing, waste reduction, or other food-related sustainability initiatives.

ERW was unique in the prominence of the keyword 'social', indicating a distinct emphasis on social aspects of sustainability. This could include areas like community engagement, employee welfare, and equitable business practices. OHTL and SHR stood out due to their frequent use of the keywords, 'sustainability' and 'sustainable', indicating a broad-based and comprehensive approach to sustainability.

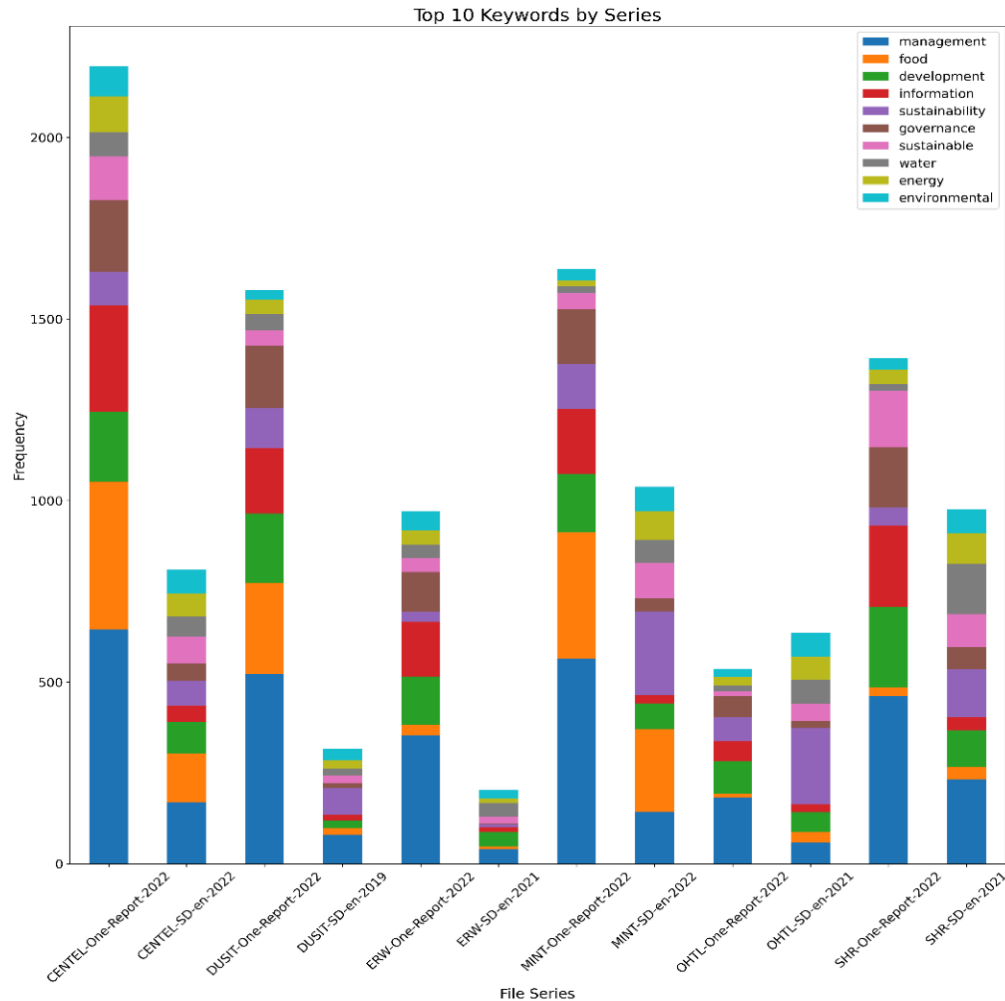


Figure 4 Top 10 keywords found across annual and sustainability reports of six companies.

In conclusion, the text analysis suggested a shared emphasis on sustainable management, development, and governance across Thai hotel companies. However, unique focus areas were also observed in individual firms, such as sustainable food practices (CENTEL and MINT), social sustainability (ERW), and a comprehensive focus on sustainability (OHTL and SHR). These insights provide a valuable understanding of the sustainability practices in the Thai hotel industry and highlight focus areas for further research. In addition, this analysis was based on keyword frequency, providing a high-level view of the companies' sustainability focuses. More nuanced insights could be obtained from a detailed content analysis of the companies' reports, which would provide the context in which these keywords were used.

CONCLUSION AND FURTHER RESEARCH

The conducted text analysis of annual and sustainability reports of six Thai hotel companies (CENTEL, DUSIT, ERW, MINT, OHTL, and SHR) has unveiled key sustainability-related themes. These themes, represented by keywords such as 'management', 'development', and 'governance', suggest a shared commitment across the companies towards sustainable management and development practices. Unique sustainability focuses, such as a focus on 'food' for CENTEL and MINT, 'social' aspects for ERW, and a broad-based approach to 'sustainability' and 'sustainable' for OHTL and SHR, was also observed.

Despite providing valuable insights, our keyword frequency analysis offers a high-level view of sustainability practices. To gain a more nuanced understanding, future research should perform a detailed content analysis of the companies' reports. This would clarify the context and specific implications of the identified keywords.

Incorporating temporal analyses in future research could reveal how companies' sustainability focus has evolved over time. This can provide additional insights into changing sustainability trends and priorities in the industry.

Further, examining potential correlations between sustainability focus and various company performance metrics, such as financial performance and customer satisfaction, could help understand the impact of sustainability practices on business performance. Expanding the scope of research to other sectors or geographical regions could provide comparative insights, contributing to a broader understanding of global corporate sustainability trends. The findings highlight the importance of sustainability in the hotel industry and pave the way for more nuanced, temporal, and comparative analyses, thereby enriching the sustainability discourse within the hospitality sector.

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