Shifting Sands: A Comparative Sentiment Analysis of Phuket's Beaches Pre and Post COVID-19

Sasichon Kaewjinda

School of Management, Shanghai University, Shanghai 200444, China

Abstract

This study investigates the shifts in tourist sentiment toward Phuket, Thailand, as a consequence of the COVID-19 pandemic by analyzing reviews from TripAdvisor from 2016 to 2023. Utilizing sentiment analysis and topic modeling, this study captures the changing emotional tone and thematic focus of tourists' feedback in pre- and post-pandemic periods. The findings revealed a significant transition from predominantly positive pre-pandemic sentiments to a broader spectrum of emotional responses afterward, with a notable increase in expressions of concern regarding health and safety. Key themes evolved from highlighting the aesthetic and leisure attributes of Phuket to emphasizing cleanliness, social distancing, and travel logistics in the post-pandemic context. These results were corroborated through a comparative analysis showing a statistically significant shift in sentiment distribution, as well as through qualitative narrative insights that provided context for the quantitatively derived themes. The implications of these findings are profound, offering actionable insights for stakeholders in Phuket's tourism industry to align their strategies with new tourist expectations and to facilitate a more resilient recovery. This research contributes to the academic understanding of sentiment analysis within tourism studies and offers a model for industry practitioners to navigate the intricacies of tourist sentiment in times of global crisis.

Keywords

Sentiment Analysis; COVID-19 Impact; Topic Modeling; Phuket Tourism.

1. Introduction

The advent of COVID-19 has upended the tourism landscape, thrusting it into a maelstrom of unprecedented challenges and compelling a re-evaluation of traveler behavior and sentiment. This study seeks to dissect the post-pandemic sentiment of tourists, focusing on the wealth of data available through online reviews, to understand the evolving psyche of the global traveler and its implications for the tourism industry.

The unprecedented nature of the COVID-19 crisis, characterized by border closures, travel restrictions, and health concerns, has catalyzed significant shifts in public sentiment, particularly in industries that are interwoven with human interaction and mobility, such as tourism. As the world grapples with the aftermath of the pandemic, it is imperative to gauge the pulse of tourist sentiment, which serves as a barometer of industry recovery and future success.

This study focuses on sentiment analysis, a powerful tool that harnesses the capabilities of Natural Language Processing (NLP) and machine learning to extract and analyze subjective information from textual data-in this case, tourist reviews. The primary objective was to capture emotional undertones and experiential feedback from tourists' online narratives, translating them into actionable insights.

This research delves into the critical examination of sentiments expressed in reviews of various tourist destinations, with a particular focus on Phuket, Thailand, a microcosm of the global

tourism economy significantly impacted by the pandemic. By analyzing reviews before and after the onset of COVID-19, this study aims to uncover the nuances of change-how have tourist expectations, experiences, and satisfaction levels been reshaped in this new era?

In this context, sentiment analysis has emerged as a pivotal tool that provides a lens through which tourists' perceptions and experiences can be deciphered and understood[1]. Sentiment analysis, particularly the analysis of online reviews and social media interactions, provides insights into the emotional and experiential dimensions of tourist interactions with a destination, offering a nuanced understanding of their perceptions, preferences, and pain points[2].

The advent of the COVID-19 pandemic has introduced a new layer of complexity and urgency for understanding tourist sentiment. Analyzing sentiments before and after the onset of the pandemic is crucial for several reasons. First, it provides insights into the shifts in tourist perceptions and preferences in response to the global health crisis, revealing altered priorities and concerns that emerged in the wake of the pandemic[3]. Second, it enables destinations and tourism operators to understand and respond to evolving tourist expectations, ensuring that their offerings and communication are aligned with the altered travel landscape. Finally, it provides a mechanism through which the recovery of the tourism sector can be facilitated, ensuring that strategies and interventions are informed by a deep understanding of tourist sentiment and behavior in the post-pandemic context.

In doing so, this study fills a crucial gap in contemporary tourism studies and sentiment analysis literature, contributing to the understanding of crisis management and recovery in tourism. It also presents a unique opportunity to explore the transformative potential of sentiment analysis as a tool for navigating the complex terrain of post-pandemic tourism, ensuring that the findings hold practical significance for stakeholders aiming to rebuild and revitalize the travel industry in the future.

2. Literature Review

2.1. Sentiment Analysis in Tourism

Sentiment analysis, synonymous with opinion mining, encompasses the computational exploration of individuals' sentiments, evaluations, attitudes, and emotions towards various entities, such as services, products, organizations, and their respective attributes. Within the tourism domain, sentiment analysis has become an indispensable instrument for deciphering and interpreting tourists' perceptions and experiences, predominantly through online reviews. Luo et al. (2020) leveraged sentiment analysis to streamline tourist attraction selection, underscoring the pivotal role of online reviews in molding tourist preferences[2]. Yu and Zhang (2020) delved into the emotional nuances embedded in local gastronomy through sentiment analysis, accentuating the importance of culinary experiences in shaping tourist perceptions[4]. Qin et al. (2021) applied sentiment analysis to categorize tourist attractions, offering insights into tourist satisfaction and attraction preferences[5]. Irawan et al. (2019) employed sentiment analysis and topic modeling to extract tourist perceptions towards Indonesia Tourism Destination, unveiling predominant themes discussed by tourists[6]. Liang et al. (2021) investigated cultural tourism resource perceptions, revealing focal points of tourist perceptions towards local tourism culture in Wuxi, China[7]. Prameswari et al. (2017) utilized sentiment analysis and text summarization to mine online reviews in Indonesia's priority tourist destinations, achieving a classification model accuracy of 78%[8]. Yu and Egger (2020) utilized sentiment analysis and topic modeling to explore tourist perceptions and experiences at overcrowded attractions, identifying topics related to overtourism and revealing negative sentiments towards safety and security[9]. Yu et al. (2019) conducted sentiment analysis on online reviews of Chinese attractions from a Japanese tourism website, comparing various

statistics and rule-based methods, and revealed the practicability and characteristics of the Japanese language in sentiment analysis[10]. Literature in this field typically focuses on the methodologies and tools used for sentiment analysis. These include natural language processing (NLP), machine learning algorithms, and various data-mining techniques. These methods are applied to analyze textual data from social media, review sites, and other digital platforms to gauge public sentiments about tourism destinations.

Moreover, Sulayes (2022) provides insights into the comparison of classification techniques, revealing the nuances and considerations in selecting an approach for sentiment analysis in tourism[11]. Another study focused on the application of aspect-based sentiment analysis to develop a recommender system for tourism, highlighting the role of sentiment analysis in shaping tourist decision-making processes[12]. Furthermore, a proof of concept for a web application for sentiment analysis in tourism is presented, focusing on the Draa-Tafilalet region and exploring its applicability and effectiveness5. Content analysis utilizing TOURQUAL and text mining online reviews was applied in a study focusing on Borobudur, revealing the potential of sentiment analysis in understanding and enhancing tourism quality[13].

These studies collectively underscore the pivotal role of sentiment analysis in deciphering tourist perceptions and experiences, thereby providing valuable insights for stakeholders in the tourism sector to understand and respond to evolving tourist expectations and preferences.

2.2.   Impact of COVID-19 on Tourism

Economic Impact: Research highlights the significant economic fallout from the pandemic on tourism-dependent economies, such as Thailand. In 2019, Thailand ranked eighth globally in terms of international tourist arrivals, with tourism creating millions of jobs. However, the pandemic has led to a drastic reduction in international and domestic travel, severely impacting the economy. Research on Phuket's tourism has spanned various dimensions, particularly those accentuated by the advent of the COVID-19 pandemic, which has significantly impacted tourist travel risk and management perceptions. Aziz et al. (2021) explored the impact of the pandemic on tourists' travel risk and management perceptions, revealing that the pandemic has significantly affected travel risk and management perceptions, and subsequently, various aspects of society[14]. Godovykh et al. (2021) delved into the antecedents and outcomes of health risk perceptions in tourism, particularly following the COVID-19 pandemic, providing a conceptual model that elucidates the relationships between various factors, tourists' risk perceptions, and travel intentions[15]. Nazneen et al. (2020) examined the impacts of the COVID-19 outbreak crises on tourists' travel behavior, indicating that the pandemic has notably affected tourists' travel decisions and their perceptions of hygiene and safety. Horng et al. (2012) explored the role of international tourists' perceptions of brand equity and travel intention in culinary tourism, revealing that brand loyalty could mediate the effects of brand image and perceived quality on travel intention4. These studies underscore the multifaceted nature of research on Phuket tourism, revealing not only the economic and operational challenges faced by the sector, but also the shifts in tourist behaviors and perceptions, particularly in the context of the pandemic. Further research can delve deeper into specific aspects, such as recovery strategies, sustainability, and digital transformation in Phuket's tourism sector in the post-pandemic era.

The literature in this area speculates on the future of tourism post-COVID-19, with projections suggesting a slow recovery to pre-crisis levels by 2024. The focus is on the need for adaptive strategies in the global tourism industry to cope with changing landscapes.

3. Methodology

The methodology of this research paper is structured to systematically explore and analyze the sentiments of tourists in the post-COVID era. The adopted approach is designed to provide a robust framework for understanding the nuances of tourist sentiment and to ensure the integrity and validity of the research findings. Herein, we detail the methods utilized to gather data, process, and analyze sentiments, and derive meaningful insights. Figure 1 shows data processing pipeline.
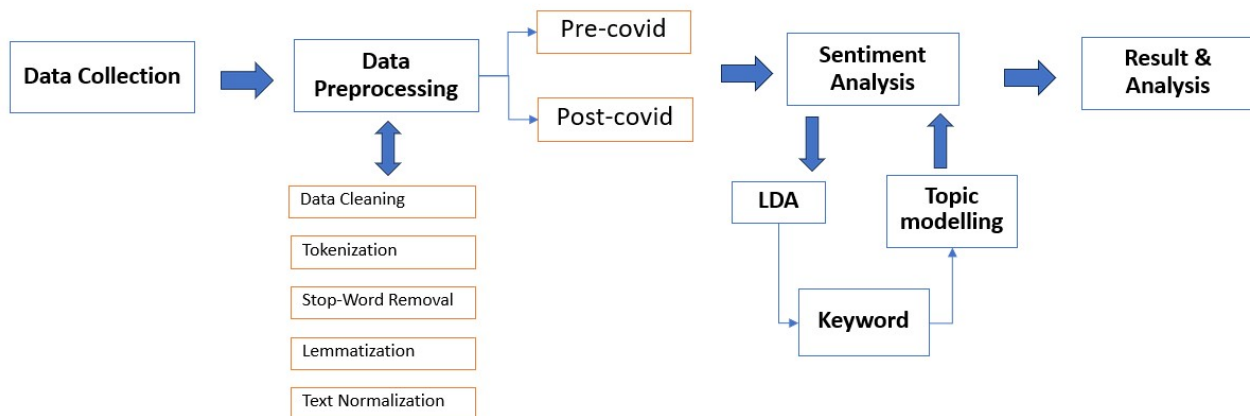

Figure 1. Data processing pipeline

3.1. Data Collection

The primary source of data for this research is tourist reviews collected from TripAdvisor, specifically focusing on reviews of Phuket, Thailand, from 2016 to 2023. This period encompasses both pre- and post-COVID scenarios, allowing for a comparative sentiment analysis. We employed web scraping techniques, adhering to ethical research standards, to gather a comprehensive dataset of reviews, ratings, and metadata that will facilitate a granular analysis of sentiments.

3.2. Data Preprocessing

The data pre-processing stage involved several crucial steps to ensure that the dataset was clean, structured, and suitable for analysis. This included:

Data Cleaning: The raw data underwent a rigorous cleaning process to remove duplicates and irrelevant information that did not contribute to the research objectives. This step ensured that the analysis was based on accurate and relevant data[16].

Data Transformation: The cleaned data were then structured into a format conducive to sentiment analysis and topic modeling. This involved organizing the reviews into a tabular format with appropriate headers and indexing to facilitate easy access and manipulation during the analysis phase.

Data Normalization: To ensure consistency, the text data were normalized by converting it to lowercase and removing punctuation, special characters, and numbers that were not relevant to the analysis.

Text Tokenization and Stop Word Removal: The review text was tokenized and broken down into individual words or tokens. Common stop words (e.g., 'the, ' 'and, ' 'is') were removed to focus on more meaningful words that could indicate sentiment or thematic content[17].

Lemmatization: Where necessary, words are stemmed or lemmatized to consolidate different forms of a word into a base or root form, thereby reducing the complexity of the analysis.

3.3.   Sentiment Analysis

The sentiment analysis process was divided into three key steps.

Tool Selection: Selection of the sentiment analysis tool is critical. We utilized a combination of proprietary and open-source software known for their accuracy and efficiency in processing large datasets.

Model Development: Utilizing NLP techniques, we developed a sentiment analysis model that is sensitive to the nuances of tourist expressions. This model was trained and tested on a curated dataset to ensure that it could accurately interpret the emotional valence of the reviews.

Validation: The sentiment analysis model undergoes a rigorous validation process, and its performance is assessed using a separate, manually annotated dataset to ensure that the sentiment classification results align with human judgment.

3.3.1. Sentiment Score Calculation

Sentiment scores were calculated by analyzing the frequency and context of sentiment-inducing words in reviews. This involves:

Sentiment lexicon: Utilizes a sentiment lexicon that has been validated for the tourism domain to identify sentiment-bearing terms.

Contextual Valence Shifters: Accounting for negations and other valence shifters that can alter the sentiment value of nearby words.

Aggregation: Aggregate sentiment scores at the sentence or review level to obtain a holistic sentiment measure for each review.

3.4.   Topic Modeling

To understand the prevalent themes within the reviews, we used Latent Dirichlet Allocation (LDA). This widely accepted technique in text analysis will help identify and categorize the main topics discussed by tourists, allowing for thematic analysis that complements sentiment analysis[18]. This process involved several steps.

Vectorization: Convert the preprocessed text into a mathematical representation, often using a bag-of-words model that results in a document-term matrix.

Model Application: The LDA algorithm is run on a document-term matrix to discover topics. Each topic is a mixture of words and each document is a mixture of topics[19].

Parameter Tuning: Adjusting parameters such as the number of topics to optimize the coherence and distinctiveness of the resulting topics.

3.5.   Comparative Analysis

We conducted a comparative analysis of the sentiments and themes identified in these reviews. Temporal Comparison: We compared the identified sentiments and themes across the pre- and post-COVID periods to discern any significant shifts or trends. Beyond quantitative sentiment and topic modeling analyses, a qualitative approach was adopted:

Narrative Analysis: A subset of reviews will be subjected to narrative analysis to capture deeper insights that quantitative methods might overlook.

Contextual Factors: We explore the external and contextual factors that could influence the sentiments expressed by tourists, such as global travel advisories, local COVID-19 cases, and changes in travel policies during the pandemic.

4.   Result and Discussion

The results of this research present a multifaceted view of tourist sentiment in the post-COVID era, centered on the analysis of TripAdvisor reviews for Phuket from 2016 to 2023. The findings

are organized into several key areas that reveal the intricate shifts in tourist perceptions and thematic concerns that have emerged or evolved due to the pandemic.

4.1. Sentiment Analysis Findings

This section examines the temporal trends in sentiment scores, focusing particularly on the changes before and after the COVID-19 pandemic. Based on the data analysis, the average sentiment score during the pre-COVID years (2016-2019) was approximately 0.281, indicating a generally positive tone within the reviews. However, during the post-COVID period (from 2020 onwards), the average sentiment score rose to approximately 0.360, a significant increase.

Several hypotheses could explain this uptick in positive sentiment post-COVID. One possibility is that tourists who visited the beaches during the pandemic were more appreciative of the opportunity to travel, or found less crowded beaches more enjoyable. Alternatively, it could reflect a change in the demographics of reviewers or a shift in what they value post-pandemic.

Figure 2 illustrates this trend, with a visible uplift in sentiment post-2020. It is noteworthy that this increase coincided with the global outbreak of COVID-19, suggesting a potential correlation between the pandemic and more positive reviews.
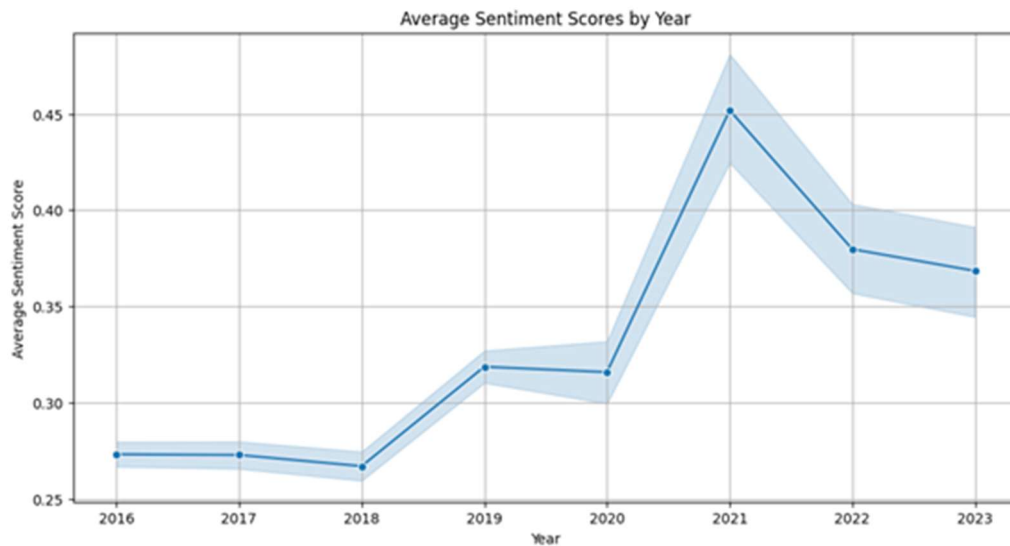

Figure 2. Sentiment Distribution Pre- and Post-COVID-19

4.2. Topic Modeling Outcomes

Table 1. Dominant Themes Identified in Topic Modeling

Pre-COVID Topics:	Keywords	Post-COVID Topics:	Keywords
Topic 1	beach good nice great restaurant phuket place beautiful patong clean	Topic 1	beach water nice clean sand beautiful restaurant patong lot food
Topic 2	beach patong phuket tourist dirty place like people karon better	Topic 2	beach water time boat beautiful patong people recommend activity sand
Topic 3	beach water sand clean beautiful clear nice wave patong day	Topic 3	great beach banana food experience tour good guide alex trip
Topic 4	beach water lot food massage activity jet place people good	Topic 4	good amazing friendly staff nice alex beach food trip great
Topic 5	place night bar street patong people lot road bangla time	Topic 5	beach patong place phuket water people night boat lot great

Table 1 lists the dominant themes identified, their frequency of occurrence, and any notable changes in their prevalence between the pre- and post-COVID-19 periods. LDA topic modeling yielded several dominant themes.

Pre-COVID-19: Dominant themes related to the 'beauty and relaxation' of beaches, 'local cuisine,' and 'cultural activities.'

Post-COVID-19: A significant emergence of 'health and safety' and 'travel logistics' themes was observed, alongside sustained interest in 'natural beauty' but with an added emphasis on 'cleanliness' and 'social distancing.'

Pre-COVID identified topics

Topic 1 - Beach Quality and Amenities: This topic is characterized by keywords such as 'beach,' 'good,' 'nice,' 'great,' and 'restaurant,' highlighting tourists' appreciation for the beaches' general quality and available amenities.

Topic 2 - Environmental Concerns and Social Experience: With words like 'tourist,' 'dirty,' 'crowded,' and 'better,' this topic reflects concerns about the impact of tourism on the environment and the desire for improved conditions.

Topic 3 - Natural Beauty and Recreation: Dominated by terms such as 'water,' 'sand,' 'clean,' 'beautiful,' and 'clear,' this topic centers on the natural attractiveness and recreational opportunities offered by the beaches.

Topic 4 - Leisure Activities and Services: This topic is focused on the various activities and services available, indicated by words like 'food,' 'massage,' 'activity,' 'jet,' and 'ski.'

Topic 5 - Nightlife and Entertainment: Highlighted by 'night,' 'bar,' 'street,' 'bangla,' and 'time,' this topic suggests that the nightlife and entertainment aspects were significant attractions.

Post-COVID identified topics

Topic 1: Beach Experience and Cleanliness: Post-COVID, this topic emphasizes the quality of the beach experience and the importance of cleanliness, with a noticeable frequency of 'clean' and 'sand' among the keywords.

Topic 2 - Activities and Recommendations: This topic underlines the interest in specific beach activities and personal recommendations, reflecting a shift towards more experiential tourism.

Topic 3 - Sustainable and Quality Tourism: With a focus on 'banana' (likely referring to banana boat rides), 'food,' 'experience,' and 'tour,' this topic suggests a leaning towards more sustainable and high-quality tourism experiences.

Topic 4 - Quality of Service and Hospitality: The presence of words like 'staff,' 'friendly,' 'amazing,' and 'alex' (possibly a tour guide's name) indicates a strong focus on the human aspect of tourism and the quality of service.

Topic 5 - Social Environment and Local Experience: This topic, with terms such as 'patong,' 'place,' 'phuket,' and 'people,' points towards the social and local aspects of the beach experience.

Following the delineation of the topics, we further examined the distribution of keyword weights within each topic to understand the relative prominence of these themes. The weights indicate the frequency and importance of each term within the topics, offering insight into the aspects of the beach experience that are discussed.

4.3. Topic Trends

This section analyzes the prevalence of topics identified in tourist reviews over the years, with a specific focus on the transitions from the pre-COVID to post-COVID periods. Topic modeling applied to the reviews revealed significant shifts in the thematic focus of tourists' discussions, reflecting the profound impact of the pandemic on tourism in Phuket.

4.3.1. Pre-COVID Topic Prevalence

Initially, the thematic content of tourist reviews centered around the experiences of beaches, local cuisine, and the general atmosphere of the tourist spots. Table 2 shows topic weights for pre-COVID. The discussions were rich in reference to the aesthetic qualities of the beaches and the vibrancy of local culture.

Table 2. Pre-COVID topic weights

Year	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
2016	0.209520	0.171659	0.287491	0.211951	0.119378
2017	0.214207	0.169771	0.296540	0.210892	0.108590
2018	0.218834	0.176560	0.272623	0.204742	0.127240
2019	0.336916	0.148980	0.237217	0.178355	0.098532
2016	0.209520	0.171659	0.287491	0.211951	0.119378

From 2016 to 2019, topics orbiting around the physical beauty of beaches (Topics 3 and 4) and the quality of amenities (Topic 1) maintained a significant presence in tourist narratives. Topic 3, with its focus on the natural cleanliness and aesthetic appeal of the beaches, consistently attracted attention as a testament to the timeless value visitors place on environmental quality. The moderate yet stable prominence of Topic 4 suggests a balanced interest in activities and services such as food and massage, pointing to a multifaceted tourist experience.

The year 2019 stands out with a noticeable uptick in Topic 1, which emphasizes general satisfaction and dining experiences. This could indicate an evolving tourism sector that increasingly integrates local gastronomy with beach tourism, enhancing the overall appeal of Phuket as a destination.

4.3.2. Post-COVID Topic Prevalence

The onset of the COVID-19 pandemic has caused a noticeable change in these topics. There was an increase in discussions related to health and safety measures, accessibility of amenities, and quality of service under the new normal. Table 3 shows the topic weights for post-COVID. This indicates a shift in tourist priorities and concerns.

Table 3. Post-COVID topic weights

Year	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
2020	0.463879	0.147993	0.128304	0.097191	0.162633
2021	0.232057	0.105395	0.364534	0.236826	0.061188
2022	0.317280	0.146462	0.234991	0.155095	0.146172
2023	0.285935	0.129966	0.265208	0.177111	0.141770
2020	0.463879	0.147993	0.128304	0.097191	0.162633

As the world began to navigate the new normal, the topic trends from 2021 to 2023 exhibited a rebalancing of themes. The revival of Topic 3 in 2021, with its emphasis on tours and guided experiences, signals a rebound in demand for structured travel experiences. This recovery is possibly fueled by a combination of easing restrictions and the desire to reconnect with the world through immersive activities.

The advent of the 2020 pandemic has catalyzed a dramatic transformation in topic distribution. The prevalence of Topic 1 almost doubled, overshadowing the other themes. This abrupt change likely reflects global reassessment of natural spaces in the face of mobility restrictions and environmental recovery reports. Phuket's beaches, perhaps seen as sanctuaries during tumultuous times, have surged in appreciation.

Conversely, the diminished weight of topic 5 in 2020 corroborates the widespread curtailment of nightlife and social gatherings, a direct consequence of health and safety regulations. The data here paint a picture of a tourist landscape momentarily stripped of its social buzz and reoriented towards a quieter, more introspective appreciation of nature.

The years 2022 and 2023 continue this narrative of diversification, with topic 2 gaining ground. This could be interpreted as a growing interest in water-based activities and exploration of aquatic life, perhaps spurred by a renewed sense of appreciation for the outdoors after prolonged periods of confinement.

The comparative analysis of pre and post-COVID topics reveals shifting priorities and experiences among tourists. While the pre-COVID topics showed a balanced emphasis on environmental quality, social experiences, and nightlife, the post-COVID topics reflected a nuanced shift towards personal experiences, sustainability, and quality of interactions. Notably, the post-COVID topics seem to highlight a deeper appreciation for cleanliness and personal recommendations, which may indicate an increased sensitivity towards health and individualized experiences as a result of the pandemic's influence on travel behaviors.

4.4. Implications

Implications for Tourism Management: Nuanced sentiment analysis underscores the need for tourism managers to adopt a proactive stance, anticipating shifts in tourist expectations. This involves adapting to the current landscape shaped by the pandemic and foreseeing future trends and potential crises. Management should employ predictive analytics and scenario planning to prepare for various eventualities, ensuring the robustness of tourism against unforeseen events.

Policy Development and Government Action: Governments should consider the development of comprehensive health and safety guidelines specific to tourism, leveraging sentiment data to tailor these guidelines to actual tourist concerns. Such policies should not be static; they require regular updates that reflect the latest health advisories and technological advancements in safety and hygiene[20].

Marketing and Communication Strategies: Marketing strategies should be grounded in a deep understanding of the emotional and psychological states of tourists. This means not only showcasing beaches and amenities, but also telling a compelling story of safety, rejuvenation, and carefree enjoyment that aligns with the evolving emotional landscape of potential visitors[21]. Virtual tours, enhanced online engagement, and transparent communication can form a part of a holistic marketing approach.

Product and Experience Design: Service design must be reimagined to prioritize contactless interactions and sanitized environments without compromising the warmth and personal touch that characterize Phuket's hospitality. The incorporation of sensory elements that signal cleanliness (such as the scent of fresh linen or the sound of running water) can subtly reassure guests about their safety[22].

Staff Training and Development: Training programs should go beyond standard service protocols to include crisis management, communication skills for health-related inquiries, and empathy training to deal with guests who may have heightened anxieties about travel and health[23].

Strategic Planning for Resilience: Strategic planning should account for the diversity of revenue streams, perhaps by exploring alternative tourism markets or ancillary services that can operate when traditional tourism cannot. Flexibility should be built into business models to allow for rapid pivoting in response to changing market conditions[24].

Sustainability and Community Engagement: The focus on sustainability should extend to building a tourism ecosystem that supports not only environmental sustainability but also

socioeconomic resilience[25]. Programs that support local businesses, safeguard cultural heritage, and involve communities in decision making can create a more inclusive and robust tourism industry.

Investment in Technology: Embracing cutting-edge technologies such as artificial intelligence for personalized guest experiences, blockchain for secure and transparent transactions, and Internet of Things (IoT) devices for enhanced safety measures can position Phuket as a leader in innovative tourism.

Implications for Future Research: Future research could explore the long-lasting psychological impacts of the pandemic on travel behavior, the potential shifts in the demographic profile of Phuket visitors, and the effectiveness of different management strategies adopted by beach resorts during and after the pandemic[26].

5. Conclusion

In conclusion, this research has not only contributed to academic discourse by providing a methodologically robust analysis of tourist sentiment but has also offered practical guidance for the tourism industry's recovery and strategic reorientation post-COVID-19. This study has laid a foundation for future research, suggesting a continued focus on the interplay between global crises and tourist behavior. As the world gradually emerges from the shadow of the pandemic, the tourism industry must navigate the landscape irrevocably altered by this experience. In Phuket, as in other tourist destinations around the globe, the key to future success lies in understanding and responding to these shifts in tourist sentiment, ensuring that the industry can not only recover but also thrive in the post-pandemic world.

References

[1] B. Aydın and M. D. Alvarez, "Understanding the Tourists' Perspective of Sustainability in Cultural Tourist Destinations," Sustainability, vol. 12, no. 21, p. 8846, Oct. 2020, doi: 10.3390/su12218846.

[2] Y. Luo, X. Zhang, Y. Qin, Z. Yang, and Y. Liang, "Tourism Attraction Selection with Sentiment Analysis of Online Reviews Based on Probabilistic Linguistic Term Sets and the IDOCRIW-COCOSO Model," Int. J. Fuzzy Syst., vol. 23, no. 1, pp. 295–308, 2021, doi: 10.1007/s40815-020-00969-9.

[3] M. Sigala, "Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research," J. Bus. Res., vol. 117, pp. 312–321, Sep. 2020, doi: 10.1016/j.jbusres.2020.06.015.

[4] C. E. Yu and X. Zhang, "The embedded feelings in local gastronomy: a sentiment analysis of online reviews," J. Hosp. Tour. Technol., vol. 11, no. 3, pp. 461–478, 2020, doi: 10.1108/JHTT-02-2019-0028.

[5] Y. Qin, X. Wang, and Z. Xu, "Ranking Tourist Attractions through Online Reviews: A Novel Method with Intuitionistic and Hesitant Fuzzy Information Based on Sentiment Analysis," Int. J. Fuzzy Syst., vol. 24, no. 2, pp. 755–777, Mar. 2022, doi: 10.1007/s40815-021-01131-9.

[6] H. Irawan, G. Akmalia, and R. A. Masrury, "Mining Tourist's Perception toward Indonesia Tourism Destination Using Sentiment Analysis and Topic Modelling," in Proceedings of the 2019 4th International Conference on Cloud Computing and Internet of Things, New York, NY, USA: ACM, Sep. 2019, pp. 7–12. doi: 10.1145/3361821.3361829.

[7] F. Liang, Y. Pan, M. Gu, W. Guan, and F. Tsai, "Cultural Tourism Resource Perceptions: Analyses Based on Tourists' Online Travel Notes," Sustainability, vol. 13, no. 2, p. 519, Jan. 2021, doi: 10.3390/su13020519.

[8] P. Prameswari, Zulkarnain, I. Surjandari, and E. Laoh, "Mining online reviews in Indonesia's priority tourist destinations using sentiment analysis and text summarization approach," in 2017 IEEE 8th International Conference on Awareness Science and Technology (iCAST), IEEE, Nov. 2017, pp. 121–126. doi: 10.1109/ICAwST.2017.8256429.

[9]   J. Yu and R. Egger, "Tourist Experiences at Overcrowded Attractions: A Text Analytics Approach," in Information and Communication Technologies in Tourism 2021, Cham: Springer International Publishing, 2021, pp. 231–243. doi: 10.1007/978-3-030-65785-7_21.

[10] C. Yu, X. Zhu, B. Feng, L. Cai, and L. An, "Sentiment Analysis of Japanese Tourism Online Reviews," J. Data Inf. Sci., vol. 4, no. 1, pp. 89–113, Feb. 2019, doi: 10.2478/jdis-2019-0005.

[11] A. Rico-Sulayes and J. Monsalve-Pulido, "A Proposal and Comparison of Supervised and Unsupervised Classification Techniques for Sentiment Analysis in Tourism Data," 2022, Accessed: Oct. 08, 2023. [Online]. Available: http://ceur-ws.org.

[12] X. Jiang, J. Qin, J. Gao, and M. G. Gossage, "How Tourists' Perception Affects Travel Intention: Mechanism Pathways and Boundary Conditions," Front. Psychol., vol. 13, p. 821364, Jun. 2022, doi: 10.3389/FPSYG.2022.821364/BIBTEX.

[13] R. Widyawati, H. Irawan, and A. Ghina, "Content Analysis of Tourist Opinion based on Tourism Quality (TOURQUAL) by Text Mining Online Reviews : The Case of Borobudur," in Proceedings of the 1st International Conference on Sustainable Management and Innovation, ICoSMI 2020, 14-16 September 2020, Bogor, West Java, Indonesia, EAI, 2021. doi: 10.4108/eai.14-9-2020.2304462.

[14] N. A. Aziz, F. Long, M. A. Bhuiyan, and M. K. Rahman, "Travel decision making during and after the COVID-2019 pandemic: Revisiting travel constraints, gender role, and behavioral intentions," Front. Psychol., vol. 13, Sep. 2022, doi: 10.3389/fpsyg.2022.961464.

[15] M. Godovykh, A. Pizam, and F. Bahja, "Antecedents and outcomes of health risk perceptions in tourism, following the COVID-19 pandemic," Tour. Rev., vol. 76, no. 4, pp. 737–748, Jul. 2021, doi: 10.1108/TR-06-2020-0257.

[16] E. Rahm and H. H. Do, "Data Cleaning: Problems and Current Approaches," IEEE Data Eng. Bull., 2000.

[17] "NLTK :: nltk.tokenize package." https://www.nltk.org/api/nltk.tokenize.html (accessed Nov. 22, 2023).

[18] R. Hammad, V. C. Hardita, and A. Z. Amrullah, "Topic modeling and sentiment analysis about Mandalika on social media using the latent Dirichlet allocation method," MATRIX J. Manaj. Teknol. dan Inform., vol. 12, no. 3, pp. 109–116, 2022, doi: 10.31940/matrix.v12i3.109-116.

[19] P. Brzustewicz and A. Singh, "Sustainable consumption in consumer behavior in the time of covid-19: Topic modeling on twitter data using lda," Energies, vol. 14, no. 18, 2021, doi: 10.3390/en14185787.

[20] L. Zhang, J. Hong, A. Nasri, and Q. Shen, "How built environment affects travel behavior: A comparative analysis of the connections between land use and vehicle miles traveled in US cities," J. Transp. Land Use, vol. 5, no. 3, pp. 40–52, 2012, doi: 10.5198/jtlu.v5i3.266.

[21] Monaworld, "The 27 Most Beautiful Beaches In The World," THAIest, 2023.

[22] G. Moscardo, Stories as a Tourist Experience Design Tool, vol. Part F1054. 2017. doi: 10.1007/978-3-319-42773-7_7.

[23] J. Lee, K. Lara, G. McRoskey, and J. Jhunjhunwala, Pranay Guggenheim, "What Travel and Tourism Consumers Really Want-and Why," Bost. Consult. Gr., p. 7, 2019.

[24] UNWTO, "Tourism on track for full recovery as new data shows strong start to 2023," no. May, pp. 33–34, 2023.

[25] J. M. Thomsen, S. Lendelvo, K. Coe, and M. Rispel, "Community perspectives of empowerment from trophy hunting tourism in Namibia's Bwabwata National Park," J. Sustain. Tour., vol. 30, no. 1, pp. 223–239, 2022, doi: 10.1080/09669582.2021.1874394.

[26] K. Fuchs, "Small Tourism Businesses Adapting to the New Normal: Evidence From Thailand," Tourism, vol. 70, no. 2, pp. 258–269, 2022, doi: 10.37741/T.70.2.7.