Asia Pacific
Academy of Science Pte. Ltd.

Research Article

Exploring user generated content for beach resorts in Cox's Bazar, Bangladesh: A pre- and post-pandemic analysis

Mohammad Sayed Noor[1], Narariya Dita Handani[1,2,*], Hak-Seon Kim[3,*]

[1] School of Global Studies, Kyungsung University, Busan 48434, Korea

[2] Department of Management, Faculty of Economics and Business, Universitas Wijaya Kusuma Surabaya, Surabaya 60225, Indonesia

[3] School of Hospitality & Tourism Management, Kyungsung University, Busan 48434, Korea

* Corresponding authors: Narariya Dita Handani, narariya0624@kyungsung.ac.kr; Hak-Seon Kim, kims@ks.ac.kr

ABSTRACT

The tourism industry plays a significant role in the economy of Bangladesh, particularly in the world-renowned coastal town of Cox's Bazar. However, the COVID-19 pandemic has significantly disrupted this sector, leading to substantial economic losses and shifts in customer satisfaction and behavior. This study aims to analyze the change in customer satisfaction in Cox's Bazar hotels and resorts before and after the pandemic. In order to identify user-generated content from 9481 reviews from 11 hotels, Linguistic Inquiry and Word Count (LIWC-22) software was used for text analysis, followed by factor analysis and regression analysis. The study highlights the increased importance of "Financial Stability" post-pandemic, likely due to price reductions and special offers. Additionally, "Digital Culture" and "Illness" emerged as new dissatisfaction factors. The insights offer valuable implications for businesses, policymakers, and tourism stakeholders to strategize effective customer service and foster sustainable recovery in the post-pandemic era.

Keywords: Bangladesh; hotels; Cox's Bazar; Kuakata; customer satisfaction; user generated content; textual analysis; LIWC-22

1. Introduction

Bangladesh, despite its relatively small geographical size, is rich in significant and scenic locations. A number of beautiful and significant places can be found within it, such as the Sundarban mangrove forest (a UNESCO World Heritage Site)[1]. Another noteworthy site is Cox's Bazar, with its gentle slope and unbroken length of 155 km (96 miles). Cox's Bazar has been referred to as the "longest natural unbroken sea beach" in the world[2].

Despite the presence of these natural wonders, international tourism in Bangladesh has remained notably low. In 2019, Bangladesh reported 323,000 tourists, placing it 148th in absolute terms based on the number of tourists to the population of Bangladesh. When measured by the number of tourists per resident, it ranks 201st globally[3].

Tourism plays a small but significant role in the Bangladeshi economy, accounting for 0.052% of the country's total gross domestic product. The beginning of 2020, however, saw the advent of the COVID-19 pandemic which drastically impacted the tourism sector. A reported decrease in foreign tourism by 44% resulted in substantial economic losses for the country[3]. The country is one of the most affected countries by COVID-19. In accordance with UNWTO predictions, the country has suffered a loss of approximately TK. 40 billion (USD 470 million) this year. The Tour Operators Association of Bangladesh (TOAB) has estimated that the tourism sector may lose up to TK. 60 billion in 2020 due to the pandemic. Meanwhile, the Pacific Asia Travel Association (PATA) predicted that COVID-19 has encountered a loss of approximately TK. 97 billion Bangladesh's tourism sector[4]. This shift has led to increased interest from both international and local hotel groups in the region.

In Bangladesh, domestic tourism plays a significant role in the development of the tourism industry. In 2020, approximately 10 million local tourists are expected to visit different tourist places[4]. Consequently, various international brands as well as local hotel groups have been attracted to the area. Among them, some of the beach accessible hotels and resorts are: Sea Pearl Beach & Spa Cox's Bazar, Marmaid Beach Resort, Long Beach Hotel Cox's Bazar, Best Western Heritage, Sayemen Beach Resort, Seagull Hotel, Kuakata Grand Hotel & Spa Resort, Hotel Graver Inn International, Kuakata, Neeshorgo Hotel & Resort Ltd. Numerous beach-accessible hotels and resorts have sprung up in response to demand, most receiving high ratings on Google Travel. However, there is a noticeable lack of studies investigating hotel performance from the perspective of customer satisfaction or ratings on review platforms like Google Travel[5].

Addressing this gap, this study leverages user-generated content to identify key factors influencing customer satisfaction in hotels and resorts in Cox's Bazar, both before and after the COVID-19 pandemic. Additionally, this research seeks to compare these factors to understand how the pandemic may have altered customers' priorities and perceptions. The research also aims to analyze the impact of the pandemic on user-generated content and customer experiences. This analysis will be based on linguistic data derived from the Linguistic Inquiry and Word Count (LIWC-22), a text analysis software that computes the degree to which people use different categories of words across a wide array of texts[6]. A regression analysis will be employed to pinpoint key drivers of customer satisfaction based on data derived from user-generated content. This combination of linguistic analysis and statistical modeling allows us to explore not only what customers are saying, but how their language may reflect their overall satisfaction and attitudes[7].

The findings of this study hold significant potential to guide the development of effective business strategies and improve customer service in the hotel industry. By understanding the specific factors that contribute to customer satisfaction such as financial stability and lifestyle, businesses can more effectively meet the needs and expectations of their customers, improving their overall experience[8]. Furthermore, these insights can contribute to strengthening the resilience and recovery of tourism in Cox's Bazar in the post-pandemic world. By understanding how customer feedback has changed due to the pandemic, tourism stakeholders can better adapt to new realities, making necessary adjustments to ensure the industry's sustainable recovery. Therefore, the results of this study provide valuable insights not only for hoteliers and resort owners but also for policy makers, tourism planners, and other stakeholders in the tourism industry.

2. Literature review

2.1. Customer satisfaction

As defined by Hunt[9], customer satisfaction refers to the quality of the customer experience in the service industry. Understanding customer satisfaction is essential for measuring an organization's performance because it directly reflects consumers' expectations and perceptions of service quality[10]. User-generated content, such as

customer reviews, can serve as a powerful indicator of this satisfaction. These reviews encapsulate customers' perceptions of a company's performance and its service quality[11]. A positive customer experience, manifested through satisfaction, contributes to customer loyalty and repeat purchases. It also encourages favorable word-of-mouth (WOM) recommendations, ultimately leading to increased profits for the company[12].

In the context of this study, customer ratings can be considered a quantifiable measure of customer satisfaction. These ratings, often expressed on a numerical scale, capture the customer's overall evaluation of their service experience. High ratings typically signal high customer satisfaction, as the service has met or exceeded the customer's expectations. Conversely, low ratings can suggest dissatisfaction, indicating that the service failed to meet the customer's expectations[8,13]. Therefore, in a broader sense, customer ratings can serve as a powerful tool for gauging customer satisfaction in a quantifiable way.

Various studies have explored the relationship between textual hotel reviews and customer satisfaction. One such study focused on the sentiment polarity of online reviews and found it significantly influences customer satisfaction[13]. Techniques such as natural language processing, text mining, and sentiment analysis have demonstrated a strong correlation with sentiment scores derived from the titles and content of online customer reviews[14]. Further research by Qu et al.[15] found a significant relationship between most attributes expressed in textual reviews and the customer rating. Likewise, Kim et al.[16] and Xu and Li[17] confirmed previous findings that overall ratings which can define as overall customer satisfaction serve as critical predictors of hotel performance.

This study defines consumer satisfaction as the comprehensive emotional response a consumer has to an intangible as well as tangible services. This response is typically measured post-purchase by comparing the service encounter with the customer's expectations. Generally, customers are satisfied when a service meets or exceeds their expectations. Conversely, when a service falls short of these expectations, dissatisfaction often ensues[17]. Accordingly, this study defines consumer satisfaction as the entire emotional response a consumer has to an intangible and tangible services. At the post-purchase point, the emotional response to a service is measured by comparing the encounter with the expectations of the customer. In general, customers are satisfied with a service if it meets or exceeds their expectations. Nevertheless, many customers are dissatisfied with a service that does not meet their expectations[18].

2.2. User generated content

A customer's motivation for writing online reviews is primarily motivated by altruism and reciprocity. Those who leave online reviews for hotels on this basis seek to assist future hotel guests in making better decisions about their hotel stay choices, as well as to assist hotels in improving their service operations[19]. In addition, fulfilling psychosocial needs is of utmost importance to the company. A customer posting an user generated contents or online review for this purpose can indicate their satisfaction and admiration for the hotel, as well as their dissatisfaction and complaints regarding it[20]. Customer social needs are the third factor. A positive reputation can be developed by being voted "helpful" in an online community[21], gaining social identification in the travel community[22], or anticipating the hotel manager's online response[23]. Lastly, there are economic incentives that encourage individuals to post reviews on online review platforms in exchange for rewards[24]. The motivations of customers for writing online reviews influence their linguistic style[25,26].

User generated contents are typically written based on their satisfaction with the services, their desire for better services in the future, and their desire for social support[27]. It has been demonstrated in a variety of previous studies that online reviews can provide valuable insight into various industries. In a recent study, user generated contents were used to predict airline customers' recommendations based on the key attributes contributing to their satisfaction with hotels[28]. Further research showed that the generated contents of

customers influence the reputation of the hotel and the purchase decisions of potential customers[29]. The results of another study describe how hotel managers can use user generated contents to forecast and evaluate the performance of their hotels[30].

2.3. Textual analysis

Unlike ratings, which are structured, textual reviews posted in the online space are unstructured user-generated content, which differs from structured ratings[14]. Accordingly, textual reviews are definitely a more comprehensive source of information regarding consumers' experiences and perceptions of a product when compared with customer ratings[17]. These insights make textual reviews an invaluable tool in market analysis.

Textual analysis has been employed to dissect this user-generated content. The extracted insights help the hospitality industry identify potential competitors and devise strategies to enhance profitability. A key aspect of this process is the transformation of textual data into quantifiable figures that can be used to determine the significance of certain factors[13].

Meanwhile, textual analysis can examine the positive and negative tones emanating from user-generated content. Positive reviews play a crucial role as they disseminate favorable information about the hotel, which can inspire potential customers to finalize their bookings. Conversely, negative reviews can discourage potential bookings, underscoring the pivotal role of customer feedback in the hospitality industry[13,31].

In addition, textual reviews can offer supplementary information about products and services. This extra layer of detail can enhance the pre-purchase evaluations of both current and potential customers. As a result, this can aid customers in making more informed, beneficial purchasing decisions.

3. Methodology

3.1. Data collection

In order to conduct this study, Google Travel was used to obtain the data. A web scraping tool was developed to gather reviews for 4-star beach-front hotels in Bangladesh in two categories. The first period of time is the period prior to COVID-19, which is between January 2016 and December 2019. The second period of time is after the COVID-19 pandemic, which is between January 2020 and April 2023. The data was then analyzed and compared to understand the pandemic impact on the hotel industry. As a result, more than 50,000 reviews have been collected from hotels offering sea views and beach front locations. A refinement process was performed on data collected from reviews which did not contain actual comment content or did not provide important information. This resulted in 9661 reviews which were suitable for further analysis[32]. By comparison, 3798 reviews are from pre-COVID 19 and 5683 reviews are from post-COVID 19. Data were analyzed quantitatively using exploratory factor analysis and regression analysis using SPSS 27 to determine the data for this study[5,33]. The research process is shown in **Figure 1**.
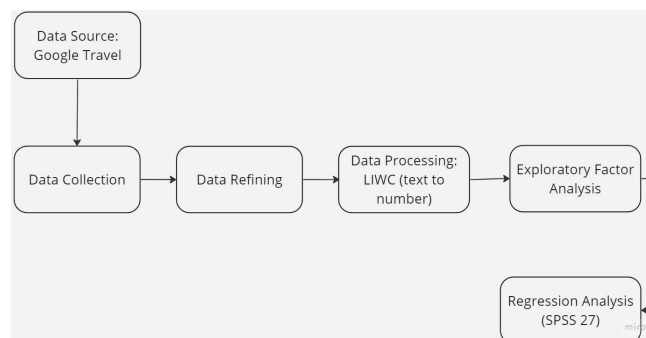

Figure 1. Research process flow.

It is not uncommon for researchers to use user-generated data, such as collected data from online reviews, when identifying informants is difficult[34]. As an hotelier, it is difficult to access all crisis response strategies online because hotels rarely disclose their crisis response strategies online[35]. In addition, hotels may have adopted different strategies from those disclosed by them. Therefore, the hotel's response to the crisis may be reflected in the online reviews from its customers[8]. In **Figure 2**, we illustrate an example of a customer review from this study.
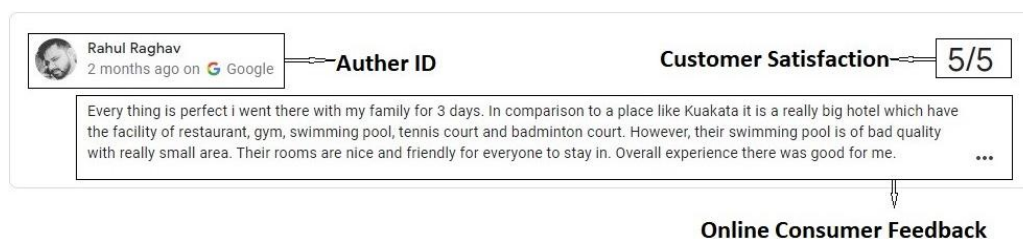

Figure 2. Screenshot of online review from Google travel.

While previous studies investigated similar topics, the study of Kim et al.[36] examined the perspectives of consumers by examining online reviews and organizational behavior. According to the research conducted by Liang et al.[37], management response frequency and online review experiences have a positive correlation with customer satisfaction. Consequently, when establishing customized response techniques, business owners should ensure that they keep a close eye on guests who have not experienced a positive online review experience. The study of customer reviews is therefore believed to be a valuable tool for hoteliers in order to gain new insights into customer satisfaction, which can be beneficial to the development of their business[13].

3.2. Variables and measurement

In order to convert user-generated content into numerical scales, the Linguistic Inquiry and Word Count (LIWC-22) program was employed. This tool utilizes a text analysis module and pre-developed dictionaries to count words and determine their distributions along various linguistic pathways, such as emotions and cognitive processes[6,38]. The reliability and validity of LIWC in tourism and hospitality research has been tested and confirmed by numerous studies[35,39].

In this study, we evaluated several independent constructs using this software, including positive tone, negative tone, social aspect, lifestyle aspect, and health aspect[40]. The inclusion of positive and negative tone as independent variables is crucial because they reflect the overall sentiment expressed in the reviews. The positive tone can indicate elements of the service experience that the customers appreciated, while the negative tone can highlight areas of dissatisfaction or concern[13]. The balance between these two variables can provide a more nuanced understanding of customer satisfaction and expectations. For instance, words related to leisure might reflect a customer's recreational preferences, influencing their satisfaction with amenities and activities provided by the hotel[41]. On the other hand, it is fair to say that customers are concerned about health issues when on vacation, given that the tourism industry has recovered from the collapse caused by COVID-19. A key point to keep in mind is that the information was collected following COVID-19[35].

Based on the online customer reviews, the independent variables were identified. In this study, the textual analytical were measured using LIWC-22. In this study, four independent variables were examined: positive tone, negative tone, social aspect, and health aspect. These variables were standardized on a scale from 0 to 1, aligned with the original scale of 0 to 100, making the difference scale smaller than that of other variables. This allows for more precise observations and comparisons among the variables[13].

On the other hand, the dependent variable in this study was customer satisfaction. This was derived from ratings found in online reviews, which provide a direct insight into customers' experiences during their stay at the hotel[5,8]. Online reviews serve as a rich source of user-generated content, often offering detailed perspectives on various aspects of the customer experience. They allow for a comprehensive evaluation of customer satisfaction, extending beyond basic numerical ratings to include qualitative feedback on specific areas of service. **Table 1** shows a detailed description of each variable along with its measurement[42].

Table 1. Variable description and measurement.

Measurement	LIWC category	Scale
Positive emotion	Positive emotion	0–1.0
Negative emotion	Negative emotion	0–1.0
Social	Social behavior, prosocial behavior, politeness, interpersonal conflict, moralization, communication, family, friends	0–1.0
Culture	Culture, politics, ethnicity, technology	0–1.0
Lifestyle	Leisure, home, work, money, religion	0–1.0
Health	Health, illness, wellness, mental health	0–1.0
Customer satisfaction	-	Ratings (1: extremely unsatisfied–5: extremely satisfied)

4. Results

4.1. Analysis of word frequency

As a result of text mining and refinement, this study was divided into two categories: pre-COVID-19 3798 and post-COVID-19 5683. A total of 9481 reviews were collected from 11 four-star hotels or higher based on Google travel. In **Tables 2** and **3**, the frequency of numerical ratings of 1 to 5 is summarized for pre-COVID-19 and post-COVID-19.

Customer satisfaction levels can be evaluated using the following table as a baseline. Based on the information from **Table 2**, or the pre-COVID-19 data, we can conclude that 10% of visitors were dissatisfied. Meanwhile, the post-COVID-19 data indicates that 11% of visitors were dissatisfied. When comparing the data between pre-COVID-19 and post-COVID-19 periods, there is only a 1% difference. This minor change may be due to the pandemic, many hotels and resorts had to modify their operations, which could have resulted in reduced amenities, services, or changes in procedures that some guests did not appreciate[8]. In addition, many businesses faced operational challenges during this period, which might have affected their ability to deliver services at the same level as before the pandemic.

Table 2. Summarization of overall satisfaction rating during pre-COVID-19.

Rating	Frequency	Percent
1	222	6%
2	159	4%
3	438	12%
4	1169	31%
5	1810	48%
Total	3798	100%
-	Average score 4.1	-

Table 3. Summarization of overall satisfaction rating during post-COVID-19.

Rating	Frequency	Percent
1	397	7%
2	245	4%
3	679	12%
4	1536	27%
5	2826	50%
Total	5683	100%
-	Average score 4.1	-

4.2. Quantitative analysis

A factor analysis is a methodology for investigating the relationships and correlations between various independent indicators in this study[43]. On the basis of the variance of keywords in customer reviews of beach resorts in Bangladesh, this graph illustrates the relationship between variables. By using the oblique rotation process, factor analysis reduces many variables into smaller ones. An important percentage of total variance is accounted for by the Eigen value which is greater than 1.0 in this study.

Table 4. Result of factor analysis of pre-COVID-19.

Factor	Words	Factor loading	Eigen value	Cumulative variance
Diversity	Culture	0.992	2.188	12.868
	Technology	0.845		
	Ethnicity	0.526		
Lifestyle	Wellness	0.926	1.850	23.747
	Health	0.911		
	Leisure	0.516		
Dissonance	Interpersonal conflict	0.781	1.475	32.426
	Negative emotion	0.779		
Courtesy	Politeness	0.737	1.395	40.629
	Communication	0.650		
Engagement	Positive emotion	0.763	1.214	47.771
	Work	0.596		
	Prosocial behavior	0.518		
Faith	Family	0.734	1.102	54.251
	Religion	0.660		
Financial stability	Home	0.715	1.037	60.352
-	Money	−0.595	-	-
KMO (Kaiser Meyer Olkin) = 0.382				
Bartlett's chi square (p) = 19,567.308 ($p < 0.0001$)				

As shown in **Table 4**, pre-COVID has a KMO value of 0.382 following the factor analysis. The Bartlett's test (X^2), the correlation matrix was statistically significant ($p < 0.001$). Based on this data, it was concluded that the data did not produce an identity matrix and that the distribution of the data was multivariate normal. Based on the factor analysis, the following seven factors are identified: "Diversity (Factor 1)", "Lifestyle (Factor 2)", "Dissonance (Factor 3)", "Courtesy (Factor 4)", "Engagement (Factor 5)", "Faith (Factor 6)", and

"Financial Stability (Factor 7)". Factor 1 consists of "culture", "technology", and "ethnicity", which are related to diversity. Factor 2 consists of "wellness", "health", and "leisure", which are related to lifestyle. Factor 3 consists of "interpersonal conflict" and "negative emotion", which are related to dissonance. Factor 4 consists of "politeness" and "communication", which are related to courtesy. Factor 5 consists of "positive emotion", "work", and "prosocial behavior", which are related to engagement. Factor 6 consists of "family" and "religion", which are related to faith. Factor 7 consists of "home" and "money", which are related to financial stability.

In the same vein, **Table 5** displays the results of the factor analysis of post-COVID-19 with the KMO (Kaiser Meyer Olkin) value of 0.446. As a result of the Bartlett's test (X^2), the correlation matrix was statistically significant ($p < 0.001$). Based on this result, it can be concluded that there was no identity matrix in the data, and that its distribution was multivariate normal. Based on the results of the factor analysis, there are seven factors: "Digital Culture (Factor 1)", "Lifestyle (Factor 2)", "Attitude (Factor 3), "Dissonance (Factor 4)", "Illness (Factor 5)", "Behavior (Factor 6)", and "Financial Stability (Factor 7). Factor 1 consists of "culture" and "technology", which are related to digital culture. Factor 2 consists of "wellness", "health", and "leisure", which are related to lifestyle. Factor 3 consists of "politeness", "prosocial behavior", and "communication", which are related to attitude. Factor 4 consists of "interpersonal conflict" and "negative emotion", which are related to dissonance. Factor 5 consists of "illness", which is related to illness. Factor 6 consists of "positive emotion", "work" and "moralization", which are related to behavior. Factor 7 consists of "home" and "money", which are related to financial stability.

Table 5. Result of factor analysis of post-COVID-19.

Factor	Words	Factor loading	Eigen value	Cumulative variance
Digital culture	Culture	0.963	1.956	12.228
	Technology	0.962		
Lifestyle	Wellness	0.906	1.859	23.845
	Health	0.847		
	Leisure	0.482		
Attitude	Politeness	0.724	1.498	33.207
	Prosocial behavior	0.686		
	Communication	0.573		
Dissonance	Interpersonal conflict	0.741	1.371	41.774
	Negative emotion	0.705		
Illness	Illness	0.862	1.148	48.947
Behavior	Work	0.746	1.102	55.835
	Positive emotion	0.448		
	Moralization	0.446		
Financial stability	Money	0.715	1.045	62.365
-	Home	−0.591	-	-
KMO (Kaiser Meyer Olkin) = 0.446				
Bartlett's chi square (p) = 17,409.478 ($p < 0.0001$)				

Following the factor analysis, linear regression was used to analyze guest experiences and satisfaction for both pre-COVID-19 and post-COVID-19 reviews. The linear regression for pre-COVID in **Table 6** has seven independent variables: "Diversity (D)", "Lifestyle (L)", "Dissonance (D)", "Courtesy (C)", "Engagement (E)",

"Faith (F)", and "Financial Stability (F)". The variance explained by seven variables was 15.8% ($R^2 = 0.158$). The significance level for all variables was 0.01. Four factors, "Diversity" ($\beta = -0.088$, $p < 0.001$), "Dissonance" ($\beta = -0.311$, $p < 0.001$), "Courtesy" ($\beta = -0.084$, $p < 0.001$), and "Financial Stability" ($\beta = -0.082$, $p < 0.001$) were negative impacts on the guest average satisfaction rating based upon its standardized coefficient values. A number of guest reviews indicate that they are not satisfied with "Diversity", "Dissonance", "Courtesy" or "Financial Stability". The three other variables, "Lifestyle" ($\beta = 0.082$, $p < 0.001$), "Engagement" ($\beta = 0.157$, $p < 0.001$), and "Faith" ($\beta = 0.086$, $p < 0.001$) were shown to have a positive impact on guest satisfaction. Hotel guests became more trusting when Lifestyle, Engagement, and Faith aspects were identified.

Based on the standardized β, the regression equation can be expressed as follows:
CS = 4.102 − 0.088***(Diversity) + 0.087***(Lifestyle) − 0.311***(Dissonance) − 0.084***(Courtesy) + 0.157***(Engagement) + 0.086***(Faith) − 0.082***(Financial)

Table 6. Result of linear regression analysis of pre-COVID-19.

Model	Unstandardized coefficients		Standardized coefficient	t
-	β	Std. error	Beta	-
(Constant)	4.102	0.017	-	243.818
Diversity	−0.099	0.017	−0.088	−5.908***
Lifestyle	−0098	0.017	0.087	5.0835***
Dissonance	−0.351	0.017	−0.311	−20.837***
Courtesy	−0094	0.017	−0.084	−5.607***
Engagement	0.178	0.017	0.157	10.553***
Faith	0.098	0.017	0.086	5.797***
Financial Stability	−0.093	0.017	−0.082	−5.523***

Notes: Dependent variable: Customer satisfaction; $R^2 = 0.158$; adjusted $R^2 = 0.156$; $F = 101.433$; *** $p < 0.001$.

According to **Table 7**, post-covid regression has seven independent variables: "Digital Culture (D)", "Lifestyle (L)", "Attitude (A)", "Dissonance (D)", "Illness (I)", "Behavior (B)", and "Financial Stability (F)". All the variance explained by seven variables was 15.4% ($R^2 = 0.154$). All the variables were significant at 0.01. Three factors, "Digital Culture" ($\beta = -0.082$, $p < 0.001$), "Dissonance" ($\beta = -0.353$, $p < 0.001$), and "Illness" ($\beta = -0.128$, $p < 0.001$) were negative impacts on the guest average satisfaction rating based upon its standardized coefficient values. In their reviews, guests express dissatisfaction with the "Digital Culture", "Dissonance", and "Illness" factors. The four other variables, "Lifestyle" ($\beta = 0.064$, $p < 0.001$), "Attitude" ($\beta = 0.039$, $p < 0.002$), "Behavior" ($\beta = 0.015$, $p < 0.212$), and "Financial Stability" ($\beta = 0.024$, $p < 0.052$) were shown to have a positive impact on guest satisfaction. The identification of favorable factors related to lifestyle, attitude, behavior, and financial stability made guests feel more secure in these hotels.

Based on the standardized β, the regression equation is:
CS = 4.082 − 0.082***(Digital) + 0.064***(Lifestyle) + 0.039***(Attitude) − 0.353***(Dissonance) − 0.128***(Illness) + 0.015*(Behavior) + 0.024**(Financial)

Table 7. Result of linear regression analysis of post-COVID-19.

Model	Unstandardized coefficient		Standardized coefficient	t
-	β	Std. error	Beta	-
(Constant)	4.082	0.015	-	281.436
Digital culture	−0.098	0.015	−0.082	−6.727***
Lifestyle	0.075	0.015	0.064	5.201***

Table 7. (*Continued*).

Model	Unstandardized coefficient		Standardized coefficient	t
Attitude	0.046	0.015	0.039	3.162***
Dissonance	−0.419	0.015	−0.353	−28.896***
Illness	−0.151	0.015	−0.128	−10.442***
Behavior	0.018	0.015	0.015	1.249*
Financial Stability	0.028	0.015	0.024	1.942**

Notes: Dependent variable: Customer satisfaction; $R^2 = 0.154$; adjusted $R^2 = 0.153$; $F = 147.380$; *** $p < 0.001$; ** $p < 0.05$; * $p < 0.1$.

5. Discussions and implications

Despite the breadth of research in the field of hotel and guest satisfaction, there is a notable paucity of studies leveraging big data to assess resort performance, particularly within the context of the pre- and post-COVID-19 periods. Our study aims to fill this gap, providing a novel examination of resort performance in Cox's Bazar, Bangladesh, by utilizing extensive user-generated content from online reviews to understand the dynamics of customer satisfaction before and after the pandemic.

By the results of this study, we can provide a general overview of the hotel service condition over the past three years since COVID-19 began, as well as an understanding of how the environment has developed since COVID-19, and subsequently, to the present day. In order to better prepare hoteliers to deal with future health crises, hoteliers should follow government rules and regulations as well as upgrade hotel values and menus in order to improve customer satisfaction. To ensure that guests are comfortable and safe during their stay, hoteliers should focus on hygiene and cleanliness in the present and in the future[8].

5.1. Main findings of the study

This study reveals the shifting dynamics in customer satisfaction determinants in the hotel industry, particularly focusing on Cox's Bazar's resorts. By analyzing online reviews of top resorts in Bangladesh for a specific period of time, we examined the influence of positive and negative emotions on customer satisfaction and experience. Several steps were involved in the conduct of this study. The degree and eigenvector centrality of 38 words with the highest frequency were examined based on the results of frequency analysis in order to identify the most influential factors.

Based on exploratory factor analysis, from pre-COVID-19 reviews were categorized into seven categories, including "Diversity", "Lifestyle", "Dissonance", "Courtesy", "Engagement", "Faith", and "Financial Stability". All the factors were significant. In this case "Dissonance" holds negative emotions, and "Engagement" includes positive emotions. During the regression analysis, Dissonance was negatively impacted and Engagement positively, even though both were significant.

In addition, 15 words from post-COVID reviews were divided into seven categories: "Digital Culture", "Lifestyle", "Attitude", "Dissonance", "Illness", "Behavior", and "Financial Stability". As we can see in this example, both groups are affected by some factors that are similar. There are three key factors to consider, namely "Lifestyle", "Dissonance", and "Financial Stability". Here, positive emotions can be explained by the "Behavior" factor. A surprising finding was that "Dissonance" was a significant factor, however, "Behavior" was less significant.

The result of linear regression has seven independent variables in each of the two groups that were pre-COVID-19 and post-COVID-19. As a result of the first group of participants we were able to identify: Diversity (D), Lifestyle (L), Dissonance (D), Courtesy (C), Engagement (E), Faith (F), and Financial Stability (F).

Secondly, there are the following groups: Digital Culture (D), Lifestyle (L), Attitude (A), Dissonance (D), Illness (I), Behavior (B), and Financial Stability (F).

These seven categories were responsible for 15.8% ($R^2 = 0.158$), 15.4% ($R^2 = 0.154$) of the total variation in each group. The correlation between independent and dependent variables were relatively low due to the fact that there are many factors which may have an impact on customer satisfaction, but were not included in the seven clusters because their frequency was so low in the collected data. Customer satisfaction can be affected by a variety of factors. If one examines output variables from text mining data, such as customer opinions, it might be difficult to take into account all the relevant factors. The R^2 value is reported to be relatively low in previous studies[5,44].

A significant correlation was found among all variables at 0.01. Some factors in each group had a negative impact on the average guest satisfaction ratings. Those include "Diversity", "Dissonance", "Courtesy", and "Financial Stability". In addition, "Digital Culture", "Dissonance", and "Illness". As shown in the diagram, Dissonance is matched with Dissonance, whereas Diversity is matched with Digital Culture.

There are three factors in the first group: Lifestyle, Engagement, and Faith. In the second group of factors, four factors were found to have a positive impact on guest satisfaction: Lifestyle, Attitude, Behavior, and Financial Stability. In both groups, Lifestyle had a positive impact on the guest experience.

Financial Stability is the only factor that has moved from a negative to a positive position after COVID-19. There is a possibility that this is due to price reductions and special offers from hoteliers after COVID to attract customers. As identified by Ramanathan and Ramanathan[45], "value for money" plays an important role in influencing customers' future choice behavior. During their search for a deal, Chen and Schwartz[46] noted that it is important that guests consider value when booking a room on the Internet and that the patterns of rate changes observed by the guests affect the likelihood that the guest will make a booking. As a result of staying at home for a prolonged period of time without having to leave for refreshment, people were not considering financial matters once the hotel began to receive guests. The findings of this study may assist hoteliers in improving aspects of resort hotels in Bangladesh which still cause guests dissatisfaction.

5.2. Theoretical implications

There are numerous studies that use big data to analyze customer satisfaction in the hospitality industry. Despite this, there are few studies examining how big data can be applied to resorts in Bangladesh. A number of researchers have been modeling and testing the influence of reviews, reviewers, products, and consumer characteristics on consumer outcomes using online reviews to gain a better understanding of consumer behavior in e-commerce, for example, an environment that is highly dynamic and rapidly evolving[47]. As opposed to other studies, this study concentrates on the analysis and determination of the total level of customer satisfaction according to the content of textual reviews of resorts in Bangladesh. Each of these variables reflects the writing style of the customer in the user generated content. Several theoretical implications and contributions are presented in this study.

In the first instance, this study examines the relationship between two independent variables, linguistic style and customer satisfaction in general. The content of textual customer generated content reflects the experiences of past consumers as compared with overall customer satisfaction. This study predicts customers' level of satisfaction in resorts in Cox's Bazar and nearby areas by analyzing linguistic styles used in user generated content or online review. The results of this study support those of earlier studies by providing insight into how future customers and hoteliers can determine a hotel's overall customer experience by the language used in its user generated content.

Secondly, the findings of this study complement those of previous studies concerning the linguistic style of user generated content. There is a strong correlation between sentiment polarity and customer satisfaction, as reported in previous studies[26]. The results of this study support this conclusion as well.

As a final point, this study confirms earlier studies regarding the analysis of patterns in the styles of linguistic expression generated by past customers. To analyze the business value of customer textual content in the hospitality industry, this study examined 9481 user generated content from 11 top resorts in Cox's Bazar and surrounding areas in Bangladesh. It was possible to handle the vast volume of information by mining the linguistic styles of customer textual content[13].

5.3. Managerial implications

The findings of this study provide critical insights that could guide managerial decisions in the hotel industry. By utilizing the LIWC-22 and SPSS for data analysis, this study identifies key attributes that significantly affect guest satisfaction and their intent to return.

One crucial finding is the importance of financial stability-guests value this aspect and its perception can greatly enhance customer satisfaction. Hotel managers, therefore, should work towards promoting the perception of financial stability, possibly by transparent pricing strategies and providing value for money. Consequently, hotels should ensure that their services are perceived as being of good value for the money they charge. As customers become more accustomed to purchasing travel products online (travel tickets, hotel reservations, etc.), online ratings are becoming increasingly important in selecting their vendors[48].

The study also underscores the rising importance of online ratings. As more customers turn to online platforms for hotel reservations, a good online guest rating has become essential for attracting and retaining customers. Hotel managers should prioritize maintaining a positive online reputation by actively managing and responding to online reviews. Online reviews have become an integral component of marketing due to their accessibility, reach, and transparency[13].

Finally, our classification scheme of hotel service quality attributes provides a practical tool for managers. By understanding which attributes guests value the most, managers can allocate resources more effectively, tailoring their services to meet customer expectations, and thus enhancing overall customer satisfaction. Thus, it is necessary to develop a good perception of this attribute in order to enhance the perception of customers[45].

6. Limitations and future research

The data for this study were gathered from only top sea view resorts, despite the fact that a large number of samples were collected. The hotel is not categorized by rank or stars. We are concerned that if we categorize by stars in this study, we will not obtain enough samples to conduct an analysis since this study uses big data. However, since we used online reviews for this study, we converted the text to numbers using the LIWC-22. This can be inaccurate when analyzed quantitatively. This may result in incorrect scoring of online review factors. Despite that, it is still a valuable opportunity to gain insight into the guest's experience through an online review. It is anticipated that similar methods will be used at other locations in the future, not only at hotels and accommodations. A number of reviews were also excluded because they were written in a language other than English. Additionally, we were not able to add responses from managers to customer reviews. The interactions might have been better understood if we had more information about them.

7. Conclusion

An investigation of textual analytic based on user generated contents to investigated customer satisfaction was conducted in this study. User generated contents were divided into different categories based on several

factors, including positive emotions, negative emotions, health, and leisure aspects. Negative comments clearly demonstrate dissatisfaction, whereas positive comments demonstrate satisfaction. This study was compared between pre-COVID-19 and post-COVID-19. It was found that a large amount of decision-making is influenced by financial aspects of life. In pre-COVID-19, it was found that financial stability become one negative effect on customer satisfaction. The findings of this study contribute significantly to the field of research on customer satisfaction in the context of hotels and resorts located along the Cox Bazar coast.

Author contributions

Conceptualization, MSN and NDH; methodology, MSN and NDH; software, MSN; validation, NDH; formal analysis, MSN and NDH; investigation, HSK; resources, NDH; data curation, MSN; writing—original draft preparation, MSN and NDH; supervision, HSK; project administration, NDH; funding acquisition, HSK. All authors contributed to the revision of this paper and had full access to all of the research data and took responsibility for the integrity of the study and the accuracy of the data analysis. All authors have read and agreed to the published version of the manuscript.

Funding

Conflict of interest

The authors declare no conflict of interest.

References

1. The Sundarbans. Available online: https://whc.unesco.org/en/list/798/ (accessed on 13 July 2023).
2. Cox's Bazar. Available online: https://en.wikipedia.org/wiki/Cox%27s_Bazar (accessed on 13 July 2023).
3. Tourism in Bangladesh. Available online: https://www.worlddata.info/asia/bangladesh/tourism.php (accessed on 13 July 2023).
4. Bhuiyan AH. COVID-19 and domestic tourism development in Bangladesh. Available online: www.thefinancialexpress.com.bd/views/views/covid-19-and-domestic-tourism-development-in-bangladesh-1601134828 (accessed on 13 July 2023).
5. Handani ND, Kim HS. Unlocking customer satisfaction of Halal restaurant in South Korea through online review analysis. *Environment and Social Psychology* 2023; 7(2): 1501. doi: 10.18063/esp.v7.i2.1501
6. Jaidka K, Giorgi S, Schwartz HA, et al. Estimating geographic subjective well-being from Twitter: A comparison of dictionary and data-driven language methods. *Proceeding of the National Academy of Science of the United States of America* 2020; 117(19): 10165–10171. doi: 10.1073/pnas.1906364117
7. Wei S, Kim HS. Online customer reviews and satisfaction with an upscale hotel: A case study of Atlantis, the palm in Dubai. *Information* 2022; 13(3): 150. doi: 10.3390/info13030150
8. Handani ND, Riswanto AL, Kim HS. A study of inbound travelers experience and satisfaction at quarantine hotels in Indonesia during the COVID-19 Pandemic. *Information* 2022; 13(5): 254. doi: 10.3390/info13050254
9. Hunt JD. Image as a factor in tourism development. *Journal of Travel Research* 1975; 13(3): 1–7. doi: 10.1177/004728757501300301
10. Walker J, Baker J. An exploratory study of a multi-expectation framework for services. *Journal of Services Marketing* 2000; 14(5): 411–431. doi: 10.1108/08876040010340946
11. Park JW, Robertson R, Wu C. The effect of airline service quality on passengers' behavioural intentions: A Korean case study. *Journal of Air Transport Management* 2004; 10(6): 435–439. doi: 10.1016/j.jairtraman.2004.06.001
12. Tao S, Kim HS. Cruising in Asia: What can we big from online cruiser reviews to understand their experience and satisfaction. *Asia Pacific Journal of Tourism Research* 2019; 24(6): 514–528. doi: 10.1080/10941665.2019.1591473
13. Handani ND, Williady A, Kim HS. An analysis of customer textual reviews and satisfaction at luxury hotels in

Singapore's marina bay area (SG-Clean-Certified Hotels). *Sustainability* 2022; 14(15): 9382. doi: 10.3390/su14159382

14. He W, Tian X, Tao R, et al. Application of social media analytics: A case of analyzing online hotel reviews. *Online Information Review* 2017; 41(7): 921–935. doi: 10.1108/OIR-07-2016-0201

15. Qu Z, Zhang H, Li H. Determinants of online merchant rating: Content analysis of consumer comments about Yahoo merchants. *Decision Support System* 2008; 46(1): 440–449. doi: 10.1016/j.dss.2008.08.004

16. Kim WG, Lim H, Brymer RA. The effectiveness of managing social media on hotel performance. *International Journal of Hospitality Management* 2015; 44: 165–171. doi: 10.1010/j.ijhm.2014.10.014

17. Xu X, Li Y. The antecedents of customer satisfaction and dissatisfaction toward various types of hotels: A text mining approach. *International Journal of Hospitality Management* 2016; 55: 57–69. doi: 10.1016/j.ijhm.2016.03.003

18. Li H, Ye Q, Law R. Determinants of customer satisfaction in the hotel industry: An application of online review analysis. *Asia Pacific Journal of Tourism Research* 2013; 18(7): 784–802. doi: 10.1080/10941665.2012.708351

19. Yoo KH, Gretzel U. Influence of personality on travel-related consumer-generated media creation. *Computers in Human Behavior* 2011; 27(2): 609–621. doi: 10.1016/j.chb.2010.05.002

20. Cantallops AS, Salvi F. New consumer behavior: A review of research on eWOM and hotels. *International Journal of Hospitality Management* 2014; 36: 41–51. doi: 10.1016/j.ijhm.2013.08.007

21. Kwok L, Xie KL. Factors contributing to the helpfulness of online hotel reviews: Does manager response play a role? *International Journal of Contemporary Hospitality Management* 2016; 28(10): 2156–2177. doi: 10.1108/IJCHM-03-2015-0107

22. Cheung CMK, Thadani DR. The impact of electronic word-of-mouth communication: A literature analysis and integrative model. *Decision Support Systems* 2012; 54(1): 461–470. doi: 10.1016/j.dss.2012.06.008

23. Gu B, Ye Q. First step in social media: Measuring the influence of online management responses on customer satisfaction. *Production and Operations Management* 2014; 23(4): 570–582. doi: 10.1111/poms.12043

24. Hennig-Thurau T, Gwinner KP, Walsh G, Gremler DD. Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet? *Journal of Interactive Marketing* 2004; 18(1): 38–52. doi: 10.1002/dir.10073

25. Ludwig S, Friedman M, Brüggen EC, et al. More than words: The influence of affective content and linguistic style matches in online reviews on conversion rates. *Journal of Marketing* 2013; 77(1): 87–103. doi: 10.1509/jm.11.0560

26. Zhao Y, Xu X, Wang M. Predicting overall customer satisfaction: Big data evidence from hotel online textual reviews. *International Journal of Hospitality Management* 2019; 76: 111–121. doi: 10.1016/j.ijhm.2018.03.017

27. Zhang X, Tang M, Kim HS. Exploration of global theme hotels through semantic network analysis of online customer reviews: Focused on Disneyland hotels. *Journal of Industrial Innovation* 2022; 38(1): 215–241. doi: 10.22793/indinn.2022.38.1.009

28. Ban HJ, Choi H, Choi EK, et al. Investigating key attributes in experience and satisfaction of hotel customer using online review data. *Sustainability* 2019; 11(23): 6570. doi: 10.3390/su11236570

29. Xu X. Examining consumer emotion and behavior in online reviews of hotels when expecting managerial response. *International Journal of Hospitality Management* 2020; 89: 102559. doi: 10.1016/j.ijhm.2020.102559

30. Ma Y, Xiang Z, Du Q, Fan W. Effects of user-provided photos on hotel review helpfulness: An analytical approach with deep leaning. *International Journal of Hospitality Management* 2018; 71: 120–131. doi: 10.1016/j.ijhm.2017.12.008

31. Chan ICC, Lam LW, Chow CWC, et al. The effect of online reviews on hotel booking intention: The role of reader-reviewer similarity. *International Journal of Hospitality Management* 2017; 66: 54–65. doi: 10.1016/j.ijhm.2017.06.007

32. Kausar S, Huahu XU, Ahmad W, et al. A sentiment polarity categorization technique for online product reviews. *IEEE Access* 2019; 8: 3594–3605. doi: 10.1109/ACCESS.2019.2963020

33. Handani ND, Wang J, Kim H. The destination attributes of travelers' satisfaction and experience at Uluwatu tourism area based on online reviews. In: Budiartha INP, Saptomo A, Verhezen P (editors). *Proceedings of the 3rd International Conference on Business Law and Local Wisdom in Tourism*. Atlantis Press; 2023. Volume 1. pp. 829–835.

34. Langer R, Beckman SC. Sensitive research topics: Netnography revisited. *Qualitative Market Research* 2005; 8(2): 189–203. doi: 10.1108/13522750510592454

35. Yu M, Cheng M, Yang L, Yu Z. Hotel guest satisfaction during COVID-19 outbreak: The moderating role of crisis response strategy. *Tourism Management* 2022; 93: 104618. doi: 10.1016/j.tourman.2022.104618

36. Kim JY, Hlee S, Joun Y. Green practices of the hotel industry: Analysis through the windows of smart tourism system. *International Journal of Information Management* 2016; 36(6): 1340–1349. doi: 10.1016/j.ijinfomgt.2016.05.001

37. Liang S, Schuckert M, Law R. Multilevel analysis of the relationship between type of travel, online ratings, and

management response: Empirical evidence from international upscale hotels. *Journal of Travel & Tourism Marketing* 2017; 34(2): 239–256. doi: 10.1080/10548408.2016.1156613

38. Tausczik YR, James WP. The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology* 2010; 29(1): 24–54. doi: 10.1177/0261927X09351676

39. Lee M, Lee S, Koh Y. Multisensory experience for enhancing hotel guest experience: Empirical evidence from big data analytics. *International Journal of Contemporary Hospitality Management* 2019; 31(11): 4313–4337. doi: 10.1108/IJCHM-03-2018-0263

40. Pennebaker JW, Chung CK, Ireland ME, et al. The development and psychometric properties of LIWC2007. LIWC.net; 2007.

41. Boyd RL, Ashokkumar A, Seraj S, Pennebaker JW. The development and psychometric properties of LIWC-22. The University of Texas at Austin; 2022.

42. Kapeš J, Keča K, Fugošić N, Tanković AČ. Management response strategies to a negative online review: Influence on potential guests' trust. *Tourism and Hospitality Management* 2022; 28(1): 1–27. doi: 10.20867/THM.28.1.1

43. Harahsheh S, Haddad R, Alshorman M. Implications of marketing Jordan as a Halal tourism destination. *Journal of Islamic Marketing* 2020; 11(1): 97–116. doi: 10.1108/JIMA-02-2018-0036

44. Kim HS, Noh Y. Elicitation of design factors through big data analysis of online customer reviews for washing machines. *Journal of Mechanical Science and Technology* 2019; 33(6): 2785–2795. doi: 10.1007/s12206-019-0525-5

45. Ramanathan U, Ramanathan R. Guests' perceptions on factors influencing customer loyalty: An analysis for UK hotels. *International Journal of Contemporary Hospitality Management* 2011; 23(1): 7–25. doi: 10.1108/09596111111101643

46. Chen C, Schwartz Z. Room rate patterns and customers' propensity to book a hotel room. *Journal of Hospitality & Tourism Research* 2008; 32(3): 287–306. doi: 10.1177/1096348008317389

47. Zinko R, Patrick A, Furner CP, et al. Responding to negative electronic word of mouth to improve purchase intention. *Journal of Theoretical and Applied Electronic Commerce Research* 2021; 16(6): 1945–1959. doi: 10.3390/jtaer16060109

48. Wen I. Factors affecting the online travel buying decision: A review. *International Journal of Contemporary Hospitality Management* 2009; 21(6): 752–765. doi: 10.1108/09596110910975990