

## Heritage Hotel Insights: A Comprehensive Analysis of Customer Reviews and Sentiments

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### ABSTRACT

**Purpose:** This study involves analysing the online feedback from customers about The Royal Heritage Haveli, a heritage hotel located in Jaipur. The aim is to perform sentiment analysis on reviews through polarity classification to ascertain the overall sentiment conveyed in the collected reviews.

**Design/methodology/approach:** A comprehensive collection of 1,268 consumer reviews regarding the hotel was gathered from the Trip Advisor platform. The BeautifulSoup library in Python was utilized for web scraping activities. The data was subjected to pre-processing and analysis using the Orange data mining program. The VADER sentiment analysis method is employed to evaluate the polarity and general sentiment of the reviews. The study classifies review sentiments into three distinct categories: positive, neutral, and negative.

**Findings:** An examination of tone and topic of internet reviews of The Royal Heritage Haveli has revealed interesting information about the entire guest experience. After evaluating the thoughts expressed by reviewers, it is clear that a significant majority communicate a sense of optimism, as they express happiness and joy. The analysis of emotions indicates a favorable tendency towards many components of the historic hotel.

**Originality/value:** This study represents a unique effort to analyze online customer reviews of The Royal Heritage Haveli by employing a text-mining methodology. The objective is to determine the sentiment scores of these reviews to ascertain levels of pleasure and dissatisfaction.

**Keywords:** Text mining, sentiment analysis, Online reviews, customer satisfaction, topic modelling.

### INTRODUCTION:

The Ministry of Tourism is the primary entity concerned with the promotion of tourism in the country. It plays a crucial role in coordinating and augmenting the initiatives of State/Union Territory Governments, fostering private investment, strengthening promotional and marketing activities, and providing skilled human resources. The Ministry of Tourism has established criteria for the classification of heritage hotels.

Informal communications directed at customers utilizing internet-based technologies are known as (eWOM). Themes frequently covered in such discussions include product features, benefits, and suppliers. (Chittiprolu, Nagaraj, & Bellamkonda, 2021).

Reviews written by actual customers may be found all over the internet, in places like blogs, forums, and social media. Customer feedback in the form of reviews allows people to share their ideas, stories, and opinions regarding a product or service. (Wong, S, & Saeed Pahlevan Sharif, 2020)

Internet reviews provide customers with a wealth of information from the experiences, opinions, and advice of other buyers, which can greatly influence their decision-making and buying decisions. The availability of data and the network make this possible. (Chittiprolu, Nagaraj, & Bellamkonda, 2021). Content created by users provides companies with a valuable source of reliable information, allowing for accurate evaluations of customer satisfaction and service quality. (Chatterjee, 2023). There exists a definitive correlation between the quantity of evaluations and ratings a corporation obtains and the ensuing augmentation in Conversely, evaluations with elevated ratings indicate consumer contentment, articulated via commendations for the service.

Conversely, negative reviews express customer dissatisfaction through complaints, which can impact the company's income. However, reviews with low ratings have an adverse effect on the firm's success. (Ahmad & Guzmán, 2021). Recurring failures can lead to "churn" in client relationships, indicating that disgruntled consumers are prepared to migrate to other organization. (Knox & Oest, 2014)

In almost every industry and business, the impact of internet evaluations has drastically changed the way decisions are made. The travel and tourist business is no different; online reviews significantly influence customers' purchasing decisions in this field as well. The tourist industry is at the forefront of embracing new technologies and regularly applies innovative methods in its operations. (HBI, 2018)Ninety percent of tourists said that reviewing online assessments helped them familiarize themselves with the local attractions, options, and innovative ideas before arriving at their destination. (Gretzel & Kyung, 2008).

Several of Indian ancient structures, such as palaces, forts, and mansions, are presently being renovated to serve as hotels. This is due to independence, several estates disappeared following the dissolution of princely federations. Consequently, this has resulted in the present circumstances. The Indian government transformed these sites into historic hotels, now overseen by various royal families and esteemed hotel companies in India. Ownership of historical assets has many benefits, including the protection of cultural arts, the provision of economic possibilities for local citizens, the maintenance of architectural integrity and aesthetic appeal of historic monuments, and the overall enhancement of career prospects.(Rasoolimanesh, Jaafar, Kock, & Ahmad, 2017)

India's heritage hotels attract a large number of tourists, both from within the country and from abroad, due to its ability to offer guests an experience of royal lifestyle while also shedding light on the nation's historical and current state.(India, 2017)The services provided by heritage hotels contrast with those provided by commercial hotels(See & Goh, 2019)The main difference between historic hotels and commercial hotels is on the presence of heritage features and the nature of commercial activities conducted within the hotel. Heritage hotels with commercial value distinguish from other hotels by offering elegant bars and premium dining establishments.(Henderson, 2013)

As a result of our research, we have demonstrated that it is possible to extract useful information from the written sections of online customer evaluations in order to evaluate the level of pleasure that our customers have with our establishment. For the purpose of determining the level of satisfaction experienced by customers, we extracted relevant information from online reviews by employing text mining and sentiment analysis techniques.

#### **Objectives:**

The objective of this study is to accomplish the following:

- 1) Assess the general sentiment of the reviews by using the Valence Aware Dictionary for Sentiment Reasoning (VADER) model.
- 2) Use topic modeling to uncover hidden themes or topics that may not be immediately obvious within a huge corpus of data.
- 3) Analyse feedback from customers to identify particular elements that influence both positive and negative experiences, such as amenities, ambiance, and service quality.

#### **LITERATURE REVIEW**

##### **Online reviews:**

"Online customer reviews (OCR's) refer to product reviews that are created by customers and posted on either the company's website or third-party websites" (Mudambi & Schuff, 2010)andCustomers primarily depend on online evaluations as their main source of knowledge about products and services, because of the availability of an enormous amount of data and the ease of using the internet. Customers read internet reviews to minimize confusion over purchasing decisions and optimize time efficiency.(Hennig-Thurau, Groth, M, Paul, & Gremler, 2006)(Tan, 2018)

Clients share their knowledge by writing reviews and sharing videos and photographs on various online platforms, including web blogs, social networking sites, and third-party websites like TripAdvisor and Ctrip. These platforms may include popular channels such as Facebook, Twitter, Instagram, and YouTube. Research has demonstrated that online reviews attract fresh customers.(Hennig-Thurau, Groth, M, Paul, & Gremler, 2006)assist consumers in making purchasing decisions (Ye, Li, Wang, & Law, 2014)and influence consumers' trust(Filieri, "What makes online reviews helpful? A diagnosticity-adoption framework to explain informational and normative influences in e-WOM", 2015) in websites that are operated by third parties.

Customers publish online reviews for many purposes. Consumers derive enjoyment from sharing their experiences through internet reviews and genuinely value the activity.(Oliveira, Brochado, Moro, & Rita, 2019).There are two concepts that we need to consider: altruism and reciprocity. Consumersprovide feedback through online reviews, assisting fellow travelers and service providers in implementing essential improvements.(Pourfakhimi, Duncan, T, & Coetzee, 2020)(Gretzel & Yoo, 2008)(Jelodar, et al., 2019)

In addition, the fulfillment of psychosocial needs. Customers can express their satisfaction or dissatisfaction

with a hotel's services by sharing online reviews. These reviews can have either good or negative sentiments. Self-realization and a feeling of personal achievement rank fourth in importance. A significant number of travellers seek recognition among their peers and on various social media platforms. Individuals can enhance their helpful votes and contributor points by providing additional reviews.(Oliveira, Brochado, Moro, & Rita, 2019)

***Hotel customer sentiment:***

Customer sentiments refer to the emotions and opinions that customers convey regarding a product or service through an online review.(Geetha, Singha, & Sinha, 2017). The term can possess either a favorable or unfavorable implication, or it may remain impartial. The feedback obtained from customers responds to inquiries about the specific attributes of the product being evaluated.(Liu & Sangwon , 2015) Consequently, sentiment drivers are persistent elements that compel buyers to submit online evaluations.(Xie, Chen, & Wu, 2016)

Accommodation owners and operators were reminded to consider the impact that reviews can have on potential visitors' choice of accommodation.(Gavilan, Avello, & Martinez-Navarro, 2018) It is essential to assess the reliability of the testimonials submitted by the customer (Noone & Mcguire, 2016)As noted by (Lo & Yao, 2019)positive emotions are directly linked to the capacity to encourage customers to visit a company's website, significantly increasing the chances of converting those visitors into sales. Additionally, they discovered that this connection is in direct correlation with the degree of consumer happiness. Consequently, hotel owners must possess a precise and all-encompassing understanding of the sentiments conveyed by consumers throughout the various channels dedicated to customer reviews. Prior study has demonstrated that the viewpoints of hotel visitors significantly influence the amount of income generated by hotels.

Customer sentiment is seen as a vital element in the creation of meaningful marketing information. (Li, Li,, Zhang, & Hu, 2019)(Zhao, Xu, & Wang, 2019)underscored the importance of consumer mood as a crucial factor in forecasting hotel customer happiness. The customer's valuation of a service significantly influences their readiness to compensate for a certain product or service. Price is a crucial determinant of both the value and quality of things(Mattila & O'neill, 2003) Similarly,(Dube & Renaghan, 2000)emphasized consumer perceptions of value for money while choosing a hotel. This aligns with Atkinson (1988), positing that the perceived value of a product or service influences consumer decision-making. Research on three-star hotels in Malaysia revealed a significant association between customers' perceived value and consumer behavior.

The enhanced evaluations of the hotel's amenities by customers contributed to improved overall ratings, subsequently resulting in a boost in revenue for the establishment.(Salehan & Kim, 2016)(Geetha, Singha, & Sinha, 2017). The textual assessment section, as the core of the review, encompasses review remarks as well as relevant images on the services (if included), which capture the genuine sentiments and emotions of the customers. Conversely, internet hotel ratings consistently indicate the level of consumer satisfaction derived from assessments of hotel services. (Zhu, 2010).

TripAdvisor is a website that boasts over 760 million reviews, covering a wide variety of topics like restaurants, hotels, attractions, activities, travel experiences, cruises, and airlines. It is a highly detailed review platform. (TripAdvisor, 2019).

Before releasing customer reviews, TripAdvisor implements a screening procedure that includes the verification of customers' email addresses and Internet protocol (IP) addresses. Furthermore, they strive to identify any potentially fraudulent activities.(Zhao, Xu, & Wang, 2019)According to(Marine-Roig & Clave, 2015)customer review websites act as easily accessible data sources that can be utilised to examine customer behaviour, destination image, and service quality in various contexts.

***Sentiment analysis in tourism and hospitality:***

To extract subjective emotional preferences from textual data, the sentiment analysis methodology uses computational linguistics.(Salehan & Kim, 2016)This approach allows for the assignment of emotional values to each online review, ranging from negative to neutral to positive.Some researchers have examined sentiment analysis in the context of hospitality and tourism.

(Chatterjee, 2023)indicated that the emotions conveyed by customers turn internet reviews more beneficial than their content and valuation. Recent research has examined the correlation between consumer sentiment and online hotel ratings(Geetha, Pratap , & Sumedha, 2017)A suggested correlation exists between internet ratings and genuine consumer sentiments across several hotel categories; however, no theoretical explanation was provided for this phenomenon. Subsequently, grounded in the philosophy of emotion and client pleasure.(Zhu, 2010)examined the link between guest sentiment and online ratings, focussing on the influence of analytical thinking and authenticity within the context of peer-to-peer lodging. An examination of 4,602 reviews for San Francisco on the Airbnb platform indicated that good emotion is associated with high ratings, whereas negative

sentiment is linked to low ratings. This correlation is more pronounced when users exhibit heightened analytical thinking and sincerity.

**The Royal Heritage haveli**

The Royal Heritage Haveli, constructed in the 18th century by His Highness Madho Singh Ji of Jaipur, has recently been transformed into a boutique hotel after remaining closed for 250 years. The Royal Heritage Haveli is currently under the ownership of Maharaj Jai Singh of Jaipur. The management of the haveli is entrusted to Angelique, his niece, and her spouse Pradip.

Angelique and Pradip are renowned for their gracious hospitality, providing every guest with an individualized and authentic experience of the nostalgic era of the Maharaja's lifestyle. The Royal Heritage Haveli is a captivating location, including expansive gardens, peaceful inner courtyards, luxurious interiors, and grand living spaces.

**Classification of heritage hotels**

**Heritage:** This category includes hotels that were constructed before 1950 and fall under the following types: Residences, Havelies, Hunting Lodges, Castles, Forts, and Palaces. The hotel should have a minimum of 5 rooms, each equipped with 10 beds.

**Heritage Classic:** This category will include hotels that were constructed before 1935 and fall within the categories of Residences, Havelies, Hunting Lodges, Castles, Forts, and Palaces. The hotel should have a minimum of 15 rooms, which would accommodate a total of 30beds.

**Heritage Grand:** This category includes hotels that were constructed before 1935 and fall into the following types: Residence, Havelies, Hunting Lodges, Castles, Forts, and Palaces. The hotel must have a minimum of 15 rooms, which equates to 30 beds. At least 50% of the rooms must be air-conditioned, except in hill stations where heating provisions should be included. The hotel must provide a minimum of two athletic facilities.

The Royal Heritage Haveli is classified as part of the Heritage category.

**Table: 1**

<b>Hotel</b>	<b>Type</b>	<b>No.of hotels</b>
<b>Heritage</b>	Basic	28
<b>Heritage</b>	Classic with Alcohol	0
<b>Heritage</b>	Classic without Alcohol	2
<b>Heritage</b>	Grand	1
<b>Total</b>		<b>31</b>

*Source:* Ministry of Tourism – Government of India

RESEARCH PROCESS

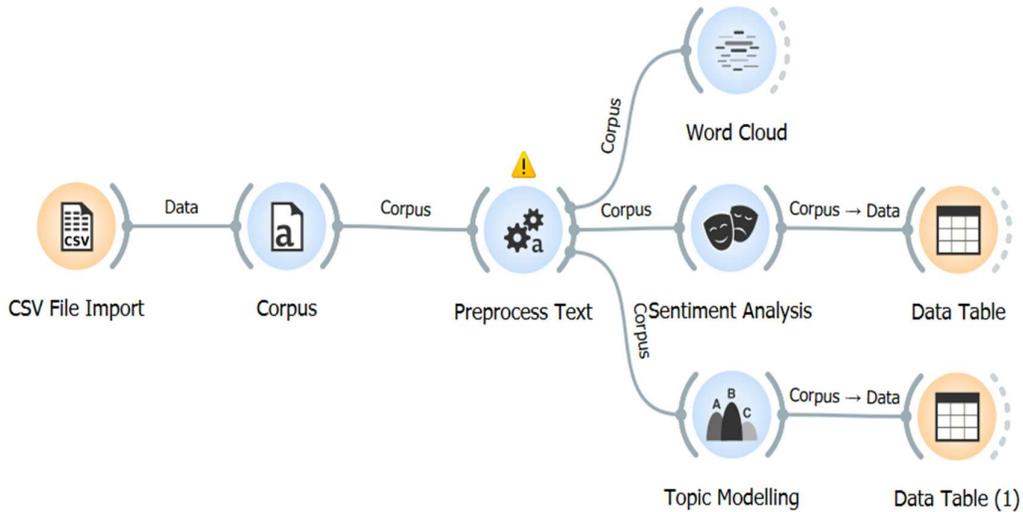


Figure (1)

Data and Sample

The Royal Heritage haveli, which is a hotel that holds significant historical significance, was selected as the sample. Through the use of the TripAdvisor website, a total of 1268 online reviews that were relevant to the hotel were gathered. The method of web scraping was utilized, and the Python computer language's delicious soup package was utilized to facilitate the process. The Orange data mining software was utilized to perform pre-processing and analysis on the input data. To determine the polarity of the reviews as well as the general sentiment in general, the VADER sentiment analysis tool is deployed. Based on the findings of the study, the opinions expressed in assessments are divided into three categories: positive, neutral, and unfavorable.

Considering the importance of TripAdvisor in the travel and tourism industry, we selected it as a primary source of information for our study. Xie, Chen, and Wu (2016) TripAdvisor serves as an extensive review platform, boasting more than 760 million user-generated reviews that encompass a wide range of subjects, including restaurants, hotels, attractions, activities, travel experiences, and airlines. (TripAdvisor, 2019). Before customer reviews are published, TripAdvisor implements a screening process that involves verifying the email addresses and Internet protocol (IP) addresses of users. Additionally, they strive to uncover any trends that could suggest fraudulent behaviour. (Zhao, Xu, & Wang, 2019).

A Likert scale with five points is used to calculate the ratings given by customers. Using this scale, one represents "awful" and five represents "great." TripAdvisor is the one that provides the scale. Ratings of 5 and 4 are deemed favourable, whilst ratings of 1 and 2 are seen as unfavourable. Reviews rated "5" indicate pleased buyers, whereas those rated "1" signify dissatisfied customers (Berezina, Bilgihan, Cobanoglu, & Okumus, 2016).

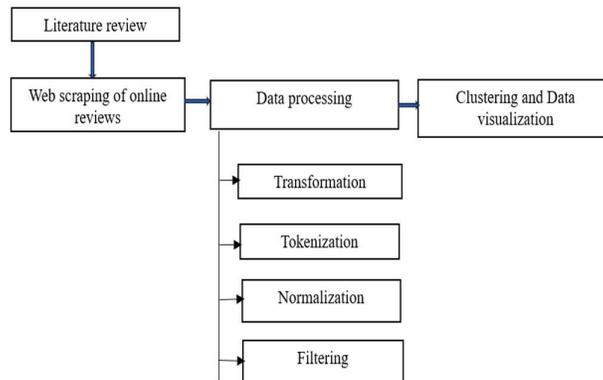


Figure (2)

**Literature review:**

Examine Literature Aspects of text mining are defined and covered by prior research and literature studies.

**Data Acquisition (scraping)**

We are gathering data by utilizing comments offered by the community on the online social media network.

**Data Processing**

Determining the class attribute and loading the dictionary entails matching base words with sentiment word dictionaries to ascertain the sentiment content, which can be categorized as positive, neutral, or negative.

The data is categorized into classes, namely three kinds: good, negative, and neutral.

**Data visualization**

Data mining entails the utilization of word cloud and sentiment analysis output to visually represent the processed text mining data, specifically focusing on the emotions expressed by users.

**DATA ANALYSIS**

**Text Pre-processing**

Text preprocessing will be done on the text before text analysis is done. To do this, the text is divided into segments that are called tokens. Tokenization, transformation, normalization, and filtering are then applied. Sequential analysis steps can be turned on or off in Orange Data Mining's Preprocess Text widget. The actions taken in the Orange Data Mining application's preprocess text widget are depicted in Figure 3 below.

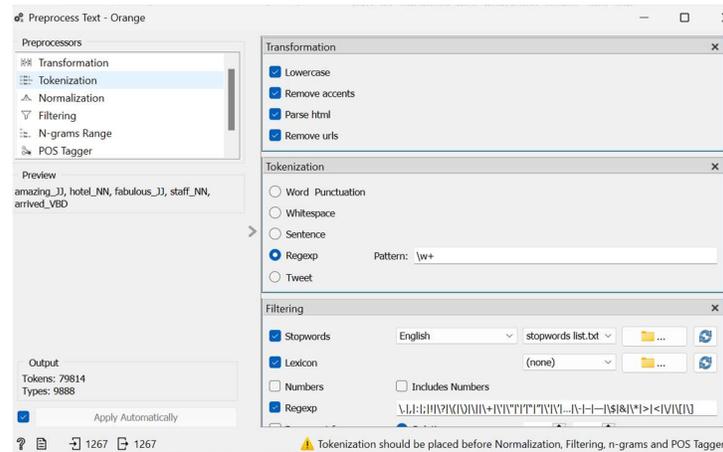


Figure (3)

The following actions are taken in the Orange Data Mining application's preprocess text:

**Transformation**

The first phase is transformation, which entails changing all of the text to lowercase, eliminating accents from it, recognizing and parsing HTML tags, and eliminating URLs.

**Tokenization**

Sentences will be tokenized into words at this point, keeping punctuation intact.

**Filtering**

Selected words will either be preserved or removed during this phase. Words unrelated to sentiment analysis will be eliminated during this procedure. Using the stopwords widget, all terms that need to be eliminated have been entered into a file called "filter\_kata.txt." Tokens are also extracted from the lexicon dictionary using the lexicon widget. To eliminate meaningless numbers, the number widget is used.

**Sentiment Analysis**

In the context of sentiment analysis, the acronym VADER, which stands for Valence Aware Dictionary for Sentiment Reasoning, refers to a model that is applied for determining the polarity (positive/negative) and intensity (strong) of emotions that are present in a collection of texts or documents. The VADER model was made available to customers for the first time in the year 2014. The methodology that was utilized includes qualitative evaluation and empirical validation through the utilization of human evaluators and crowdsourcing, with an emphasis on approaches that are the focus of human attention.

VADER uses a lexicon that assigns sentiment ratings to words based on their emotional intensity, enabling the quantification of the emotional impact of each phrase. The score of a text is calculated by summing the intensity

values of each word that appears in a corpus, which is a collection of documents. An emotion's intensity can be quantified using a scale ranging from -4 to +4. A score of -4 indicates the highest level of negativity, while a score of +4 indicates the highest level of positivity. Meanwhile, the value 0, which is the midpoint, is considered to be neutral.

According to Hutto and E (2014), a normalization method is utilized in order to measure the overall intensity of emotions. After that, the score is scaled to a range that extends from a negative one to a positive one. VADER and other notable sentiment analysis tools were evaluated in a study that was carried out at the Georgia Institute of Technology. The purpose of the study was to determine how well these tools classified emotions. According to the conclusions of the study, VADER revealed exceptional performance and, in general, outperformed other tools for sentiment analysis (Hutto & E, 2014). In his investigation, Al-Shabi (2020) also arrived to the same results as previous researchers. The following is the primary justification for the utilization of VADER in the investigation.

Text processing, sentiment analysis, and the creation of word clouds were conducted using Orange Data Mining Software throughout the inquiry. Machine learning and data visualization are two applications that may be carried out with Orange, which is a flexible open-source software offering. An extensive collection of tools is included in data analysis, which serves a number of goals, one of the most important of which is to graphically build processes. A collection of textual reviews was gathered for the analysis, and then the VADER sentiment analysis model was utilized to categorize the reviews into the following categories: positive, negative, neutral, and compound.

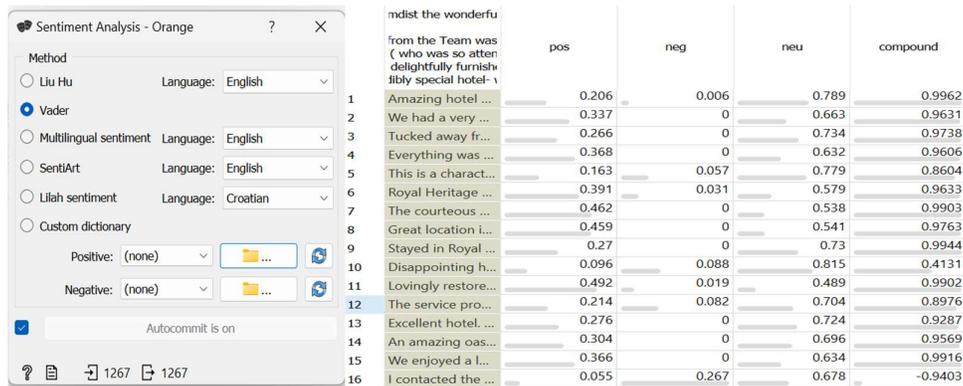


Figure (4)

**Topic modelling:**

Latent Dirichlet Allocation, often referred to as LDA, is a prevalent method for topic modelling, usually used for analysing extensive document collections. Documents are shown in line with the essential principle.

A topic distribution is characterized by each subject being defined by a certain distribution of related terms. Textual data analysis may be categorized into two primary types: topic modelling and sentiment analysis. The categories are defined by the kind of information collected from the text. Topic modeling analysis entails using several methodologies to ascertain the subject matter of a text, while sentiment analysis necessitates the use of a set of methods to discern the emotions or feelings expressed within the text. Topic modeling analysis is a component of sentiment analysis. (Blei, Andrew, & Michael, 2003). Topic modeling is a technique that finds and suggests potentially important topics or issues.

Topic modeling is a technique that discovers and suggests topics or subjects that have the potential to be significant. Identifies the topics and themes that have been identified from the corpus and displays their distributions.

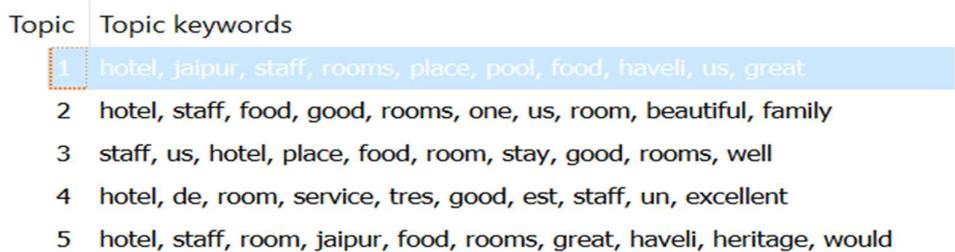


Figure (5)



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