

## Analyzing Online Reviews in New York City in Relation to E-WOM: Hotel Reputation and Hotel Ratings

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### Abstract

Online customer reviews have become an important information source influencing customers' buying intention and behavior in the (E-WOM) age. The findings of the study corroborated the dimensions on which online reviews have an impact. This study was conducted to understand online ratings of hotels in New York city by online reviews restored in Google travel. The initial stage was to gather hotel reviews from the world's largest search engine, Google Travel ([www.Google.com/travel](http://www.Google.com/travel)). The group name was derived in consideration of the characteristics of the words included in each cluster. The group name was as "Food & Beverage", "Physical Environment", "Service", "Brand". From this study, the researcher will find out the rating category of hotels created by customers' online reviews in Google travel. The objective of this study was to acquire a general and text-based awareness and recognition of online reviews through big data analytics.

**Keywords:** Online reviews, E-WOM, Hotel reputation, Hotel ratings, Big Data

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## 1. Introduction

The historical backdrop of New York starts around 10,000 B.C. at the point when the principal individuals showed up. In 1664, England renamed the province, New York, after the Duke of York and Albany, siblings of King Charles II. New York city acquired noticeable quality in the eighteenth century as a significant exchanging port the thirteen colonies.

New York city is the largest city in the united states. New York state's population in 2021 is estimated to be 20.4 million and its fourth most populous US state. New York city's populace in 2021 is 8.82 million, is additionally the most thickly populated and significant city, located at the southern piece of the U.S. province of New York. In excess of 800 languages are spoken in New York city, making it the most semantically different city on the planet. This is the first city that launched a restaurant sanitation letter grade system in 2010. (Kim. 2018). In America, New York is the most populated city that's why it's a great place to open a restaurant. Most of the restaurants, coffee shops, and gourmet specialty food stores have New York city's per capital among all US cities.

We are planning a trip to another city and need to make a hotel reservation Because of unfamiliarity with the area, unsure how to choose a place to stay. Might ask friends, go to a travel agency, or conduct an Internet search. All of these tactics have one thing in common: individuals frequently seek assistance from others while making decisions. It is well acknowledged that client purchasing decisions are influenced by word of mouth, both positive and bad. For a long time, marketing professionals have been interested in word of mouth communication (Anderson, 1998).

Marketing theorists would relate this informative component of a review to consumers' product or brand awareness,.In the consideration set model of consumer decision making awareness is a key variable (Ivar, 2009).

Fang, Kucukusta, and Law (2016) defined OCR as "numerical ratings and descriptive comments" provided by current and past customers which are used to express satisfaction or dissatisfaction, often submitted with opinions or recommendations, revolving around an experience with a product or service.

User-generated comments create a digitalized WOM, and the aggregation of all this online feedback creates web reputation. Reputation is crucial for the desirability of tourism and hospitality products and services, and it is, therefore, a major asset that requires investment and being managed (Anagnostopoulou, 2020)

Online client audits address a type of electronic verbal (E-WOM). Audits are viewed as more effective in impacting buyer conduct, contrasted with customary promoting instruments (Phillips, 2017). They are regularly autonomous of advertisers' selling endeavors, so they show up more reliable and be according to buyers. (Vermeulen, & Seegers, 2009). Online audits are significant wellsprings of data that can shape the standing of the travel industry endeavors (El-Said, 2020).

With regard to the potential outcomes of social comparisons elicited by E-WOM information post-purchase, the literature suggests that consumers not only form cognitive and emotional evaluations towards a product/service at this stage, but also adjust their brand perception. Meanwhile, consumers can also re-evaluate the E-WOM platform's credibility based on consistence between the information available on the site and their personal experience (Liu, Jayawardhena, Osburg, Mohiuddin & Mujahid, 2020)

Restaurants must discover rivals and obtain competitive advantages in the marketplace because it is a highly competitive sector. Traditionally, rivals' information has been gleaned through the written media in the form of news reports and surveys (Zhao, Wang, Guo, & Law, 2015).

The purpose of this study is to quantify the effect of online reputation created through customer reviews on hotel industry rating Lodging among clients is shown through the portrayal.

## **2. Theoretical Background**

### *2.1. Customer Experience & Online Review*

Making great client experiences has been a primary goal in the hotel sector. Recognize the limits of traditional marketing tactics centered on price, product, and quality, and emphasize the importance of customer experience management in gaining competitive advantages and building customer loyalty. Pine and Gilmore (1999) were among the first to introduce the notion of customer experience, describing it as "events that engage consumers in a personal way" and claiming that each customer's feeling is unique (Hwanj & Seo, 2016). Consumers may now communicate their thoughts and sentiments on the internet, which has become a common venue for them. Consumers provide significant feedback via various online social media platforms, such as brand communities or brand sites. If customers express their ideas on a brand, it can have an impact on the business's image in the marketplace. Online customer reviews can be faked or placed on behalf of a company or website by a third party (Chakraborty, 2019).

Reviews are crucial material since they give a significant source of information that may assist buyers in making informed selections. These reviews include a total product score as well as star ratings. It's similar to a helpful tip explanation that assists customers in making better judgments (O'Mahony & Smyth, 2009).

### *2.2. Electronic word of mouth (E-WOM)*

With the growth and expansion of the Internet, a new type of word of mouth (WOM) has emerged: electronic word of mouth (E-WOM), which is now regarded one of the most important informal media among customers, companies, and the general public. This paper builds on these ideas by reviewing the relevant literature, analyzing the impact of traditional WOM and E-WOM in the field of consumer behavior, and highlighting the key differences between the two types of recommendations, with the goal of contributing to a better understanding of their potential (Alcocer, 2017)

Web 2.0 apps are altering how passengers generate, trade, and consume information by enabling online user involvement and collaboration. Some of these apps, such as E-WOM, promote the spread of word of mouth (WOM) via the internet (Filieri, & McLeay, 2014). The use of the internet is increasing day by day. There is a growing body of evidence suggesting customers are impacted by internet views before making selections (Lin, 2012). Participating in e WOM involves two behaviors seeking and providing advice (López, & Sicilia, 2014). Actually, more than 24 years ago, it was predicted that there would be another market space. where people can share their experiences. Nowadays consumers both online & offline market but in last 12 years, there is hugely changed in internet business. E-WOM become a great & important platform for consumers. Web 2.0 can do one to one, one to many, many to one, etc kind of communication with businessmen and consumers (Verma, 2021).

### *2.3. Hotel Reputation*

A particular number of reviews is generally associated with a product rating. The number of reviews raises exposure while also serving as social proof of popularity. Consumers should be able to mix these two sources of information while limiting or lowering the expense of searching. The heuristic "plenty of reviews transform a rating into a reliable figure" interacts with aggregate ratings and the number of reviews (Gavilan, 2018). The heuristic known as social proof explains why people prefer to depend on ratings when making decisions (Cialdini, 2009). In order to make a buying choice, today's internet shoppers must cope with a massive quantity of data, new search engines, various gadgets, and new approaches to approaching information. When it comes to making e-commerce selections, internet ratings have become one of the most reliable sources. Consumers usually trust and believe these assessments (Gavilan, 2018). In fact, in the hospital industries, restaurants need lots of good quality images & reputation. That is why that part they invest most. (Lai, 2019).

#### *2.4. Hotel Rating*

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There are about 100 formal and informal hotel rating systems in use across the world. Commercial entities, government authorities, and industry groups oversee and administrate hotel ratings (Ingram, 2007). The World Trade Organization sought to establish a uniform or standardized worldwide rating system in the 1960s. Despite these efforts, hotels throughout the world continue to employ a variety of ranking systems (El-Said, 2020).

#### *2.5. Big Data*

Big Data ushers in a new era of data discovery and application. This is happening as a result of new data sources, and people have been creating data on the Internet since the beginning of time. The demand for strong statistical and analytical abilities is increasing as a result of big data. Big data technologies provide unparalleled prospects for statistical inference on enormous data sets, but they also pose significant obstacles, particularly when contrasted to the analysis of properly gathered smaller data sets (Tao, 2019).

Big Data refers to data set that are too massive, complicated, or diversified for typical data processing systems to acquire, manage, and analyses. Data mining, web mining, reputation mining, social mining, cluster analysis, and reality mining are all examples of big data analysis.

This is accomplished mostly by collecting useful information from transaction records stored in large-scale (Kang, Shuting, & Kim, 2018). While the CONCOR analysis was used to compare the top most frequently used terms in this study, the approach for displaying data is critical for comprehending the semantic network of words. The network may be seen and confirmed, and the visual representation makes it simple to see the network topology or node associativity at a look. Ucinet 6.0 was used to create the technique and visualization for this study's semantic network analysis (Ban & Kim, 2019).

### **3. Research Method**

#### *3.1. Data Collection*

The following is the data gathering technique for this investigation. The initial stage was to gather hotel reviews from the world's largest search engine, Google travel ([www.Google.com/travel](http://www.Google.com/travel)). Google hotel reviews include information such as the customer's preferred hotel brand, the reviewer's ID, review date, remark, rating, and trip type. Figure 2 depicts a specific example of Google Online Reviews.

The Wellness and Tourism Big Data Research Institute at Kyungsoong University developed Python-based SCTM (Smart Crawling & Text Mining) to aid in the collection and refinement of web data. The frequency was computed by text mining and key terms were picked in order to use the unstructured data as data for study. Reviews were gathered from 5 hotels in New York that Google travel, a worldwide travel information website, recommended as the finest hotels in 2021. Table 1 lists the five hotels we suggest, along with the amount of reviews each has received.

Initially, 6635 reviews were collected in 5 hotels, and with 5764 reviews and 14811 words retrieved after removing data that was unreadable or had simply ratings with no review content. The data collecting period was established from March 2020, when COVID-19 first happened, to March 2021.

For the analysis of this study, key words were derived from the Google travel, and then, the key words were extracted according to the frequency ranking of the appearing words by

conducting the search for the analysis data. The top 61 frequency words were extracted through text mining refining process. Then, the word matrix (word x word) was deduced. Additionally, in order to understand the overall satisfaction of the hotel experience, a distribution of hotel experience evaluation based on the rating score was used, and this ‘overall score’ was used as a dependent variable because the value can be treated as a main output variable.

Table 1. Number of reviews according to 2021 Hotel ranking source from Google Travel website.

<b>Rank</b>	<b>Hotel</b>	<b>No of review</b>
1	The Manhattan at Times Square Hotel	2,273
2	Pod 39	2,195
3	Sheraton New York Times Square Hotel	649
4	Crowne Plaza Hy36 Midtown Manhattan	528
5	The Westin New York at Times Square	119

### 3.2. Qualitative Data Analysis

The following procedure was used in this study's analysis, as illustrated in Figure 1, to determine the frequency of frequent reviews either positive or negative. The initial step would be to gather review data online and refine the text that had been gathered. In terms of the Ucinet 6.0 comes with Net draw, a visualization tool, for data analysis. The Net draw is an illustration application that shows how frequently used words are connected and how they interact with one another. It focuses mostly on the semantic network analysis of the top 64 frequently used keywords derived from raw data.

### 3.3. Frequency Analysis

To find the words most frequently used in customer reviews, Table 2 lists the top 63 frequent words associated with the hotel experience and their corresponding frequency percentage. These words reflect the hotel experience. The distribution of major upper words is shown in Figure 3, and the result of visualizing the network that reflects the frequency is Figure 4 The CONCOR analysis is the final stage of the study. It assists in the segmentation of upper

frequent words and visualizes the segmentation of more frequent words, allowing often used terms to be assigned to one of many categories and other words to be assigned to any of several groups.

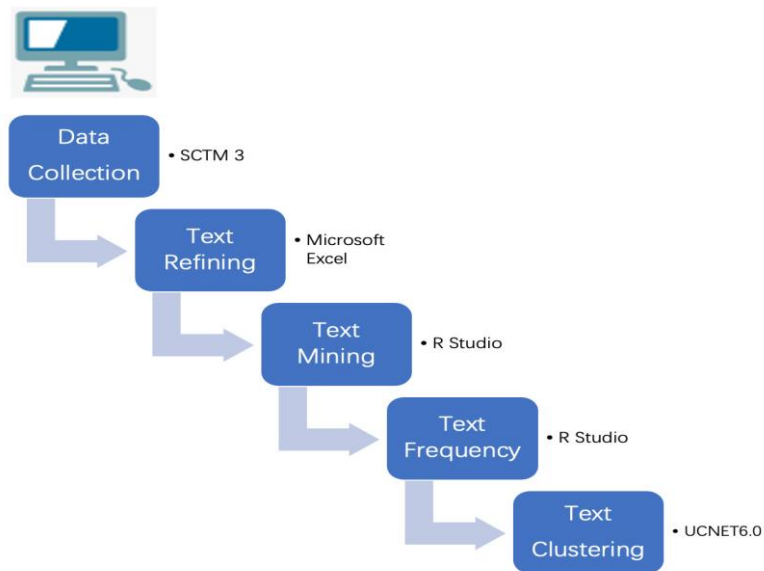


Figure 1. Qualitative research process

#### 4. Results

Table 2 Top 63 frequent words from the online hotel review

Rank	Word	Freq	%	Rank	Word	Freq	%
1	clean	3530	9.61%	32	customer	350	0.95%
2	friendly	3316	9.03%	33	back	348	0.95%
3	location	1994	5.43%	34	comfortable	337	0.92%
4	nice	1726	4.70%	35	trip	320	0.87%
5	right	1563	4.26%	36	desk	316	0.86%
6	square	1292	3.52%	37	nyc	306	0.83%
7	staff	1239	3.37%	38	pretty	300	0.82%
8	super	1222	3.33%	39	hotels	300	0.82%
9	area	1086	2.96%	40	stayed	291	0.79%
10	best	820	2.23%	41	night	280	0.76%
11	definitely	740	2.01%	42	extremely	273	0.74%
12	floor	739	2.01%	43	York	271	0.74%
13	food	714	1.94%	44	station	264	0.72%
14	front	677	1.84%	45	look	261	0.71%
15	view	615	1.67%	46	excellent	259	0.71%
16	water	592	1.61%	47	bad	257	0.70%
17	city	510	1.39%	48	old	253	0.69%
18	place	500	1.36%	49	bar	253	0.69%
19	good	493	1.34%	50	amazing	252	0.69%
20	lobby	478	1.30%	51	grand	248	0.68%
21	price	471	1.28%	52	star	247	0.67%
22	room	463	1.26%	53	breakfast	246	0.67%
23	service	452	1.23%	54	perfect	226	0.62%
24	beautiful	449	1.22%	55	central	214	0.58%
25	door	434	1.18%	56	nights	205	0.56%
26	sleep	432	1.18%	57	elevator	203	0.55%
27	arrived	427	1.16%	58	experience	200	0.54%
28	bathroom	415	1.13%	59	carpet	195	0.53%
29	dirty	373	1.02%	60	park	195	0.53%
30	helpful	362	0.99%	61	worst	194	0.53%
31	people	358	0.97%	62	modern	191	0.52%
				63	rooftop	191	0.52%



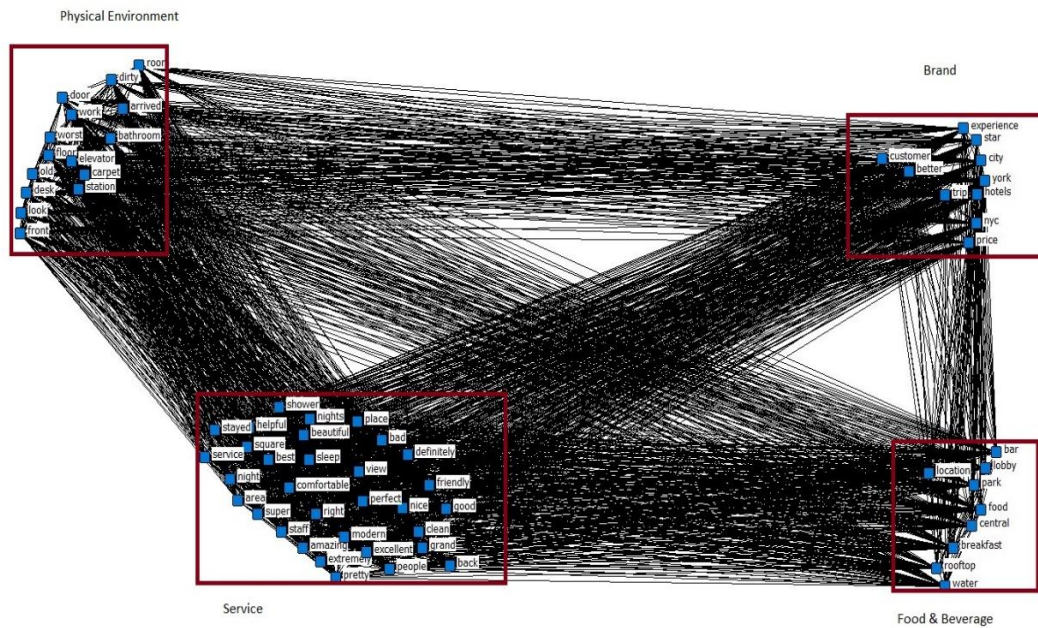


Figure 6 Visualization of Convergence of iterated Correlation (CONCOR) analysis.

Table 3 Result of CONCOR analysis.

	Extracted Words	Significant Words
Food & Beverage	Water/bar/location/lobby/park/food/central/ Breakfast/rooftop	Breakfast/food/water/location
Physical Environment	elevator/carpet/station/desk/park/ look/front/room/old/worst/ dirty/work/bathroom/floor/ arrived	park/carpet/elevator/ station/desk/ room/bathroom/floor/
Service	beautiful/super/clean/excellent/nice/good/ view/service/modern/perfect/night/staff/ shower/comfortable/people/place/back/ definitely/excellent/attention/area/extremely/ sleep/best/right/helpful/square/ grand/stayed/best/bad/friendly/amazing	beautiful/super/nice/good/ perfect/bad/excellent/staff/ comfortable/service/attention/ amazing/friendly/ clean/modern/ attention
Brand	Hotels/ experience/star/city/customer /York/nyc/price/trip/better	Hotels/star/nyc/trip

The group name was derived in consideration of the characteristics of the words included in each cluster. The group name was as “Food & Beverage”, “Physical Environment”, “Service”, “Brand”.

The first cluster is” “Food & Beverage with terms like water, bar, food, central, breakfast, rooftop which were apparently related to food or food location. The second cluster is "Physical Environment" which consists of "carpet", "desk", "park", "bathroom", “elevator”, “front”, “room”, “floor”, which words include various facilities. The third cluster "Service which consist of, "perfect", "clean", "attention", “super”, “beautiful”, “attention”, “staff”,” “service”, “Excellent”, “comfortable”, “amazing”, “modern”, “bad”, This reflects that consumers tend to consider staff service, quality of service when they choose hotel. The last cluster, "brand" contains words relating with purpose like "hotels", "star", "nyc", “trip” which word includes various popular brand.

## **5. Conclusion**

This study purpose was to find out the Impact of Online Reviews on Hotel Ratings of New York city. For the analysis of customers' hotel online reviews, to begin with, keywords were derived through text mining, and second, frequency analysis was performed. Based on this frequency analysis, top 64 frequent words were extracted. CONCOR analysis was accomplish to identify the sympathetically aware of other people’s feeling & perception of a situation through the online review.it helps to categorize the data for the study.CONCOR analysis was adopted to generate four categories, namely, “Food & Beverage”, “Physical Environment”, “Service”, and “Brand”. Within the 4 groups “Service” & “Physical Environment” central part, because over 70% of 5764 reviews are “Service” & “Physical Environment related. It’s means that customer first priority is service, so they usually look for good hotel who can give them good quality of service with nice place. This is why there is so many related word with service like as beautiful, super, clean, excellent, best, helpful, friendly etc. In additionally it also connected many words with such as station, park, arrived, elevator, front etc . The other two factor “F&B” and “Brand” were important to the customer because it’s attract the attention of customer. Additionally, they were visualized by drawing networks and nodes using Net Draw

in Ucinet 6.0. From this study we find out that online reviews have strong relationship with hotel's rating. Because of online review can increase hotel reputation also can decrease. In online platform customer give strong opinion based on their point of view. There is a theory between customer satisfaction & online platform, it's called benefit-cost theory (Han, S., & Anderson, C. K. 2020). when customer wants to book a hotel, it's called decision making process. they make the decision based on hotel ratings. the ratings is high when number of reviews are increased, but the rating is low when reviews are less (Gavilan, et. al,2018). So online review has great impact on hotel ratings.

This study concentrated on New York city, therefor the reviews from Google travel.com were filtered to make sure that how important online review for hotel ratings.

However, there is some limitations for this study. Firstly, the study has limited data. We can't collect all the reviews because other reviews are from different language and website is English version. So it is the restriction for the study. Secondly the collected data was analyzed based on the frequency, so it is very difficult to understand exact the word meaning. Suggestion for future researcher to analyze these problems & research further to better understanding the Impact of online reviews on hotel ratings.

### *5.1. Summary of Article*

In Summary this paper analyses the impact of online reviews on hotel reputation and ratings. A quantitative approach has been followed by collecting the online reviews. The following is the data gathering technique for this investigation. The initial stage was to gather hotel reviews from the world's largest search engine, Google travel ([www.Google.com/travel](http://www.Google.com/travel)). Google hotel reviews include information such as the customer's preferred hotel brand, the reviewer's ID, review date, remark, rating, and trip type. Results of the research revealed that positive and negative reviews have a strong impact on hotel reputation. In conclusion, this study explains the importance of online reviews in hotel reputation on Google travel in star category.

### *5.2. Practical implications*

In this paper management of hotels can find out keywords mostly being used by customers for which they are rating a hotel such as services, food, and parking etc. From this study they can make sure to get these things better for having better reviews and giving best services to their customers. This can lead them having better rating and star category in social media sites as well as traveling sites. These two diagrams network CONCOR and word count highlighting the most common and repeated reviews of customers.

### *5.3. Theoretical Implications*

In this era Electronic word of Mouth (E-WOM) have the power to increase value of product and services. This study shows how online reviews impacting the hotels ratings and reputation. From this study researcher will find out the rating category of hotels creating by customers online reviews, in Google travel.

### *5.4. Future Implications*

For future studies, researchers can use different traveler site for data collection, as in this research only one site is being used. Different city or country can also be opt for future studies and research. The final factor for future research consideration should be the investigation of positive and negative reviews towards hotel booking intention. Such as the amount and relevance of reviews, or auxiliary factors such as the hotel location, hotel facilities, brand familiarity, or online presence of the property. Furthermore, to broaden the understanding of moderators and their role in influencing the impact of online customer reviews on hotel booking intention, other factors such as loyalty, loyalty programs, reliability of online platforms, and previous experience with review platforms need to be extensively explored.

### 5.5. Limitations

The major limitation of this study is the generalization of the results. This study only considered the reviews of 5 hotels in New York city. As such, it offered more comprehensive suggestions for practitioners in how to better utilize online reviews as a marketing tool.

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