

# Analyzing Hotel Customer Experience through Big Data Method: Samples from Hotels in Antalya and Istanbul

*Oznur Cetinkaya\*, Serdar Çöp\*\*, Güvenç Bayraktar\*\*\**

## **Abstract**

*In order to ensure customer satisfaction in the hotel business, it is required to have a good understanding of customers' preferences, to foresee customer expectations, to find factors affecting customer experience. In this way, with the increasing use of social media and user-generated content over the internet, there has been a tendency to use big data tools in service sector research studies. This study deals with the use of big data for analyzing 4 and 5-star hotel's customer experiences in Antalya and İstanbul. Non-structural data, namely customer reviews, were analyzed and most used words in hotel comments have been taken. After filtering and elimination process, it is revealed that accommodation and staff are the factors that impact hotel customer experience.*

**Keywords:** *Big Data, Social Media, Customer Satisfaction, Customer Experience*

**JEL Classification:** *P30, C80, J50*

## **INTRODUCTION**

Social sciences have their roots for data analysis and these roots have been a focal point in professional education. Therefore, developing data structures and new methods of analysis should be supported (White & Breckenridge, 2014). One of the new methods is gathering online data that is left behind the internet users.

The amount of online data has been increasing because of the rising numbers of internet users and online transactions. Some techniques have been put forward to use this data scientifically in the fields of marketing and advertising. Big Data tools are also used as a method that aims to present data in a way going through the phases of sorting and clustering and covers all non-structural or structural data that have been collected for these purposes.

Hotel industry researchers can reveal the strengths and weaknesses of the offered services and hotel amenities by using big data tools. Receiving customer feedback, analyzing, and predicting expectations create a competitive advantage especially in sectors like tourism which provides service and experience intensively. Within this context, proper use of technology and

---

*Correspondence:*

*\*İstanbul Gelişim University, Turkey, oetinkaya@gelisim.edu.tr*

*\*\*İstanbul Gelişim University, Turkey, scop@gelisim.edu.tr*

*\*\*\*İstanbul Gelişim University, Turkey, guvenbayraktar@gmail.com*

having a good command of the latest data collection techniques have become compulsory.

This study aims to reveal the factors that impact hotel customer experience. For this purpose, hotel customer comments were gathered by big data tools. After the data extraction process, words were classified according to meaning groups and most mentioned topics were revealed.

## **THEORETICAL BACKGROUND**

### *What is Big Data?*

Big Data term was mentioned in a study awarded by National Science Foundation in 2009 (White & Breckenridge, 2014); and started to be used practically since 2011 (Gandomi & Haider, 2015; Halavais, 2015; Xu, Cai, & Liang, 2015). It is the transformation of all data collected into a significant and processable form (Işıklı, 2014; Xu, Cai, & Liang, 2015; Clarke & Margetts, 2014).

Big data can be split into three categories as direct, automatic, and voluntary with regards to its sources (Kitchin, 2014). Direct data is the form of data that is produced by all traditional forms of supervision and has technology focused on a person or a place under the supervision of an operator. Checking information through the system at passport control points and getting information through fingerprint or retina are examples of direct data. Information on technological devices or systems can be shown as examples of automatic data. That the mobile phones save call information in every user provides source for automatic data. Voluntary data is the sum of the information left by user with his/her free will. Comments made on social media, photos, or sharing location details are the sources of voluntary data (Kitchin, 2014).

To name a data set "big", it is necessary to use the biggest part of all the data set and for this reason, it is necessary to have a high level and unique data storage facilities, management, and analysis (Işıklı, 2014; Önder, 2017; Song & Liu, 2017). McAfee and Brynjolfsson (2012), Kitchin (2015), Schroeder and Taylor (2015), Loukissas (2016), Önder (2017), McNeely and Hahm (2014), Johnson et al. (2017) explain big data with three component; Halavais (2015) consider it with four-component; Işıklı (2014), Song and Liu (2017), Kune et al. (2016) state it with five component and Gandomi and Haider (2015) and Bozkurt (2016) resolve it with six component which are stated below:

- Variety: Each technology should be able to produce data.
- Velocity: It is the increase in data production speed.
- Volume: It is the increase in the amount of collected data at any moment.
- Verification: Data coming in an information density should be verified and the data should be followed at the security level as it should be.
- Veracity: It is to get exact information from content.
- Value: Data should create a plus value for the institution after layers of data production and processing (Bozkurt, 2016).

### *Big Data Critics*

Big data has been criticized for intervening in private life, restricting civil freedom, and

increasing state and company control (Boyd & Crawford, 2012; McNeely & Hahm, 2014; Clarke & Margetts, 2014). One of the reasons for these critics is the view that as there is a huge amount of data, this may show connections that don't exist (Ekbia et al., 2015). Because when data is so huge or unlimited, it becomes more difficult to calculate the margin of error (Frické, 2015).

Another critic about big data is that there is an extracting process, especially in social media texts. At which point the data will be cut or which one will stay reflects the subjective side of big data and at this point, some critical studies have been carried out against big data (Boyd & Crawford, 2012; Pflugfelder, 2013; Işıklı, 2014; Panger, 2015; Halavais, 2015; Ekbia et al., 2015).

Kitchin (2015) indicated that big data is both an important source that causes excitement and a technique that should be studied in a detailed way and Kitner and Wet (2015) underlined that a proper substructure should be provided before starting the research.

### *Big Data in Tourism*

Internet and network development have a leading role in the success of tourism and the proper use of them is an important way for the development and success of this industry (Shafiee & Ghatari, 2016). Customers leave traces in all of their searches, comment, booking, and planning transactions about their experience (Fuchs, Höpken & Lexhagen, 2014). All these traces left behind are evaluated within the context of big data. (Shafiee & Ghatari, 2016). It is especially used to foresee tourism demands in the tourism sector. Each study uses a different social media platform as a big data source such as Flickr, Twitter, Facebook, and Blogs (Önder, 2017). In the tourism domain, recent studies have used mostly microblogs (Twitter), consumer reviews (TripAdvisor), and internet forums (Varkaris & Neuhofer, 2017).

Contents developed by users on social media and the internet, affecting the service industry since 2005 (Barutçu & Tomaş, 2013), and they have been used by consumers to consult on accommodation purchases (Varkaris & Neuhofer, 2017).

To understand customer behavior in the tourism industry and company performance, online customer testimonials are thought as one of the most valuable sources of internet content. These testimonials refer to the experience of customer's re-experiencing, structuring, and evaluating. And as a result of this, new customers will be able to take into consideration these comments. Therefore, it can be seen that comments have a great effect on customer behavior and behavioral intention (Xiang, Schwartz, Gerdes & Uysal, 2015). The image created by the companies at these platforms has a direct effect on potential customers' preference for the product. The fact that the company creates a noticeable image and branding helps the company to gain an important and consistent advantage over the competitors; create loyal customers; and develop special products and services for customers (Coşar, 2008; Tayfun & Yayla, 2013).

Digital era tourists make a significant contribution to this system by getting information from electronic sources, mobile applications, call centers, travel agencies, and social media provided by the tourism sector (Park, Ok & Chae, 2015). It has been reported that TripAdvisor received more than 200 million opinions; Trivago received 140 million views; and Booking received 43 million views in January 2015 (Marine-Roig & Anton Clavé, 2015). All these data

reveal travel plans of tourists, their interest, and behavior related to accommodation experience (Park, Ok & Chae, 2015). Statistical information obtained through the survey beforehand has enough potential to increase the data quality; to put forward new analysis and indicators; and to compensate for the loss of time and cost (Heerschap, Ortega, Priem & Offermans, 2014). A huge amount of big data related to tourism allows making a deduction about human activity and behavior for everyone in the tourism industry, not only customers (Song & Liu, 2017).

The advantages of information collected through big data in the tourism industry can be indicated as follows (Park, Ok & Chae, 2015):

- It allows having an idea about the purchasing power of customers and advertisement and marketing activities.
- Websites and blogs can contribute to increasing the quality of service by sharing the data they have with hotels, agencies, airlines, airports, and public institutions.
- Government officials can develop infrastructure in the tourism sector by checking tourist accommodation rates and capacity.
- People in the tourism sector can make their plans by foreseeing the number of tourists.
- Rival countries and the latest trends can be followed.
- Special services, products, and packages can be prepared for customers.

Big data has effects such as individualization of customer experience, competition distinction, cause-related – marketing, foreseeing customer's present, and future needs in the tourism sector. The most important advantage of big data in the tourism sector is to make the travel experience perfect by defining the interests of people; discovering mental models; and developing products and services in this direction. Thus, it is possible to be a leader in this highly competitive sector with these techniques (Shafiee & Ghatari, 2016).

Agencies and stakeholders who earn an income from tourism can find innovative ways to use different data sources to contact potential customers at different stages of their travel and they can benefit from these big data sources to understand increasing visitor information more quickly (Song & Liu, 2017). Data collected from different sources such as web pages, social media, mobile phone data, public transportation data, and electronic traffic systems except for online travel web sites which are one of the biggest data sources can change the production and appearance of tourism statistics (Heerschap, Ortega, Priem & Offermans, 2014). When compared to traditional methods, the advantages of innovative methods related to big data in tourism can be indicated by Song and Liu (2017) as follows:

- Reliability: Big data deals with the real reactions of users. It doesn't deal with surveys that are deliberative and aim to measure intentions.
- New Information Flow: The consumer or user produces information in big data and this information keeps increasing in many different ways.
- Real-time data and up – to – date prediction: one of the innovative sides of big data is that it allows making up – to date prediction until official information comes out.

Both customers and touristic product providers benefit from big data use. Customized marketing and target product designs include strong opportunities for both groups. Big data can be used to transmit target-oriented, profitable, and better products and services to the customers. Big data doesn't aim to reach the total by starting from one group; it tries to reach

the total directly, unlike the data extracted from the survey sample (Song & Liu, 2017).

One of the big data studies in tourism was published by Xiang and et. al. in the USA in 2015. This study was carried out among 10.537 hotels found in 100 largest cities in the USA and 60.648 customer testimonials were collected. Firstly, textual content about each city and hotel was taken from internet browsers. 529 hotels were also integrated after preview scan. 80 most used words were found among 6642 words according to their usage frequency. Usage frequency of words was taken as numeral values for analysis and then words were separated into dimensions by carrying out factor analysis. After that, analyses were carried out to see the effect and relationship between the satisfaction rate of hotels and defined dimensions (Xiang, Schwartz, Gerdes & Uysal, 2015).

Another study about big data has been carried out to see the development of academic studies in the tourism area. The published research studies, between 2003 – 2012, and the situation of China's tourism researches were examined by studying 16.024 tourism academic publications (Zhang, Lan, Qi & Wu, 2016).

Big data has a very important place in destination image and branding studies along with analyzing the perception, experience, and behaviors of tourists. Marine – Roig and Anton Clavé have analyzed 111,487 entries that belong to the last decade in a big data study conducted in Barcelona. Most used words have been chosen with this data set collected from online English travel blogs and magazines. It has been figured out that the works of Gaudi are the most-mentioned topics. In addition to this, the intensive use of positive and likable words have caught the attention (Marine-Roig & Anton Clavé, 2015).

## **METHOD**

### *Data Collection Tool*

For the big data analysis, it was aimed to collect the data as the first step. Here data refers to customer comments about hotel enterprises. To collect the comments, five-star and four-star hotels were filtered out. After all, Istanbul and Antalya hotels were chosen as target areas.

After defining the data collecting area, it was necessary to determine the data source. There are many domestic and foreign booking companies in the business in Turkey. Tatilbudur.com, Tatil.com, and many other travel agencies' web pages can be addressed among domestic companies. When it comes to foreign companies, it can be seen that companies such as Booking.com, Expedia.com, and Trivago.com are used actively in Turkey. Booking.com was chosen for the reason that hotel scoring made by customers could be filtered according to the desired language.

From booking.com, positive and negative comments were collected and analyzed. It has been considered as a customer comment without discrimination of positive and negative comments. Turkish comments were collected and used as data then all the study was translated in English so all the words which came out from the comments, were translated into English.

### Data Collection Stage

Data was collected through a web browser. The list of four and five-star hotels in Istanbul and Antalya was made by collecting data from Booking.com through this robot (web crawler). After that, Booking.com pages belonging to these hotels were visited by this robot (web crawler) and customer comments about these hotels were collected and kept in a relational database.

In consequence of the data collection process, on Booking.com system, data about 338 hotels including 112 four-star and 226 five star hotels were found in the Antalya region; data about 303 hotels including 118 four-star and 115 five star hotels were found in the Istanbul region. Therefore, the number of hotels in this study became 641. After collecting customer comments about these hotels, we have reached 122.122 customer comments.

### Extraction of Data

To reach clear factors which affect the experience, the data was supposed to be extricated. With this purpose in mind, after collecting 122.122 comments, we proceeded to another stage which was separating comments into words. With this process, it was found out that 120.451 different words used in customer comments 1.273.642 times in total. When extracted words and their number of users in hotel comments examined, it was realized that there were a lot of single meaningless words. Frequency table of 15 most used words has been shown in Fig. 1.

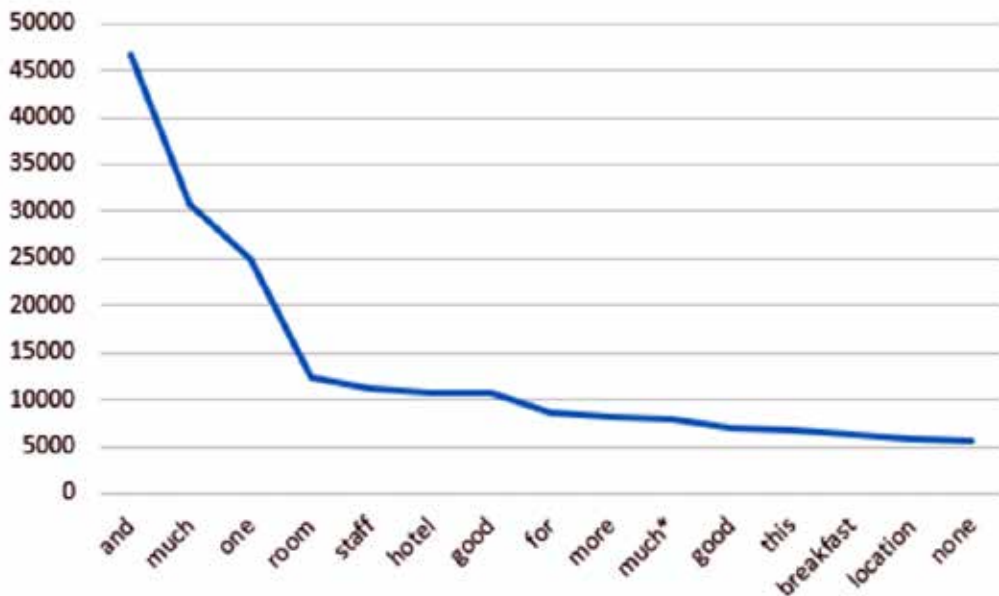


Figure 1: Word frequencies in hotel comments

\* This was a mistyped word for much

As can be seen from the graphic in Fig. 1, there were a lot of single meaningless words in the raw data set such as "and", "very", "one" etc. Another problem observed in the raw data set was the spelling mistakes made by users in comment entries. For example, as can be seen from Fig. 1, the word "very" which means "çok" in Turkish written as "cok" in comments. Another problem observed in the data set was that word roots receive an addition of a sound, prefix, or suffix to the end of the word. For example, the expressions "its location" and other expressions such as "at location", "to the location" etc. represent the location feature of the hotel.

In this process, in order to overcome these problems, we applied four-phase control and extraction operation which include eliminating meaningless words in the raw data set; determining spelling mistakes and correcting these mistakes; determining words with an additional sound, prefix, or suffix; and finally determining words which cannot be related to customer satisfaction such as "hotel", "one", "not available". After the control and extraction operation, root and derivate word relationships were determined for 1943 words, and 105.935 words were deleted in total. 80 most used words in hotel comments were taken under review after all this filtration process. These words and their frequency of use in hotel comments can be seen in Fig. 2.

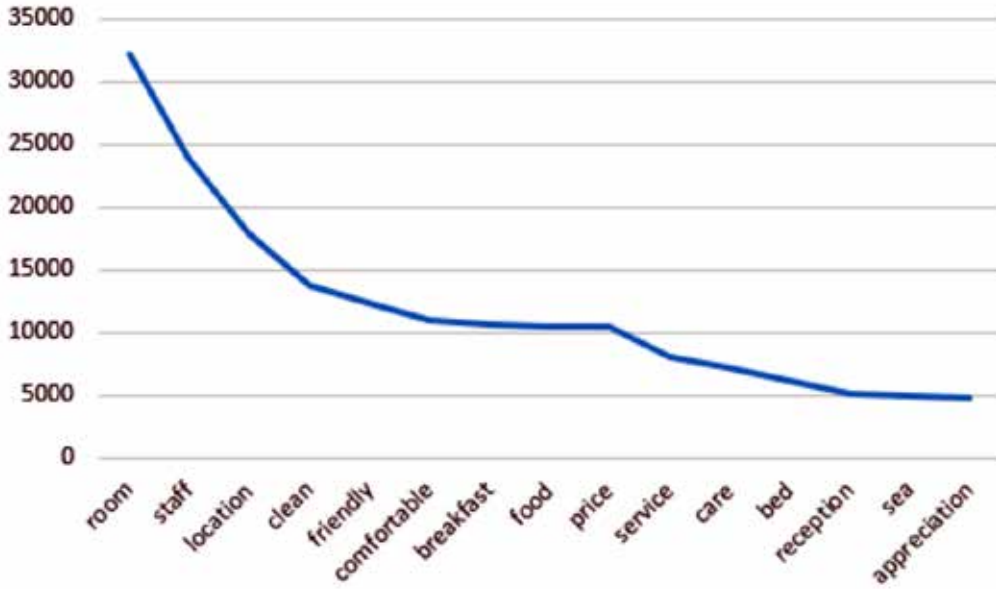


Figure 2: Word frequencies in hotel comments after the filtering process

When compared to the words in Fig. 1. and Fig. 2., after the elimination process, the table revealed is much more meaningful in terms of customer satisfaction. Another point coming out of the comparison of these two figures is how big the effect of words derived from word roots is. For example, it can be seen that the word root "oda (room)" has been used 12.264 times in comments. However, when its usage with other words deriving from it is addressed, this number goes up to 32.230. The effect of this editing is highly critical in terms of the study. For example, although the words "temiz (clean)", "gülyüzlü (friendly) and "rahat (comfortable)" in Fig. 2 couldn't take place in the first fifteen of the list concerning raw data set, they could take place in the first fifteen of the list when these words were addressed with their root words.

After editing words in the data set, as the next step, hotel comments which do not include these words and have any comments were removed from the data set. Following this filtration process, the number of comments was reduced to 75.107 and the hotel number decreased to 415 when the hotels related to these comments were filtered out.

### Findings

The number of hotels and hotel comments indicated in Table 1 after the filtration and extraction process. When the data received from Antalya and Istanbul hotels which are the

centers of tourism have been compared, it can be seen that the satisfaction rate of five–star hotels in Istanbul are much higher than Antalya hotels. It has been also found out that there are more four–star hotels in Istanbul than in Antalya. This is because business trips and culture–based tours are highly organized in Istanbul while the service is based on the sea, sand, and sun concept in Antalya. Even though there is not much difference in the number of five–star hotels (99 –107) between Istanbul and Antalya, there is a great difference in the number of comments about these hotels (17.406 – 28.432). Thus, it can be said that the customers of five – star hotels in Istanbul give much more feedback.

*Table 1: Breakdown of hotel data*

	<b>Hotel Count</b>	<b>CommentCount</b>	<b>Hotel-Comment Frequency</b>	<b>Hotel Satisfaction Rate</b>
<i>4 Star Antalya</i>	39	4.559	0,28	7,74
<i>5 Star Antalya</i>	99	17.406	0,72	8,10
<i>Sum of Antalya</i>	138	21.965	1,00	8
<i>4 Star İstanbul</i>	170	24.710	0,61	8,07
<i>5 Star İstanbul</i>	107	28.432	0,39	8,43
<i>Sum of İstanbul</i>	277	53.142	1,00	8,21

As a result of the process starting with filtration and extraction of words which is in the data set; going on with filtration of hotel comments and then filtration of hotel – word data, 80 most used words have been revealed. In Table 2, these words and their frequency of use in hotel comments have been indicated.

*Table 2: Top 80 words with the highest frequency and their frequencies*

<b>Word</b>	<b>N</b>	<b>Frequency</b>	<b>Word</b>	<b>N</b>	<b>N/Hotel</b>
<i>room</i>	32230	77,66265	<i>Problem</i>	1798	4,33253
<i>staff</i>	23924	57,64819	<i>Taste</i>	1746	4,207229
<i>location</i>	17861	43,03855	<i>air conditioner</i>	1665	4,012048
<i>clean</i>	13743	33,11566	<i>Smell</i>	1617	3,896386
<i>friendly</i>	12339	29,73253	<i>Recommend</i>	1598	3,850602
<i>comfortable</i>	9783	23,57349	<i>İncompetent</i>	1594	3,840964
<i>breakfast</i>	10685	25,74699	<i>Acceptable</i>	1454	3,503614
<i>food</i>	10451	25,18313	<i>Reservation</i>	1422	3,426506
<i>price</i>	10447	25,17349	<i>Ventilation</i>	1379	3,322892
<i>service</i>	8093	19,5012	<i>Animation</i>	1315	3,168675
<i>care</i>	7204	17,35904	<i>Transportation</i>	1226	2,954217
<i>bed</i>	6098	14,69398	<i>Helpful</i>	1223	2,946988
<i>reception</i>	5143	12,39277	<i>Kind</i>	1211	2,918072
<i>sea</i>	5020	12,09639	<i>Tv</i>	1142	2,751807
<i>appreciation</i>	4766	11,48434	<i>Dirty</i>	1113	2,681928
<i>quality</i>	4373	10,53735	<i>Towel</i>	1104	2,660241
<i>view</i>	4345	10,46988	<i>Pillow</i>	1095	2,638554
<i>noise</i>	4044	9,744578	<i>Treat</i>	1073	2,585542



<i>pool</i>	4008	9,657831	<i>Cold</i>	1054	2,539759
<i>close</i>	3071	7,4	<i>Cigarette</i>	999	2,407229
<i>bath</i>	2984	7,190361	<i>Free</i>	955	2,301205
<i>small</i>	2962	7,137349	<i>Greeting</i>	916	2,207229
<i>bar</i>	2953	7,115663	<i>Entertainment</i>	876	2,110843
<i>restaurant</i>	2950	7,108434	<i>Airport</i>	870	2,096386
<i>wide</i>	2897	6,980723	<i>Salon</i>	867	2,089157
<i>drink</i>	2703	6,513253	<i>Ambience</i>	853	2,055422
<i>time</i>	2611	6,291566	<i>Exit</i>	798	1,922892
<i>assist</i>	2364	5,696386	<i>Lobby</i>	759	1,828916
<i>quiet</i>	2279	5,491566	<i>İntimate</i>	722	1,739759
<i>customer</i>	2253	5,428916	<i>Design</i>	721	1,737349
<i>spa</i>	2181	5,255422	<i>Careless</i>	704	1,696386
<i>new</i>	2172	5,233735	<i>Easy</i>	703	1,693976
<i>entrance</i>	2119	5,106024	<i>Far</i>	686	1,653012
<i>big</i>	2060	4,963855	<i>Swift</i>	631	1,520482
<i>internet</i>	1980	4,771084	<i>Fruit</i>	589	1,419277
<i>parking</i>	1963	4,73012	<i>City</i>	586	1,412048
<i>accommodation</i>	1933	4,657831	<i>Vale</i>	545	1,313253
<i>old</i>	1907	4,595181	<i>Music</i>	535	1,289157
<i>heat</i>	1896	4,568675	<i>Professional</i>	526	1,26747
<i>uncomfortable</i>	1804	4,346988	<i>İsolation</i>	519	1,250602

Frequency values of words have been designated as a value in the SPSS program. The average of words classified according to their meaning has been taken and it has been determined that which groups of words are used most in comments. Thus, aspects formed by the words remembered and affected most about hotel experience have been revealed.

Table 3: Word groups and their average values

<b>Accommodation</b>	<b>Staff</b>	<b>Food&amp;Drinks</b>	<b>Hotel</b>	<b>Facilities</b>
<i>Room</i>	<i>Staff</i>	<i>Breakfast</i>	<i>Location</i>	<i>Sea</i>
<i>Bed</i>	<i>Friendly</i>	<i>Food</i>	<i>Parking</i>	<i>View</i>
<i>Comfortable</i>	<i>Service</i>	<i>Drink</i>	<i>Transportation</i>	<i>Pool</i>
<i>Bath</i>	<i>Care</i>	<i>Bar</i>	<i>Airport</i>	<i>Spa</i>
<i>Air conditioner</i>	<i>Assist</i>	<i>Restaurant</i>	<i>Lobby</i>	<i>İnternet</i>
<i>Ventilation</i>	<i>Helpful</i>	<i>Taste</i>	<i>Design</i>	<i>Animations</i>
<i>Tv</i>	<i>Kind</i>	<i>Fruit</i>	<i>Reception</i>	<i>Entertainment</i>
<i>Towel</i>	<i>Greeting</i>		<i>City</i>	<i>Vale</i>
<i>Pillow</i>	<i>Intimate</i>		<i>Far</i>	<i>Music</i>
<i>Isolation</i>	<i>Swift</i>		<i>Close</i>	
<i>Clean</i>	<i>Professional</i>			
<i>Dirty</i>	<i>Careless</i>			
,7438	,7830	,4208	,3903	,2456

Frequency values of words have been designated as a value in the SPSS program. The average of words classified according to their meaning has been taken and it has been determined that which groups of words are used most in comments. Thus, aspects formed by the words remembered and affected most about hotel experience have been revealed.

*Table 3: Word groups and their average values*

It can be seen from Table 3 that the average and frequency use of groups named accommodation (,7438) and staff (,7830) are mentioned much more in the comments. When word groups are examined, the word "isolation" shows the importance of this element except referring to main features related to accommodation. Location and transportation features come to the forefront when the words under the title of the hotel are examined. And it can be seen from the staff section, how important the human relationship, friendly and helpful staff are in the service sector.

## **DISCUSSION**

With the development in technology and the predominance of the internet, the change and development in research methods of social sciences have become inevitable. Millions of internet users leave traces on social media or in contents created by themselves or blogs voluntarily or automatic systems collect these traces.

Big data aims to gather a huge amount of information left on the internet and serving this information in a structured way. Technological developments like big data, can reduce the cost of product and services and also contribute to the enterprises for creating competitive capacity by making expansion on quality product and product range (Coşar, 2008).

In a sector like tourism which is very dynamic and contains lots of feedback, using this method will be appropriate and useful. Because a huge number of data is left in this area and enterprises will be able to obtain both competitive advantages and predictions about customer experience through the appropriate use of this data.

In research about hotel choice of tourists conducted by Tayfun and Yayla (2013), it was found out that one of the factors affecting brand loyalty is accessibility. It attracts attention that feedback about staff is generally about the attitude and behaviors of staff. Serçek and Serçek (2016) saw in their study which was carried out by using a hotel hospitality scale that the sincerity aspect has the highest factor rate. They also indicate that sincerity which is one of the aspects of hotel hospitality has a great effect on customer satisfaction. In a research carried out by Selvi and Ercan (2006) about customer loyalty at hotels, Selvi and Ercan(2006) indicate that the relationship between customer and staff affects the decision of customer's visit in the future, and service by the staff is one of the most important factors which make a hotel different than others.

In our study, comments about four and five star hotels in Istanbul and Antalya were collected by taking advantage of Booking.com, which is an international web page providing hotel reservation service. 122.122 customer comments were collected in total and after the filtration and extraction process. Filtration and extraction can be reflected as stages which require great attention and take time (Ekbia et. al., 2015). After the process of extraction and

filtration, the most used words in the comments were revealed. The words accommodation (,7438) and staff (,7830), which have the highest frequency, appear as the group having the highest average at the same time. Except that the words under the title of accommodation refer to the main features, the word "isolation" shows the importance of this element. To keep silence in hotel rooms, isolation is indicated as an important feature for a comfortable and restful accommodation. When the words under the title of the hotel were examined, the location and transportation features come to the forefront. People want to reach the facility organized for holiday or having a rest most easily. Feedbacks about staff are generally related to the attitude and behaviors of staff. At this point, the importance of human relations and friendly and helpful staff can be seen clearly. While the services expected at four and five-star hotels are indicated under the title of facilities, the internet is considered of utmost importance. Customers think that the internet is not an additional service. On the contrary, they think that it is a feature that should be.

From this point of view, it is possible to indicate that most experiences of customers who accommodated at four or five-star hotels in Istanbul or Antalya consist of features related to accommodation and staff. Hence, factors that affect satisfaction come from these areas. The main factor defining satisfaction is to meet customer expectations. If the hotel enterprises take into account the stated results, this will be very useful in terms of foreseeing customer expectations. Apart from this, competitive advantage will be provided by using this method and the current affairs will have been followed. It is also expected that the use of big data methods will increase and be an example for studies in the future.

## REFERENCES

- Barutçu, S. & Tomaş, M. (2013). Sustainable Social Media Marketing and Measuring the Effectiveness of Social Media Marketing. *Journal of Internet Applications and Management*, 4(1), 5–24.
- Boyd, D. & Crawford, K. (2012). Critical Questions For Big Data. *Information, Communication & Society*, 15(5), 37–41.
- Bozkurt, A. (2016). Learning Analytics: E-Learning, Big Data and Personalized Learning *Journal of Open Education Practices and Research*, 2, 55–81.
- Clarke, A. & Margetts, H. (2014). Governments and Citizens Getting to Know Each Other? Open, Closed, and Big Data in Public Management Reform. *Policy & Internet*, 6(4), 393–417.
- Coşar, Y. (2008). Factors Affecting Competitiveness in Hotel Management: A Research on Administrators. *Anatolia: Journal of Tourism Research*, 19(1), 45–56.
- Kitner, K.R. and T. de Wet, (2015). Big Data, Big City. *ACM Interactions Magazine*, 22(4), 70–73.
- Ekbia, H., Mattioli, M., Kouper, I., Arave, G., Ghazinejad, A., Bowman, T., Suri, V. R., Tsou, A., Weingart, S., Sugimoto, C. R. (2015). Advances In Information Science: Big Data, Bigger Dilemmas: A Critical Review. *Journal Of The Association For Information Science And Technology*, 66(8), 1523–1545.

- Frické, M. (2015). Big Data and Its Epistemology. *Journal Of The Association For Information Science And Technology, 66*(4), 651–661.
- Fuchs, M., Höpken, W. & Lexhagen, M. (2014). Big Data Analytics For Knowledge Generation In Tourism Destinations - A Case From Sweden. *Journal Of Destination Marketing And Management, 3*(4), 198–209.
- Gandomi, A. & Haider, M. (2015). Beyond The Hype: Big Data Concepts, Methods, And Analytics. *International Journal Of Information Management, 35*(2), 137–144.
- Halavais, A. (2015). Bigger sociological imaginations: Framing big social data theory and methods. *Information, Communication & Society, 18*(5), 583–594.
- Heerschap, N., Ortega, S., Priem, A., & Offermans, M. (2014). *Innovation of tourism statistics through the use of new big data sources* (The Hague), The Netherlands: Statistics Netherlands.
- Johnson, J. S., Friend, S. B., & Lee, H. S. (2017). Big data facilitation, utilization, and monetization: Exploring the 3Vs in a new product development process. *Journal of Product Innovation Management, 34*(5), 640–658.
- Kitchin, R. (2014). The Real-Time City? Big Data And Smart Urbanism. *Geojournal, 79*(1), 1–14.
- Kitchin, R. (2015). The Opportunities, Challenges And Risks Of Big Data For Official Statistics. *Statistical Journal Of The LAOS, 31*(3), 471–481.
- Kune, R., Konugurthi, P. K., Agarwal, A., Chillarige, R. R., & Buyya, R. (2016). The anatomy of big data computing. *Software: Practice and Experience, 46*(1), 79–105.
- Loukissas, Y. A. (2017). Taking Big Data apart: local readings of composite media collections. *Information, Communication & Society, 20*(5), 651–664.
- Marine-Roig, E. & Anton Clavé, S. (2015). Tourism Analytics With Massive User-Generated Content: A Case Study Of Barcelona. *Journal Of Destination Marketing And Management, 4*(3), 162–172.
- Mcafee, A. & Brynjolfsson, E. (2012). Big Data. The Management Revolution. *Harvard Business Review, 90*(10), 61–68.
- McNeely, C. L. & Hahm, J. (2014). The Big (Data) Bang: Policy, Prospects, and Challenges. *Review of Policy Research, 31*(4), 304–310.
- Oender, I. (2017). Classifying multi-destination trips in Austria with big data. *Tourism Management Perspectives, 21*, 54–58.
- Panger, G. (2016). Reassessing the Facebook experiment: critical thinking about the validity of Big Data research. *Information, Communication & Society, 19*(8), 1108–1126.

- Park, S. B., Ok, C. M., & Chae, B. K. (2016). Using Twitter data for cruise tourism marketing and research. *Journal of Travel & Tourism Marketing*, 33(6), 885-898.
- Schroeder, R., & Taylor, L. (2015). Big data and Wikipedia research: social science knowledge across disciplinary divides. *Information, Communication & Society*, 18(9), 1039-1056.
- Selvi, M. S. & Ercan F. (2006). Evaluation of Customer Satisfaction in Hotel Enterprises: An Application in Five Star Hotel Establishments in Istanbul, *Balıkesir University Journal of Social Sciences Institute*, 9, 159-187.
- Serçek, G. Ö. & Serçek, S. (2016). The Influence of Hotel Hospitality Perception on Customer Satisfaction: A Research on Foreign Tourists. *Journal of Business Research-Turk*, 8(4), 140-161.
- Shafiee, S. & Ghatari, A. R. (2016). Big Data In Tourism. *10th International Conference On E-Commerce With Focus On E-Tourism*, 1-7.
- Song, H., & Liu, H. (2017). Predicting tourist demand using big data. In *Analytics in smart tourism design* (pp. 13-29). Springer, Cham.
- Şevki Işıklı. (2014). Big Data, Epistemology and Ethics Discussions. *Online Academic Journal Of Information Technology*, 5(17), 89-121.
- Tayfun, A. & Yayla, Ö. (2013). Brand Loyalty Factors Affecting the Hotel Elections of Tourists investigation with Respect to the Demographic Variables. *Journal of Business Research-Turk*, 5(4), 159-169.
- Varkaris, E. & Neuhofer, B. (2017). The Influence of Social Media on the Consumers' Hotel Decision Journey. *Journal of Hospitality and Tourism Technology*, 8(1): 101-118.
- White, P. & Breckenridge, R. S. (2014). Trade-Offs, Limitations, and Promises of Big Data in Social Science Research. *Review of Policy Research*, 31(4), 331-338.
- Xiang, Z., Schwartz, Z., Gerdes, J. H. & Uysal, M. (2015). What Can Big Data And Text Analytics Tell Us About Hotel Guest Experience And Satisfaction? *International Journal Of Hospitality Management*, 44, 120-130.
- Xu, M., Cai, H. & Liang, S. (2015). Big Data and Industrial Ecology. *Journal of Industrial Ecology*, 19(2), 205-210.
- Zhang, L., Lan, C., Qi, F. & Wu, P. (2016). Development Pattern, Classification And Evaluation Of The Tourism Academic Community In China In The Last Ten Years: From The Perspective Of Big Data Of Articles Of Tourism Academic Journals. *Tourism Management*, 58.