



# Decoding Significant and Trivial Factors Influencing Online Hotel Ratings: The Case of Saudi Arabia's Makkah City

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## Abstract

The hospitality and tourism industries are significant revenue and employment generators on a global scale. Saudi Arabia has enormous potential for developing its tourism industry, particularly religious tourism. The tourism industry can assist the Saudi economy in increasing non-oil revenues and achieving Saudi Vision 2030. Tourists in the modern internet age expect high-quality hotel services and rely on online booking websites for travel advice and bookings. Hotels can survive, thrive, and excel if they can satisfy guests and earn positive online reviews. This study determines the factors influencing online hotel ratings in a significant and minor way. This research chose Saudi Arabia's most important religious city, Makkah. This study analyzes consumer reviews found on the Booking.com website. Facilities, comfort, cleanliness, location, and staff all significantly impact online hotel ratings, whereas breakfast and complimentary Wi-Fi have a minor impact. The hotels in Makkah can use this study's findings to increase customer traffic, increase revenue, and contribute to Saudi Vision 2030. By addressing the identified significant and minor factors, hotels in religious destinations can improve their online ratings and customer satisfaction.

**Disciplinary:** Business Management and Information Systems, Hotel Management, Tourism and Hospitality.

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## 1 Introduction

A country's ability to thrive depends on all economic sectors (Barros, 2005), including the hospitality and tourism sectors. While a country's growth stimulates its hospitality and tourism

industry's performance, the industry contributes to the country's social, economic, and cultural development (Go et al., 1994). In the hospitality and tourism sector, the hotel industry is one of the most important industries. Hotel is a unique asset class as it usually is single-use, requires specific management expertise, and its value is directly related to its ability to generate future net income (Harper, 2008). The demand for quality hotel services is growing globally. The customers' perception of hotel service quality is crucial to their success and survival (Faullant & Matzler, 2008). In the past, traditional word of mouth (WOM) played a key role in influencing consumer expectations. With the growing users and Internet usage (Singh, 2017; Singh, 2018a; Singh, 2018b; Alshammari & Singh, 2018; Singh & Alshammari, 2020), electronic word of mouth (E-WOM) is currently playing a crucial role in affecting consumer perceptions. This becomes particularly important as consumers are increasingly turning to social media for travel and booking advice.

According to a study by ComScore Inc., 87% of customers identify online reviews significantly influence their purchase decision (Lipsman, 2007). So, online reviews assist the customers in empowering them to decide on making online purchases. Thus, online UGC is the new WOM and a valuable marketing communication tool. Online UGC provides critical insights to understand consumer behavior and enhance their satisfaction, leading to increased hotel bookings and improved profitability (Lipsman, 2007). Such improved profitability for hotels feeds and contributes to the country's hospitality and tourism industry and economic growth.

To boost tourism, the Saudi Commission for Tourism and National Heritage (SCTNH) is also working on innovative ideas like the Umrah Plus Program, allowing Umrah performers to visit valuable and distinctive tourist sites (Ministry of Tourism, 2017).

There are many methods employed in existing research to evaluate data from online reviews, including surveys (Ayeh et al., 2013; Kang & Schuett, 2013; Senders et al., 2013), case studies (Chalkiti & Sigala, 2008; Munar & Jacobsen, 2013), and interviews (Ayeh et al., 2012), etc. In this study, we obtain the online consumer reviews from Booking.com for hotel bookings in Makkah, Saudi Arabia. The online consumer reviews of the popular site like Booking.com is based on breakfast cleanliness, comfort, facilities, location, staff, value for money, and free Wi-Fi. So, this study considers the effect of these factors on online hotel ratings by developing and testing eight hypotheses. We also use the control variable of the star rating of the hotel in the present study.

This study asks two research questions:

- (1) What factors could have a significant influence on the online ratings of hotels?
- (2) What factors could have a minor influence on the online ratings of hotels?

## 2 Literature Review

Compared to traditional WOM, online WOM is the preferred choice of consumers due to its reliability, speed, convenience, unbiasedness, and trustworthiness (Sun et al., 2006; Akehurst, 2009; Li et al., 2012; Flanagin & Metzger, 2013). The advent of E-WOM and online UGC has altered the consumption of information by tourists and influences their decision-making. Tourists have

become cyber tourists and actively search the internet to look for pertinent information, create social bonds, and build an online identity (Gu & Ryan, 2008; Guex, 2010). It is increasingly realized in practice and research that online review ratings of tourists present an opulent source of data that can contribute to the hotel industry's analysis and management (Kim & Hardin, 2010; Lu & Stepchenkova, 2012). This is particularly important because most consumers use online reviews to make their hotel booking decisions (Park & Kim 2008; Schlosser, 2011).

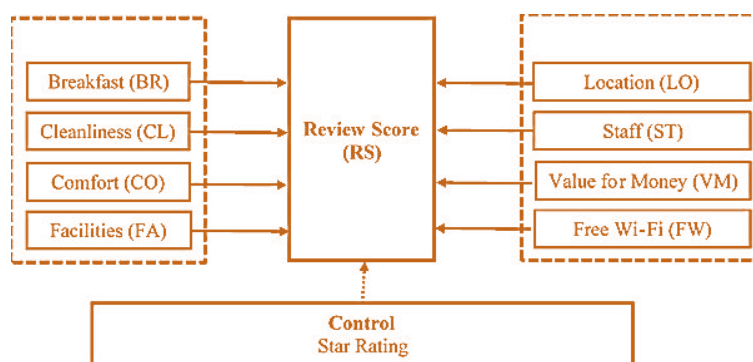
Research shows that tourists' online review ratings impact hotel bookings and sales (Archak et al., 2011). Radojevic et al. (2017) opined that effective review ratings to the target consumers help an organization improve its sales volume and increase the customer base. Online review ratings influence the hotels' brand reputation and help them monitor their service quality. According to Radojevic et al. (2017), the review ratings provide the customers with an overall idea of the critical utility and value delivered by an organization. Guo et al. (2017) observed that the other customers' reviews encourage a new customer to build trust in the business's propositions.

In the digital economy, online UGC increasingly influences consumer choices (Xiang & Gretzel, 2010). This is facilitated by the fact that travelers' prior experiences reduce choice uncertainty for other consumers (Gretzel & Yoo, 2008). Various factors determine the consumers' preference for hotels. According to O'Connor's (2008) London hotels study, factors that influence hotels' online review ratings are location, facilities, room size, breakfast, staff, etc. According to Li et al. (2012), inadequate facilities or lack of comfort levels in the hotel room lead to lower consumer satisfaction levels. The same study also reports that food and beverage management, value for money, etc., are other important factors for consumers. Kim et al.'s (2016) New York hotels study report that hotel facilities, cleanliness, staff, and attitude are imperative factors influencing online review ratings.

The main factors that can influence online ratings of hotels are breakfast, cleanliness, comfort, facilities, location, staff, value for money, free Wi-Fi, etc.

### 3 Conceptual Model and Hypotheses

It is important to develop the conceptual model of this research to explore the main factors influencing online ratings of hotels. Figure 1 presents the research's conceptual model.



**Figure 1: Conceptual Model of the Research.**

Eight factors were identified in the literature review as influencing hotel ratings. They are used to develop the research's eight hypotheses. The following are the hypotheses:

- H1: The hotel's breakfast has a positive and statistically significant effect on the review score.
- H2: The hotel's cleanliness has a positive and statistically significant effect on the review score.
- H3: The hotel's level of comfort has a positive and significant impact on the review score.
- H4: Hotel facilities have a positive and significant impact on the review score.
- H5: The hotel's location has a positive and statistically significant effect on the review score.
- H6: The hotel's staff has a positive and statistically significant effect on the review score.
- H7: The hotel's value for money has a positive and significant impact on the review score.
- H8: The hotel's complimentary Wi-Fi has a positive and significant effect on the review score.

## 4 Research Methodology

In this research, we obtained the online review scores from the popular website of Booking.com. The website Booking.com provides overall ratings for the properties listed on its platform. In this research, we consider overall ratings as the dependent variable.

The online consumer review of www.booking.com is based on cleanliness, comfort, location, facilities, staff, value for money, breakfast, and free Wi-Fi. So, we collected the numerical aggregate ratings given by consumers to these eight factors. We consider these eight factors as independent variables in our research. We consider the star rating of the hotel as the control variable.

### 4.1 Data Preparation

We created the dataset for this research to test the hypotheses. The data for the overall rating and the eight factors are listed in the form of unambiguous numerical ratings. Accordingly, aggregate numerical rating data was collected from Booking.com for 172 hotels in Makkah. The 172 hotels included in the study were rated as follows: 1-star, 2-star, 3-star, 4-star, and 5-star. We designated symbol 1 as a one-star hotel, 2 as a two-star hotel, 3 as a three-star hotel, 4 as a four-star hotel, and 5 as a five-star hotel.

### 4.2 Variables

Eight independent, one dependent, and one control variable comprise the dataset generated in Microsoft Excel. The variables of the study are explained in Table 1.

**Table 1: Variables of the Study**

Variable Name	Definition
<b><i>Dependent Variable</i></b>	
Review Score (RS)	Consumers online overall numerical rating of the hotels
<b><i>Independent Variables</i></b>	
Breakfast (BR)	Consumers online aggregated numerical rating of the breakfast of the hotels
Cleanliness (CL)	Consumers online aggregated numerical ratings of the cleanliness of the hotels
Comfort (CO)	Consumers online aggregated numerical ratings of the comfort of the hotels
Facilities (FA)	Consumers online aggregated numerical rating of the facilities of the hotels
Location (LO)	Consumers online aggregated numerical rating of the location of the hotels
Staff (ST)	Consumers online aggregated numerical rating of the staff of the hotels
Value for Money (VM)	Consumers online aggregated numerical rating of the VM of the hotels
Free Wi-Fi (FW)	Consumers online aggregated numerical rating of the free Wi-Fi of the hotels
<b><i>Control Variable</i></b>	
Star Rating (SR)	The number of stars of the hotel

## 5 Estimation Results

### 5.1 Statistics and Correlations

With the Stata software to conduct our analyses, the descriptive statistics and correlations are shown in Table 2. The results show breakfast receives an average rating of 1.85, cleanliness 7.55, comfort 7.85, facilities 7.92, location 7.01, staff 7.25, value for money 6.75, free Wi-Fi 5.98, and review score 7.40, respectively.

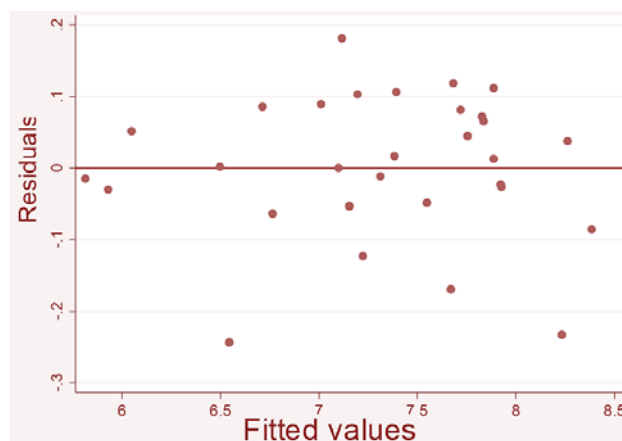
The correlation coefficient ( $r$ ) between independent variables is determined and interpreted with criteria that the value of  $r$  between 0.0-0.19 as a very weak correlation, 0.2-0.39 as weak correlation, 0.4-0.59 as a moderate correlation, 0.6-0.79 as strong correlation, and 0.8 or above as a very strong correlation. Table 2 displays the correlation coefficient between different variables. The correlation coefficients between variables are cleanliness and breakfast 0.31 (weak correlation), comfort and cleanliness 0.39 (weak correlation), facilities and comfort 0.47 (moderate correlation), location and facilities 0.57 (moderate correlation), staff and location 0.51 (moderate correlation), value for money and facilities 0.59 (moderate correlation), and free Wi-Fi and staff 0.21 (weak correlation). These results demonstrate that there is no issue of multicollinearity between independent variables. Also, the correlation coefficient between star rating (control variable) and breakfast is 0.52 (moderate correlation).

**Table 2: Descriptive Statistics and Correlations**

Variable	Mean	BR	CL	CO	FA	LO	ST	VM	FW	SR	RS
Breakfast (BR)	1.85	1									
Cleanliness (CL)	7.55	0.31	1								
Comfort (CO)	7.85	0.28	0.39	1							
Facilities (FA)	7.92	0.33	0.44	0.47	1						
Location (LO)	7.01	0.25	0.48	0.53	0.57	1					
Staff (ST)	7.25	0.32	0.48	0.44	0.49	0.51	1				
Value for money (VM)	6.75	0.06	0.59	0.52	0.59	0.33	0.53	1			
Free Wi-Fi (FW)	5.98	0.12	-0.04	0.09	0.09	-0.09	0.21	-0.07	1		
Star Rating (SR)	0.71	0.52	0.19	0.17	0.14	-0.15	0.08	-0.14	0.05	1	
Review Score (RS)	7.40	0.36	0.94	0.88	0.94	0.75	0.92	0.87	0.04	0.14	1

### 5.2 Multicollinearity and Heteroscedasticity

We built the regression model using dependent, control, and independent variables and checked for Variance Inflation Factor (VIF) to check for multicollinearity.



**Figure 2: Residual Values Fit Plot**

The highest mean value of VIF for the model was 1.55. Thus, the model shows the absence of multicollinearity concerns (Daoud, 2017). We also conducted heteroscedasticity diagnostics in Stata. We developed the residual values fit plot in Stata to check for heteroscedasticity (Figure 2). The residual values fit plot does not reveal any pattern. As a result, we can consider the data for the variables to be homoscedastic. Additionally, we perform the Breusch-Pagan / Cook-Weisberg test to determine heteroscedasticity. Table 3 summarizes the findings.

**Table 3: Heteroscedasticity Diagnostics**

Ho: Constant Variance	
chi2(1)	0.18
Prob > chi2 (P-value)	0.656

The null hypothesis in Table 3 is constant variance. This implies that the test presupposes the absence of heteroscedasticity in the data for the variables. The p-value is greater than 0.05, at 0.656. As a result, the null hypothesis of constant variance cannot be rejected. As a result, our data is free from heteroscedasticity.

### 5.3 Regression Analysis

Table 4 demonstrates the results of the regression analysis.

**Table 4: Regression Results**

Regression Statistics		ANOVA				
Observations	172		SS	df	MS	
F (13, 17)	56.65	Model	14.12	13	1.03	
Prob > F	0.0000	Residual	0.3	17	0.03	
Root MSE	0.14	Total	13.69	30	0.49	
	Coefficients	Std. Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.48	0.56	0.77	0.43	-0.76	1.8
Breakfast	0.01	0.01	0.26	0.88	-0.02	0.06
Cleanliness	0.34	0.04	5.12	0.01*	0.27	0.58
Comfort	0.38	0.05	6.88	0.01*	0.29	0.53
Facilities	0.48	0.06	2.87	0.01**	0.28	0.57
Location	0.23	0.05	3.42	0.04*	0.09	0.38
Staff	0.31	0.08	5.32	0.02*	0.25	0.54
Value for Money	0.18	0.16	2.12	0.06	-0.16	0.63
Free Wi-Fi	-0.03	0.03	-0.73	0.46	-0.07	0.04
Star Rating (SR)	-0.05	0.05	-0.95	0.38	-0.14	0.05

\*\* p<0.01, \* p<0.05

### 5.4 Hypotheses Testing

H1: The p-value of 0.88 (Table 4) indicates that the hotel's breakfast does not significantly affect the online review score. As a result, hypothesis **H1 is unsupported**.

H2: The p-value of 0.01 and coefficient of 0.34 in Table 4 indicate that the cleanliness of the hotel has a statistically significant positive effect on the review score. As a result, hypothesis **H2 is supported**.

H3: The p-value of 0.01 and coefficient of 0.38 (Table 4) indicate that the level of comfort at the hotel has a significant positive effect on the review score. As a result, hypothesis **H3 is supported**.

H4: The 0.01 p-value and coefficient of 0.48 (Table 4) indicate that hotel facilities significantly positively affect the review score. As a result, hypothesis **H4 is supported**.



H5: The p-value of 0.04 and coefficient of 0.23 (Table 4) indicate that the hotel's location has a significant positive effect on the review score. As a result, hypothesis **H5 is supported**.

H6: The p-value of 0.02 and coefficient of 0.31 (Table 4) indicate that the hotel staff has a significant positive effect on the review score. As a result, hypothesis **H6 is supported**.

H7: With a p-value of 0.06 (Table 4), the hotel's value for money has no significant influence on the review score. As a result, hypothesis **H7 is unsupported**.

H8: The p-value of 0.46 indicates that the hotel's complimentary Wi-Fi does not affect the review score in a significant way. As a result, hypothesis **H8 is unsupported**.

## 6 Discussion

This study decodes the factors that significantly and trivially influence online hotel ratings. We discover that the facilities, comfort, cleanliness, location, and personnel of hotels significantly influence their online ratings. These findings corroborate those of O'Connor (2008), Li et al. (2012), and Kim et al. (2016). The current study's findings also extend Alhamad & Singh's (2021) Makkah study, as they identified these factors as consideration and choice sets under the consideration set theory, whereas the current study identifies them as significant to influence online ratings.

Additionally, the research identifies factors that have a negligible effect on online hotel ratings. These are breakfast, complimentary Wi-Fi, and value for money. These findings corroborate Alhamad & Singh's (2021) assertion that free Wi-Fi and value for money are less relevant to tourists visiting religious destinations like Makkah. This research findings also extend Alhamad & Singh's (2021) findings, as they did not include breakfast. However, unlike O'Connor's (2008) research, ours found no evidence that breakfast has a significant effect on hotel online ratings in religious destinations like Makkah.

## 7 Conclusion

In summary, this research establishes the importance of online consumer reviews to enhance customers' satisfaction. Hotels can use the research findings to boost consumer trust and confidence (Singh & Agarwal, 2011; Singh & Grover, 2011a; Singh et al., 2011; Singh, 2018c) and enhance their satisfaction (Singh, 2011; Singh et al., 2011b; Singh, 2013; Singh et al., 2015; Singh, 2016). Therefore, the research findings create significant value for a religious heritage destination like Saudi Arabia to promote its hospitality and tourism industries and boost non-oil revenues as part of its Vision 2030.

This research deciphers tacit knowledge from online consumer reviews data using statistical methods. Using a dataset of 172 hotels in the Hail City of Saudi Arabia from the popular booking website of Booking.com, this research identifies key factors that influence online ratings of hotels. The findings of the empirical analysis informed two tenets:

(1) Factors of facilities, comfort, cleanliness, location, and staff significantly influence hotels' online ratings.

(2) Factors of breakfast, complimentary Wi-Fi, and value for money have a minor influence on hotels' online ratings.

This groundbreaking study unearths previously unknown information about the significant and trivial factors affecting hotel ratings. This is the first study of its kind in Saudi Arabia, deciphering the significant and trivial factors affecting hotel ratings using Makkah's most important religious heritage site as a case study.

The study findings can be applied in the following ways.

- The hotels in tourism destinations could use the study's findings to improve the critical factors contributing to their online rating.
- Hotels in religious destinations such as Makkah could use the information gleaned from this study to position their service offerings to survive and succeed strategically.
- Government agencies such as the Saudi Commission for Tourism and National Heritage could effectively use the study findings to promote the hotel industry and fulfill Vision 2030 goals.

## 8 Availability of Data and Materials

The corresponding author can provide access to the data and materials used in this study upon request.

## 9 Acknowledgements

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## 10 Contributions of Authors

Each author contributed equally to this study. The authors' contribution is acknowledged as follows:

Ibrahim Abdullah Alhamad: Conceptualization, funding acquisition, project management, resource management, supervision, substantiation, and writing - review & editing.

Harman Preet Singh: Collection, curation, and analysis of data, investigation, methodology, modeling, evaluation, validation, and roles/writing - original draft.

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