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## **Title: Reliability level in Tourist Recommendation Systems**

**AUTHOR:** Hend Farahat Issa, Farag

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Author signature Hend Farahat

UIB Master's Thesis Supervisor *Dr. Jaime Jaume Mayol*

Supervisor signature \_\_\_\_\_

Accepted by the Director of the Master in \_\_\_\_\_

Signature \_\_\_\_\_

# *Reliability level in Tourist Recommendation Systems*

## **1. Abstract**

Online recommendation and online reputation are becoming highly popular and crucial when planning to stay in a hotel. An increasing reliance on the online travel agency and user generated content as an information source when planning to stay in four or five stars hotels raises the need for more research into the reliability of the Online recommendations on online travel agency OTA's and tourist social media related to four and five stars hotels category.

**Purpose** – This paper aims to investigate the reliability level of online recommender systems relating to the hotels classification by comparing the most common online travel agency and touristic social media in Spain including TripAdvisor, booking.com, Expedia and hotels.com.

**Design/methodology/approach** – For better result we have implementing a filter process by using specific websites to collect our data, we investigate three independent variables: the numerical rating of the review, the hotel categories and the geographic area. Using a sample of 100 hotels randomly selected. In order to reinforce our findings, we compared our study on three Spanish islands, Palma de Mallorca, Tenerife and Gran Canarias.

The research design is presented with introduction, theoretical background, then data collection details and empirical study using excel and SPSS methodology for analyze the data and hypotheses, the final part focus on the results, discussion, then conclusions, limitation and future of research.

**Findings** – The results indicated that online recommendation system is reliable with the four stars hotels classifications while it is negative with five stars hotels, some online recommendations system have a strong correlations with hotel stars classifications such as TripAdvisor and hotel.com.

**Research limitations/implications** – large number of sample, new websites and new geographic area should be analyzed.

**Practical implications** – The results provide fruitful managerial implications for both hotels managements, and researchers. the study showed that hotels need to manage important information regarding online reputation to gain the maximum support from the customers to cope the hotel classifications stars standard with new challenges in social media recommendation system.

**Originality/value** – our work is a first study step towards understanding the reliability level in user-generated ratings in the context with four and five stars hotels classifications in Spain which is rapidly and unique market.

**Keywords:** online reputation, touristic recommendation system in Spain, reliability on touristic recommendation system in Spain,

## **2. Introduction:**

Nowadays People are commonly using online services and social media when they are planning the travel or while they are posting their satisfaction about the tourism product such as hotel stay or to share their experiences, ask questions about their destination, and seeing the reviews about their destination, all that support travelers when planning for their travel.

This research will try to examine if there is a relation between four and five stars hotels and the scoring system in online travel agencies also will try to find the reliability degree between the external scoring and the hotel stars.

Social media such as TripAdvisor represent a fundamental part and vital role for online tourism domain within the context of trip planning (Xiang and Gretzel 2010). Now travelers become more involved by creating their experience in physical areas and virtual areas. Travelers have the power by Social engagement which is a positive and critical for sharing traveler's feedback and satisfaction. We believe that as such, customer engagement allows tourism firms to improving the effectiveness of business operations.

Visitors trust more two way communication and the intelligent interactive which make travelers part of creating the tourism products, than advertising which focus only on the destinations positive side. Alžbeta Királ'ová (2014); Chung et al., (2015). Xiang and Gretzel (2010) confirmed that human centric approach is vital to have the recommendation system useful in decision making, furthermore travel reviews in social media are the most outstanding (Christou 2016).

On the other hand in the hospitality and hotel industry, the Hotel classification systems like stars system are widely used in the accommodation reflecting an indicator on the standards and quality for customers and travel agencies that they will get at the hospitalities firms and hotels. Furthermore, it can reflect useful marketing for hotels and destinations. Usually customers need to enter the service such as Hotels and then he or she can decide his satisfaction by both the interactions with customer service staff and the standard of service facilities provided and that could be reflected on the recommendations and rating on the social media that been wrote by travelers.

According to the quality standard for AA hotels, there are five stars ranging quality the hotels that have five stars rating are the hotels providing the higher quality in services and facilities in five important areas cleanliness, service, food, bedrooms and bath rooms. The customers for five and four stars hotels are expecting high level of services when hotels increase the stars for example for AA standard the hotels score quality are Quality Bands One Star 30 – 46%, Two Star 47 – 54% , Three Star 55 – 69%, Four Star 70 – 84%, Five Star 85 – 100%.

According to Eurostat/statistics (2015) Spain was the most common tourism destination in the EU for non-residents, with 270 million nights spent in tourist accommodation establishments, or 21.3 % of the EU-28 total. The highest international travel receipts in 2015 were listed in Spain (EUR 50.9 billion). Moreover, Spain is the second destination in Europe in earning from tourism. Top four destinations are Canary Island 29% of total market demand followed by Balearic Island 25%, then Catalonia and Andalucía according to hosteltur.com report. Spain has the type of sun and sand tourism which is the most popular and appealing type of tourism as a result of the good weather, the natural resource which Spain has and its present in the coast that was the reason for choosing Spain in our study.

**The objective** of this paper:

There are two reasons for choosing reliability level in touristic recommendation system focus in hotel category. First, in order to cope the hotel classifications stars standard with new challenges in social media recommendation system. Sparks, and Victoria (2011) found that

future consumers may depend on other consumer reviews because they see it relatively fair and independent from marketing.

Second, for more cooperation between hotels and touristic recommendation system. Users perceive about firms' action influence online reputation (Paola Barbara Floreddua, Francesca Cabiddua, and Roberto Evaristob, 2014).

Our study will try to find out if the relation between the stars of a hotel and the scoring in online recommendation system is reliable.

To implement our study we target both four and five stars hotels classification to confirm that there is a significant relationship between online recommendation system in OTA and TSM with official hotels classifications (hotel stars).

Also to evaluate the reliability degree on the online recommended systems by comparing 3 of most visited island in Spain, three of top tourism destinations in Spain. Normally the visitors segment for the islands has the same expectations when it is all sun and sand tourism. For accurate result we make a comparison between three Spanish islands "Balearic Island, Garn Canarias and Tenerife to exanimate the reliability by the most utilized online travel agencies in Spain.

We compared between four different touristic recommendation systems (online travel agency, and touristic social media) OTA's and TSM (TripAdvisor, Booking.com, Expedia, and Hotels.com).

Trying to examine if there is a relation between the stars of a hotel and the scoring in recommendation systems, and determine the reliability degree between the external scoring and the number of stars.

In order to meet the purpose of this work, it is necessary to take several aspects into account:

- Introduce basic knowledge about reliability, online recommendation system, online reputation, and user generate content (TSM) .
- Classify the TSM we are going to use as our source of data analyzes the importance of the ORS, in general terms and in Tourism.
- Collect information and analyze them in order to have our hypotheses answered.

### **3. Theoretical concepts / Literature review**

#### **1.3. Reliability:**

(Jøsang and Pope 2005) defined Reliability as an important component for word of mouth (WOM) and recommendations. Reliability defined as trust, it is subjective to what an individual A expect an action from another individual B while the individual A expect his benefits from the action come from individual B.

(Christou 2016) explained that a higher contact with social media gives a higher trust Sichtmann (2007) and Sparks, and Victoria (2011) asserted that the motivation of purchase affected positively by trust in a firm. Firms often need to build a trust in its product to decrease customer doubt in purchasing its product (Christina Sichtmann and Susanne Stingel 2007).

Reliability of reviews in sites such as TripAdvisor has an uncompromising question due to three reasons. first, several sites such as eBay or Expedia allow reviews for users who complete the deal, while in trip advisor any user can post reviews. That bring uncertain of some reviews could be fake review for business interests to enhance or damage the reputation of hotels. Second, the motivation to write the reviews are vary, some make reviews to mislead others make reviews to altruistic. Third, one hotel could have different level of expectation (Chua, A. Y., & Banerjee, S. 2013).

#### **2.3. Online reputation ( OR )**

Online reputation is an important factor that controls the travelers' decisions to choose specific destination and affects the hotel performance. Recently a global study by TripAdvisor

has confirmed that online reputation is one of the two top factors impacting the accommodation decision, a survey has done by TripAdvisor 2015 found that 89% of answers said reviews had the most influence on travelers booking decisions . Furthermore more than 80% of answers said that the travelers booking influenced by reviews and 54% answers will not book a hotel if doesn't have reviews.

Online reviews are considered as the main source of information for travelers. On line reputation has been defined as the collective opinion and public information collected from trusted group of agents of social community (Yu et al. 2010).

Reputation is combined trusted opinion of public knowledge from the community members of a group of agents (Dorcák, Pollák, and Svetozarovová 2015).

A research conducted by Sparks, and Victoria (2011) noted that customers prefer independent third party opinion when they purchase online to reduce the risk of online purchase. The online electronic word of mouth (eWOM) is likely to participate in development of trust and reputation.

A good reputation can empower the firms to charge a premium for products and services, impacting customer preference when competitive are applicable. Also, it can generate stakeholder support in times of debate (Paola Barbara Floreddua, Francesca Cabiddua, and Roberto Evaristob, 2014).

Travel review who contribute to TripAdvisor are mostly motivated by fundamental motives of enjoyment, concerns for other travelers or the willingness to help the firm. Meanwhile only some are motivated by the opportunity for venting (Yoo and Gretzel, 2008). Moreover, (Christou 2016) indicate that travelers intend to use social media most when they perceive greater benefits and greater altruism, availability, individual predisposition or trust.

Online relationship built between customers and a positive reputation firms requires customers to understand and to keep many information about the firm in order to reduce the risk in buying decision (Floreddu, Cabiddu, and Evaristo 2014). Reputation allows creation of a trustee between consumers and firms, and reduce uncertainty in virtual spaces.(Kotha, Rajgopal, & Rindova, 2001).

In today's modern business it becomes essential for firms to have a positive reputation which is one of the key concepts that affect public accept on firm activities and operations so they have to take a responsible approach (Dorcák, Pollák, and Svetozarovová 2015).

Online reputation has developed to have Online reputation management (ORM)which is is a management search for the brand query and negative reviews, in which Reputation Management become hard to control the negative reviews and feedback as a result of advanced social media. The main stage for ORM is to know the feedback and brand of your firm or services online.

An example for online reputation TripAdvisor branded as the largest travel community reaching with up to 375 million monthly users in 2015. It continues growth and increase in traffic to their website more than doubled (+103%). As a result the number of hotels and firms on TripAdvisor has the same increase of 42% in fewer than 3 years in 2015. (Horwath HTL 2016).

ORM: is to assess the impact of management interaction on customer reviews

### **3.3. Online Recommendation Systems (ORS):**

Over more than a decade at the same time of trip advisor had born in 2000 the online travel review have been exist. Recommendation system (RS) is a combining of information of users opinion, for a set of items, say, movies, songs, books, gadgets, to help users recommendations of items (J. Bobadilla et al. 2013).

Online ratings are a quantitative summary in form of stars or points to reflect the opinion and experience about product and services (Alexander Zauner, Monika Koller, and Arne Floh 2013).

Recommendation systems linked to online platforms that offer services for travelers to help in their decision making. taking into account the nature of travel planning that include many tasks regarding destination , accommodations, activities, restaurants that help in research cost and enhance decision quality (Park and Kim 2017).

Recommendation systems help customer in taking good decision in purchasing as they present overall product score in term of rating (O'Mahony and Smyth 2009). A progressively important for reviews had arisen from the User Generated Content (UGC) because its function of providing the customers by good purchasing decision as reviews have advantage in terms of communication scope and interact level. The reviews consist of product overall score in form of rating and review text about the product or service.

These reviews work as a kind of recommendation explanation (O'Mahony and Smyth 2009; Yoo and Gretzel 2009), also online reviews are usually valence, difference and magnitude of reviews with valence of importance for business performance (Phillips et al. 2017).

Over one third of travel businesses reviewed on TripAdvisor are accommodations (H. Lee, Law, and Murphy 2011; TripAdvisor 2012). Consumer reviews are mostly important because they are from a consumer's perspective offers indirect experience more credibility than marketers (Bickart & Schindler, 2001; Smith, Menon & Sivakumar, 2005; Yoo and Gretzel 2009).

RS is characterized by different types of filtering algorithms like collaborative filtering, content based filtering, demographic Filtering, and hybrid filtering (Max 2009). Reviews present a significant drive for consumers to compare and evaluate the services and the product (Phillips et al. 2015). Sparks, and Victoria (2011) asserted that recommendations from other consumers have more impact in choosing the product than expert advice or firm advisors the same as planning a trip.

Xiang and Gretzel (2010) found that large ratio of travelers use social media when evaluating a destination. Consumers reviews have the possible to improve or decrease a brand as consequence the impact on a firm's reputation (Sparks, and Victoria 2011).

Phillips et al. (2015) argue that the star rating reviews generate improbable distributions and afield to reflect true product quality. However, the increasing numbers of the experienced customers online opinions create new opportunities for fraud and deception (Yoo and Gretzel 2009; Sparks, and Victoria 2011).

#### **4.3. User generated content (UGC):**

In 2004 web 2.0 has been introduce more static HTML to a more dynamic web empowered the internet user by generating huge number of user generated contents (UGC) allowing two way information communication on hotels and travel destinations (Xiang and Gretzel 2010). In the past decade the need for application of social media applied to hospitality and tourism domain had born from the importance of Web 2.0. It has resulted in many UGC websites include online reviews, recommendations, or opinions (Phillips et al. 2015).

Web 2.0 or "Travel 2.0" is intrinsically made the change of the way of search for travelers, find, read, trust also collaboratively share information about tourism product (Christou 2016). Recently tourists are lean more on using new technologies while they are planning a trip, this reality is clear by the fact of internet daily use in our life. A steadily growing research and articles focusing mainly on aspects of the Internet and tourism (Zhu and Zhang 2010). A significant impact on the tourism by the intent usage had been noticed producing many studies examining varies issues related to the topic (Rob Law, Shanshan Qia, and Dimitrios Buhalisb 2009).

The importance of UGC is vital when the tourism firms implement market strategy appropriate with the customers to improve the services and product quality by which the consumer need. Therefore, application of web 2.0 has been rapidly engaged and developed with the hospitality businesses as a consequence it facilitate to travelers to share their

experience and information (Ghose, Ipeirotis, and Li 2012). It contain content syndication, customer ratings, tagging, wikis, web forums / board messages, virtual worlds, podcasting, blogs and online videos (Christou 2016).

Lately, the world online experience in the tourism become very important (Lingling Gao and Xuesong Bai 2014). As result many companies offered information's and products about the destinations. Ghose, Ipeirotis, and Li (2012) assert that customers who intend to purchase in a hotel product are the higher category in percentage more than any other product category representing 87% customers rely on the online UGC.

Organizations tourism industry like Travel agencies collaborate with information technology (IT) to provide reliable and accurate information they use it in varies department of the tourism industry (Zhu and Zhang 2010).

Finally the progressively growth of Web 2.0 applications bring new tools to customers to create and consume user generated content for hotels, travel destinations, and travel services (Xiang & Gretzel, 2010).

#### **1.4.3. Touristic Social Media (TSM):**

Touristic Social Media (TSM) Includes the applications that permit the users and customers to post or include various online information for the purpose of educate other customers about product, services and brand (Xiang and Gretzel 2010). Customers depend on a wide range of internet based source as social media and UGC before making a purchase (Ghose, Ipeirotis, and Li 2012). An increasing number of travellers are using the Internet for travel planning (Qiang Yea et al. 2011). Xiang and Gretzel (2010) noted that social media has a serious role as information sources for travellers.

Social media has three main theories; Micro-theories interact with the information obtainable online and the individual social actor's communication. Macro-theories Interact with social media content, the structure and dynamics of social actors. Pseudo-theories interact with the recently developed conceptual in marketing (Malik, F., Asif, M., & Wali, S.2016).

The progressive growth of web 2.0 gives the power to the internet and creates huge number of UGC that allows way of communication on hotels furthermore increase the number of user on travel planning. Moreover it turned travel search information to be one of the most popular activities (Qiang Yea et al. 2011). Web 2.0 based travel information consider simple way to obtain tourism information more credible and more useful than the traditional tourism market (Christou 2016).

a new shape of word of mouth known as social media giving the ability for individuals to share information's and a wide delivery through specific product review sites (e.g. <http://www.tripadvisor.com/>; <http://www.virtualtourist.com/> (Sparks, and Victoria 2011). Social media simplify an effective connection between firms and customers, and cooperation and dialogue with stakeholders (Paola Barbara Floreddua, Francesca Cabiddua, and Roberto Evaristob, 2014).

Furthermore the company reputation on social media built through the relation between the internet users and the company which can be easily improved or destroyed. The company has to understand that its reputation on social media affected by social media users perceive (Floreddu, Cabiddu, and Evaristo 2014).

#### **Trip Advisor:**

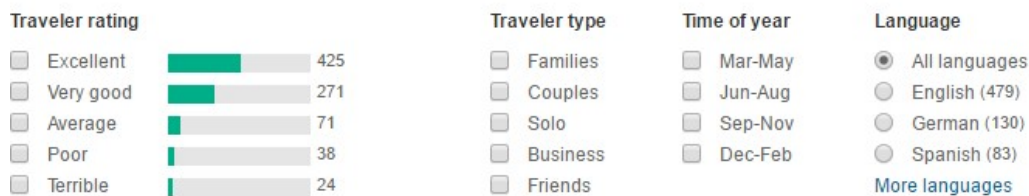
In February 2000 TripAdvisor launched, it becomes branded website and one of the most popular travel community sites. There are more than 50 million monthly visitors, 20 million members and more than 60 million travel reviews on the website in January 2012 (TripAdvisor, 2012; Kusumasondjaja, Shanka, and Marchegiani 2012). It reached out to 375 million monthly users in 2015. It had changed the way of searching for travelers by having information's and experience from other travelers those provides travelers with information's, reviews, opinion and more information.



By 2010, it was the largest travel site in the world in 24 countries with 16 languages, listings 455,000 hotels. It contained more than 40 million reviews from 35 million monthly visitors, they had 21 hotel reviews every minute. TripAdvisor expanded into international markets like China which represent a challenging market for many big companies on April 2009. They launched in china with another name Dao Dao, it had 40.000 chines hotels by August 2010 they had 600.000 reviews and 6.000000 monthly visitors (Gupta and Herman 2011). TripAdvisor has only one website, it is not mainly depend on booking as Expedia and Priceline which has a partnership with both for advertising and Booking feature.

## Reviews (829)

Write a Review



Show reviews that mention

Photo from TripAdvisor for hotel recommendation system

**2.4.3. Online travel agencies:** The Online Travel Agency industry is consist of different size firms, small, medium and large size. The leading companies have different branded websites with different services, most of known online travel agencies are owned by Priceline or Expedia for instance Booking.com sell hotels, books accommodations in hotels owned by Priceline, There is union among the major companies in the industry.

**Booking.com:** The website lists approximately 1,200,000 properties in 225 countries and books 1,200,000 room nights per day, available in 40 languages.

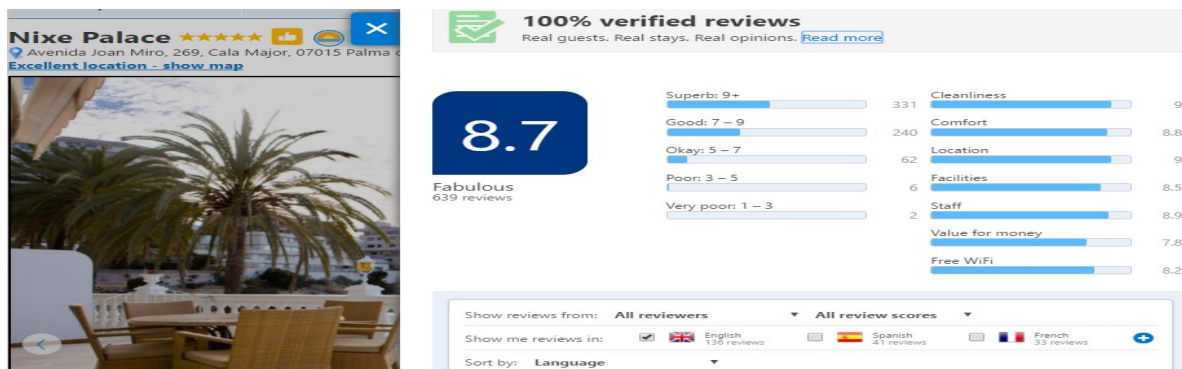


Photo from booring.com for hotel recommendation system.

**Expedia:** is one of the largest companies Expedia's acquisition of Orbitz, Expedia and Priceline own stakes in Ctrip which is use only in china market. Expedia include over than 350.000 properties in more than 1.2 million online bookable vacation rental listings in 200 countries, Expedia own Expedia.com it is localized in 33 countries, Hotels.com, Hotwire ,Travelocity Egencia, CarRentals.com ,and Orbitz.com Cheaptickets.com. Expedia is the only one which doesn't distinguished among various type of comments of good, very good ect it only gives the total score.



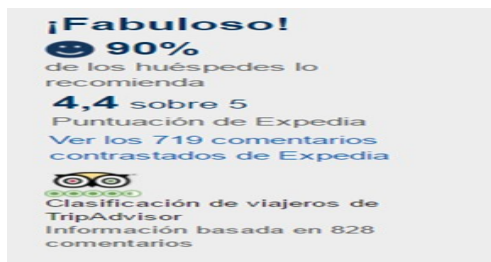


Photo source Expedia.com for hotel recommendation system.

**Hotels.com:** owned by Expedia it has 89 localized in 39 languages, offers accommodation for travelers. It offer single product that’s was the reason to consider it as the first point allowing Expedia to evaluate any market. ( Expedia annual report 2016).

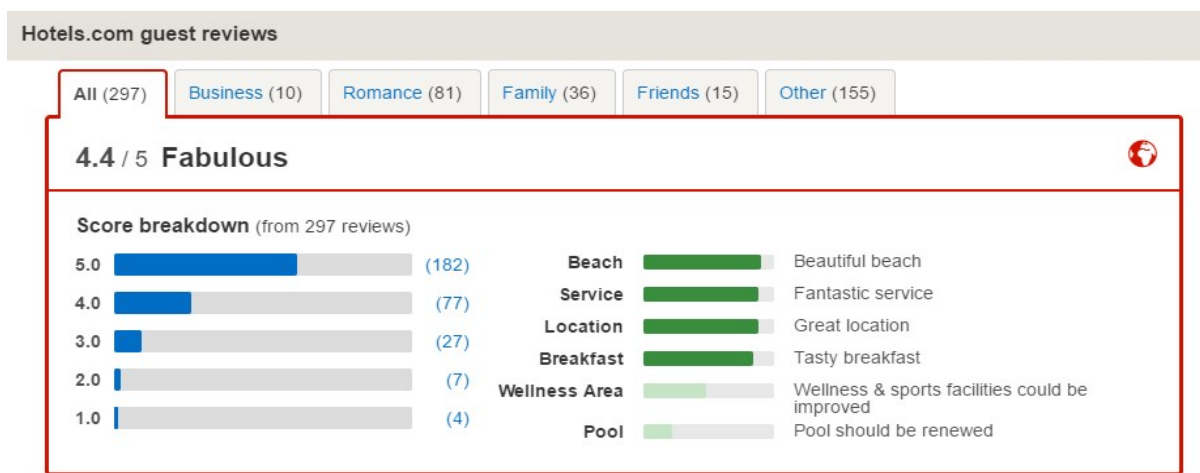


Photo of scoring system on hotel.com website.

**Project Description:**

the project consist of analysis for the online recommendation system ORS (scoring system) for a set of 100 hotels .This scoring result have been compared with the hotel quality according to the star classifications (4 and 5 stars) in this sense and Based on the above discussion, we propose the following hypothesis:

**H1:** The online reputation on TRS is reliable according to the star category of the hotels.

**H2:** there is a significant correlation between RS and hotel category

Referring the H1, we have established a first reliability degree of one point. Further studies could consider different ranges. So the range vary from more and less than 0.5 points. In this sense, the TRS score of hotels, according the category, should be:

- A value between 3.5 and 4.5 for 4 stars hotels. If the TRS score of 4 stars hotels are included in this range, then we will consider that the 4 stars TRS scoring is reliable.
- A value between 4.5 and 5.5 for 5 stars hotels. If the TRS score of 5 stars hotels are included in this range, then we will consider that the 5 stars TRS scoring is reliable.

**Project Objective:** to find out if the relation between the stars of the hotels and online recommendation system is reliable. Moreover, if there is a positive relation between the stars of a the hotels and hotel ranking.

Some main objectives are proposed:

- To analyze the importance of the ORS, in general terms and in Tourism
- To analyze the scoring for a set of hotels in some ORS
- To compare the ORS scoring with the theoretical score that the hotel should reach, according to the stars category system.

As secondary objectives, we consider:

- Identify the TRS with higher hotel scoring
- Analyze the relation between hotel category and each ORS.
- The amount of comments for each hotel in the different TRS, in order to determine which is the most ORS used in Tourism

#### **4.2. Methodology and data sample**

##### **Data collection methodology:**

The followed methodology consists of select a set of hotels and to access to different TRS, in order to determine the scoring in every TRS:

- As mentioned earlier, data for this analysis were drawn from four TRS the most popular sources of reviews for hotels TripAdvisor, booking.com, hotels.com and Expedia.

Table 1: Sample description

Population	Recommendations on TripAdvisor, Booking.com, hotel.com and Expedia
Location	3 islands in Spain (Palma de Mallorca, Tenerife, Canaria).
Data collection procedure	Through 2 filtering websites specialized in comparing hotels price, location.
Database source	Hotel-scanner.com and skyscanner.com, TripAdvisor
Population size	231825 total reviews for 100 hotels in 4 different travel agencies.
Sampling procedure	Hotel-scanner.com and skyscanner.com. are the main websites then access via them to different online travel agencies.
Collecting time fram	5:9 May 2017

The data of the analysis was primary data collected through implementing a filter process to collect data via two websites specialized in comparing the TRS, price, location. We collect data from Hotel-scanner.com it is a comparison engine and have access to over 200,000 destinations across 195 countries which allows researchers to have summery and comparison by access to the geographic area needed. And although through skyscanner.com. To enhance our result we compared our study on three Spanish islands, Palma de Mallorca, Tenerife and Gran canary.

It was a two-steps process, In the first step, using hotelsscanner.com which providers an access to the geographic areas we investigate three independent variables: the numerical rating of the review, the hotel categories and the geographic area, second step collected the numbers of ranking in order to collect the score ranging from 0 to 5 range of qualification.

Table2: Touristic social media and online travel agencies profile

Website name	Category	Scoring system average	partnership	Who can post on the website
TripAdvisor	Travel social media	Scoring system 1 to 5.	has a partnership with Expedia Inc & Priceline	Any member
Booking.com	Online travel agency	Scoring system 1 to 10.	Part of Priceline group	Customer reviews only;
Hotels.com	Online travel agency	Scoring system 1 to 5.	Part of Expedia Inc	Customer reviews only;
Expedia	Online travel agency	Scoring system 1 to 5.	Expedia Inc owns hotels.com.	Customer reviews only.

As can be seen from the previous table we first analyzed and compared the four TRS used to compare the data obtained, we have chosen the four previous touristic recommendation systems to obtain for the same hotel different score from each RS then to analyze these data.

- The accessed TRS have been through TrypAdvisor,hotels.com,booking.com and Expedia
- The set of hotels has contained 100 hotels for Tenerife, Gran Canarias and Palma de Mallorca .The hotel selection has followed a random system, considering hotels with four and five stars, remarks and comments in our four TRS. Our data base analysis shows that the most selected hotels in our sample were from Palma (50%) followed by Tenerife (28%), Canary island (22%).

We have collected the number of comments, the score. After that we have processed the information in order to calculate the score in a 0 to 5 range of qualification.

**Analysis methodology:** We used combining methods SPSS and Excel to analyze the data and to have our final result.

## 5- Results and discussion

### 5.1. Data collection

The data collection results in a table of scoring with the following information:

- The name, stars and geographical area of a set of 100 hotels
- The number of comments and scoring in every TRS
- A comparison between the scoring at the different TRS and the number of stars of the hotels.

For example, in the next table you can see the obtained data for a specific and random selected hotel as we collect the 100 hotel data:

Table 3:one hotel as a sample for the 100 hotels of the data collecting.

Name	Stars	Geog. Area	Type	TripAdvisor						
Hotel Saratoga	4	Palma	City	Comments	VG	G	N	B	VB	Score
				1045	224	298	97	37	25	4

Name	Stars	Geog. Area	Type	Booking								
Hotel Saratoga	4	Palma	City	Comments	VG	G	N	B	V B	Score	Score calculate	Score
				2333	232	232	232	22		8.3	4.15	4

Name	Stars	Geog. Area	Type	Hotels.com							Expedia	opinion
Hotel Saratoga	4	Palma	City	Comments	VG	G	N	B	VB	Score	Score	
				339	115	171	33	14	6	4.1	4.2	465

As can be seen from the previous sample which represent the process of collecting the data this sample for one hotel, we have the same collecting data for 100 hotels, we have collect the name the hotel, what is the stars classification, how many comments obtained in Trip advisor, booking.com, hotel.com and Expedia ,how many comments in each type of comment then the total score which is on the home page of the RS.

Type of comments are VG refer to very good, G refer to good, N refer to not bad, B refer to bad, VB refer to very bad. Finally the total recommendation score. As we can notice for Expedia we collect only number of comments and total score as it does not have type of

comments criteria in their evaluation, also we have in booking another range of scoring which is from 1:10 we implement an equation to have all score from 0:5 the same as the other RS:

**Table 4: Descriptive Statistics**

Descriptive Statistics						
		Hotel 4and 5 stars	TA score	BO score	HO score	EX score
N	Valid	100	100	100	98	99
	Missing	0	0	0	2	1
<b>Mean</b>		<b>4.40</b>	<b>4.03</b>	4.15	<b>4.17</b>	4.09
Std. Deviation		.492	.223	.575	.658	.980

As can be seen from the previous table the average value of overall rating among all 100 hotels including 4 stars hotels and five stars hotels was around 4.17: 4.03, which suggests that hotels online recommendation ranking mean are in general almost within 4 stars category or more, this result indicate that the mean for all TRS are not equal to 5stars.

The next table represents our result for the reliability between each four and five stars hotel categories with TRS.

Table 5: online recommendation systems in each TSM comparing with hotel star classification.

Hotel stars category	average of TA Score	average of HO Score	average of Expedia Score	average of BO Final score	Averages per category	% of difference (including all decimals)	Range of accepted values"	In accepted range of values
4 stars	4.05	4.11	4.03	4.11	<b>4.07</b>	1.83%	3.5, 4.5	Yes
5 stars	4.50	4.43	4.20	4.48	<b>4.40</b>	-11.96%	4.5, 5.5	No
Total general	4.23	4.24	4.10	4.26				

As can be seen from previous table we have found that four stars hotels is reliable with hotel scoring system on TRS with range of acceptance value between 3.5:4.5, we found 4 stars are in accepted range more than 4 stars (the score results in TRS are 1,83% over the medium score according to the category). There is a low reliability between five stars hotels with the hotel scoring system on TRS with reliability level is less than the actual standers (so, 5 stars hotels have a TRS qualification 11,96% below the score category) 5 stars hotels are not reliable with hotel scoring system on TRS are less in range of acceptance value between 4.5:5.5.

**H1:** The online reputation on TRS is reliable according to the star category of the hotels. Our hypothesis is accepted with 4 stars hotels but not accepted with five stars hotels.

Furthermore we can see, according to the previous results, it is a positive relation between hotel stars category and the recommendation system in four stars category while it is a negative relation in five stars category, so our hypothesis is accepted with four stars hotels but refused in five stars hotels.

By using SPSS methodology we made an analysis to study whether there are a positive or negative correlational between the hotels stars category and the ranking obtained in each recommendation system TA,BO,HO,EX.

Table 6: correlations between the hotel category with each ORS, and ORS's with each other.

	Hotel Stars Category	TA recommendation system	HO recommendation system	Ex recommendation system	BO recommendation system
Hotel Stars Category	1	<b>.258**</b>	<b>.294**</b>	.177	.076
TA, recommendation system	<b>.258**</b>	1	-.106	-.059	.122
HO, recommendation system	<b>.294**</b>	-.106	1	<b>.574**</b>	.097
Ex recommendation system	.177	-.059	<b>.574**</b>	1	.102
BO recommendation system	.076	.122	.097	.102	1

Correlation here means a Pearson correlation which measures the strength relationship between two variables. we analyzed 2 variables in each correlation ,we have tasted if the relation between TA and hotels category is positive or negative , another analysis between Booking.com ,Hotel.com and Expedia to test which touristic recommendation system is most reliable with the star standard .

We have found that there is a significant correlation between the hotels category as stars classifications and hotel ranking on trip advisor recommendation  $r(100) = .258^{**}$ ,  $p = .010$ .also for hotel.com  $r(98) = .294^{**}$ ,  $p = .003$ .while it is not significant correlation between the hotel category and the recommendations on Expedia and booking.com.

We also found a significant correlation between TA recommendations system and HO, also we found correlation between both Hotel.com and Expedia and that could be because of hotel.com is part of Expedia Inc.

While booking.com doesn't have a significant correlation with hotel stars category or any other RS.

**H2:** there is a positive correlation between the hotel stars category and hotel ranking on ORS. The hotel stars category has a significant correlation with TA (TripAdvisor) RS (recommendation system) and HO (Hotel.com) RS which is according to our proposed Hypothesis is accepted this finding is supported by Xiang and Ulrike Gretzel (2009) findings which found that TA and some other social media considered more comprehensive and primary online travel information sources.

## 5.2. Set of hotels

As can be seen from next table, we collected a sample of 100 hotels four and five starts category, from three Spanish islands Palma de Mallorca, Tenerife and Gran Canaria.

**Table 7:** crosstablation for geographical area with hotel categories.

### **Geographic \* hotel category Crosstabulation**

Count

	hotel category		Total
	4	5	
Palma	32	18	50
Tenerife	13	15	28
canaria	15	7	22
Total	60	40	100

we have 60 hotels of 4 stars category, and 40 of 5 stars category, we collected from Palma de Mallorca fifty hotels 32 hotels classified as four stars classification according to Hotel Classification Systems from World Tourism Organization, 18 hotels classified as five stars hotel , we collect from Tenerife twenty eight hotels with two categories' 13 hotels classified as four stars classification according to Hotel Classification Systems from World Tourism Organization, 15 hotels classified as five stars hotel, we collect from Gran Canaria twenty two hotels 15 hotels classified as four stars classification according to Hotel Classification Systems from World Tourism Organization, 7 hotels classified as five stars hotel.

## 5.2. Number of comments:

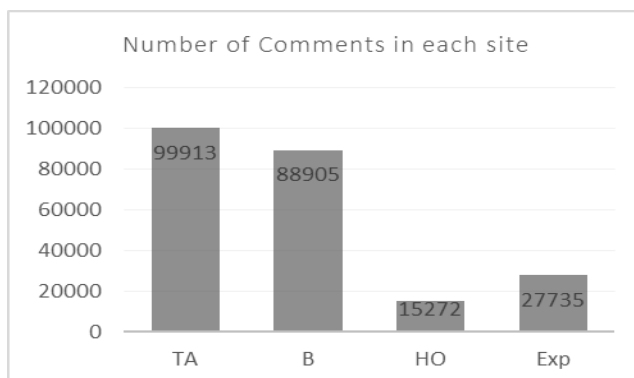
We analysed the number of comments to each TRS in each geographical area

**Table 8:** represent the number of comments in each TSM and OTA's in each geographic area.

Area	TripAdvisor	Booking.com	Hotels.com	Expedia	Total
Palma	31108	<b>45632</b>	8607	15183	100530
Tenerife	<b>49484</b>	22353	3716	7169	82721
Gran Canaria	19321	<b>20921</b>	2949	5383	48574
Total	<b>99913</b>	88906	15272	27735	231825

As can be seen from the table that booking.com is the most used in Palma then TripAdvisor is the most used in Tenerife, booking.com is the most used in Canaria, this result indicates that in general the highest number of comments in tourism is TripAdvisor that can indicate that travellers tend to use TA more than the other RS. from 100 hotel samples we have got 231825 comments, this result indicate that travellers rely on RS in their travel this finding are supported by (Sparks, and Victoria. 2011) travelers are willing to depend on social media in planning a travel due to the benefits received.

Graph1: the number of comments in each recommendation system.



We collect data of 231825 total reviews, According to the number of comments, in TripAdvisor we found total reviews from TripAdvisor 99913, total reviews from booking.com 88906, total reviews from hotels.com 15272, total reviews from Expedia 27735, total reviews from Palma 100530, total reviews from Tenerife 82721, Total opinion from Canarias 48574. from previous we can have a result that TripAdvisor is the most used in reviewing and Hotel.com is the lowest used in reviewing, also Palma as a geographical area is the highest in reviews Gran Canaria is the lowest in numbers of reviews.

Table 9: The percentage of comments in each TRS used in each island, over the amount of the TRS comments.

Area	TripAdvisor	Booking.com	Hotels.com	Expedia
Palma	31,14%	51,33%	56,36%	54,74%
Tenerife	49,53%	25,14%	24,33%	25,85%
Gran Canaria	19,34%	23,53%	19,31%	19,41%
Total	100,00%	100,00%	100,00%	100,00%

As can be seen after analyzing the highest percentage of comments in each RS, we have found that the highest percentage used in TripAdvisor is in Tenerife with percentage 49.53% form total comments in TripAdvisor, for booking.com the highest RS in percentage used is in Palma 51.33% also the highest percentage of total comments in hotels.com is in Palma 56.36%, finally the highest percentage of comments in Expedia is in Palma with percentage 54.74%.

This result means that visitors who visit Tenerife tend to use more TripAdvisor than the other RS in recommendation for four and five hotels, also visitors who visit Palma tend to use more hotels.com, Expedia and booking.com.

Table 10: percentage of island comments in TRS, over the amount of the island comments

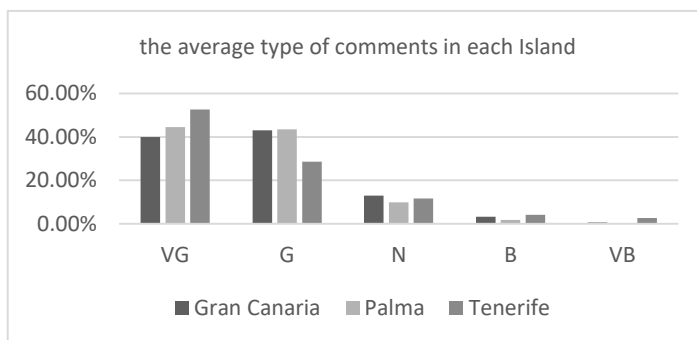
Area	TripAdvisor	Booking.com	Hotels.com	Expedia	Total
Palma	30,94%	45,39%	8,56%	15,10%	100,00%
Tenerife	59,82%	27,02%	4,49%	8,67%	100,00%
Gran Canaria	39,78%	43,07%	6,07%	11,08%	100,00%

To estimate the most used RS in each island we have analyzed from the total comments of the three island the highest RS used in Palma is booking.com 45.39 %, in Tenerife TripAdvisor is the most used 59.82% while in Grand Canaria most used RS is Booking.com 43.07%.

Lastly, regarding type of comments in every TRS we distinguished between different types of comments:

- Very Good Comments
- Good Comments
- Normal Comments
- Bad Comments
- Very Bad Comments.

Graph 2: The average type of comments in different geographic area.



As can be seen from the graph that most comments are Very good then good, Tenerife has the highest average of comments as very good then Palma finally Grand Canaria has the lowest average of comments .the following tables will represent the average of comments type in each RS and in each island.

Table 11: average score for type of comments in TripAdvisor

Goegrphic area	VG	G	N	B	VB	Total	% comments over general
Gran Canaria	51.88%	31.44%	10.97%	3.50%	2.21%	100.00%	21.10%
Palma	48.01%	34.61%	11.25%	3.98%	2.15%	100.00%	30.33%
Tenerife	52.70%	28.72%	11.68%	4.17%	2.73%	100.00%	<b>48.58%</b>
Total general	51.11%	31.08%	11.40%	3.97%	2.44%	100.00%	100.00%



As can be seen after analyzing the type of comments for TripAdvisor we have found that most of comments in TA are very good with 51% then good 31.08%. and this result indicate that customer using TA to recommend four and five stars hotels tend to give very good and good recommendations with total 82.19%.

Table 12: average score for type of comments in booking.com

Geographic area	VG	G	N	B	VB	Total	% comments over general
Gran Canaria	40.08%	43.04%	12.97%	3.24%	0.67%	100.00%	18.85%
Palma	44.55%	43.55%	9.84%	1.79%	0.27%	100.00%	40.24%
Tenerife	<b>49.06%</b>	22.77%	20.61%	6.04%	1.51%	100.00%	<b>40.91%</b>
Total general	<b>45.55%</b>	34.96%	14.84%	3.80%	0.85%	100.00%	100.00%

As can be seen after analyzing the type of comments for booking.com we found that most of comments are very good 45.55% then good 34.96%, this result indicate that customer using booking.com to recommend four and five stars hotels tend to give very good and good scoring with 80.51 %of total comments.

Table 13: average score for type of comments in hoel.com

Geographic area	VG	G	N	B	VB	Total	% comments over general
Gran Canaria	48.75%	20.78%	20.98%	7.31%	2.18%	100.00%	22.13%
Palma	50.00%	22.98%	20.81%	4.96%	1.25%	100.00%	<b>62.96%</b>
Tenerife	<b>51.24%</b>	32.84%	11.36%	3.19%	1.37%	100.00%	14.91%
Total general	49.91%	23.97%	19.44%	5.21%	1.47%	100.00%	100.00%

As can be seen after analyzing the type of comments for hotel.com we found that most of comments are very good 45.55% then good 34.96%, this result indicate that customer using booking.com to recommend four and five stars hotels tend to give very good and good scoring.

- We found considerable relation between the stars of a hotel and the scoring in recommendation system observing with four stars hotels especially in TripAdvisor and hotel.com which have a positive correlation with hotel stars classification system, an observing that recommendations on hotel.com are most similar to, Expedia rating that is clear by analysis that Expedia has a positive correlation with hotels.com rating.
- The result of this study supports earlier assumptions of a positive relationship between the online reputations on tourist recommendation system in four star hotels category.
- Our finding is also supported by Zheng Xiang and Ulrike Gretzel (2009) study which find that social media Websites such as TripAdvisor and travel sites can be considered more complete and becoming popular and developed into essential source for online travel information.
- Analyzing the three previous tables, one can see that people use to write mainly good and very good comments in the TRS. It is, these platform are not used only for bad comments

## Conclusions and future work

- This study fills the gap in the existing online tourism regarding the reliability between online recommendation systems with the hotels stars classifications.
- We conclude that online recommendation system is reliable when it is dealing with four stars hotels according to our study which found positive relation, while it is not reliable with five stars hotels, we conclude that four stars hotels manage more their reputation in online recommendation system.

- Five stars hotels reputations on online recommendation system are not cope with the hotel classifications stars standard.
- our study is the first to study these relationships using data collected from four and five stars hotels in Spain. Because of Spain’s rapidly growing tourism base and unique market, our findings provide fruitful managerial implications for both hotels managements, and researchers.
- our results indicate that reliabilty of the touristic recommendation system is subjected to future interaction between customers and RS by sharing important and critical information regarding customer satisfaction from hotels services.
- Our result shows clearly that trust in TRS has a significant effect on the relationship between some Touristic social media and hotels in the Spanish market.
- Finally, our result recommends that hotels need to manage important information regarding hotel reputation on the online recomendation systems to gain the maximum support from the customers. (Sparks, and Victoria. 2011) travelers are willing to depend on social media in planning a travel due to the perceived benefits received

**Limitation:** we have a limitation of the sample as we need large number of sample, not all the hotels have recommendations on the chosen websites, new websites and new geographic area should be analysed to have equal numbers of hotels in both category.

**Future research** large number of sample should be conducted, in the criteria of the recommendations eg. Hotel services, new geographic area , customer’s type. Equal numbers for each 4 and 5 stars hotels in each recommendation system should be analysed, new studies for different ranges. So the range vary from more and less than 0.5 points.

Table of abbreviations used in the paper

UGC	User-generated content (including text, photos and videos) produced by the general public instead of paid professionals or experts.
OTA	Online Travel Agency (e.g., Expedia, hotels.com) where consumers can “shop” and “purchase” trip components.
ORS	Online recommendation system
OR	Online reputation
ORM	Online reputation Management
TSM	Touristic social media (e.g., TripAdvisor..)
TA	TripAdvisor
HO	Hotels.com
BO	Booking.com
EX	Expedia.com

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