

# A Preliminary Analysis of Relationships Between Traveller Characteristics and Hotel Review Ratings

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**Abstract** This study aims to examine how customer satisfaction varies across different trip types and travellers' experience levels. Using online reviews covering all Hong Kong hotels in TripAdvisor, we performed a series of analyses to understand the relationships between rating and self-identified trip type and experience level represented by the reviewer's badge. This study shows that reviewers self-identified as couples tend to give higher ratings, which could be explained by the so-called happiness effect. Travellers with more travel experience tend to give lower ratings. The findings help us gain insights into the nature of user-generated contents and offer useful implications for hotel managers to understand online consumer behaviour.

**Keywords** Online review · Rating · Trip type · Experience level · Happiness effects · Satisfaction

## 1 Introduction

With the enormous growth of digital content on the Internet, online information is generating greater influence on Internet users including travellers. Through giving ratings and posting comments travellers can express their attitude or satisfaction

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with the products or service. It is widely recognized that customer satisfaction is an essential objective due to its importance to marketing strategies and service management in the hospitality industry. Higher level of customer satisfaction can lead to customer loyalty, trust, positive word-of-mouth, and repeating sales, increase in future revenue and stock prices, and a reduction in customer complaints, and perceived risk (Oh & Parks, 1997; Zhang, Zhang, & Law, 2013). Social media especially online consumer reviews offer new opportunities for us to understand factors contributing to hotel guests' satisfaction (e.g., Xiang, Schwartz, Gerdes, & Uysal, 2015).

Travellers' satisfaction may be influenced by many factors that could be classified into two foremost categories, that is consumer characteristics and product/service features. Zhu and Zhang (2010) have proposed a conceptual framework involving product features, consumer characteristics and other factors to show differential impact of consumer reviews across products in the same product category. They suggest that firms' online marketing strategies should be contingent on product attributes and consumer characteristics. Building upon existing literature on guest satisfaction using online hotel reviews, this study explores how customer satisfaction varies across different trip types and travellers' experience levels. We believe this is useful because it allows us to understand the relationships between satisfaction (represented by rating) and reviewer characteristics in the online contexts.

The rest of the paper proceeds as follows. The next section reviews the relevant literature, followed by the description of data and methods. Then, the results are presented and discussed. Finally, conclusions are drawn and directions for future research are discussed.

## 2 Literature Review

Different customers might perceive and evaluate the same service with different perspectives, regardless of how it is provided. Existing literature has focused on the related key factors influencing customer satisfaction in hospitality research with the methodology ranging from survey analysis to empirical models. Thanks to the tourism website and the widespread availability of information, data on both individual consumers and hotel properties could be obtained and understood. Online review websites such as TripAdvisor provide direct data that we can use for analysing the relationship between traveller characteristics and hotel review ratings. Typically, travellers give a star rating to hotels, destinations or trips generally ranging from one to five on websites such as TripAdvisor. Higher ratings indicate higher satisfaction levels. Zhu and Zhang (2010) show that product and consumer characteristics have moderating effect on the influence of online consumer reviews on product sales, which reflects the impacts of consumer characteristics. In the hotel industry, the features of hotels such as location, value, room, service, cleanliness may influence traveller satisfaction (Li, Ye, & Law, 2013). Moreover, reviewer

characteristics have been shown to be important determinants of customer satisfaction represented by online rating (Banerjee & Chua, 2016; Liang, Schuckert, & Law, 2016).

## ***2.1 Trip Type and Satisfaction***

Generally speaking, travellers of different trip types may have different preferences in hotel selection and varying expectation, which may lead to different satisfaction level. With respect to travellers' different purposes and expectations, travellers of different types possess varying sentiment states (Ariffin & Maghzi, 2012a, b). For example, psychological studies have shown that happiness has the potential to influence service evaluations, as people who differ in their degree of happiness have been found to react differently to the same events, with happier people perceiving things more positively (Argyle, 2013; Wessman, 1956). Some studies have compared business and leisure travellers, showing that hotel attributes have a different effect on the selections made by each group (Ye, Li, Wang, & Law, 2014; Liang et al., 2016).

There is growing literature that examine trip type using online reviews and studies have found differences in satisfaction between these two trip types (Liang et al., 2016; Ananth, DeMicco, Moreo, & Howey, 1992; Choi & Chu, 1999; Ye et al., 2014). However, most studies only used two broad categories, i.e., business and leisure. More importantly, these studies only consider trip types as a control variable instead of the main outcome variable. Ye et al. (2014), for example, showed that the impact of price on perceived quality and value will be influenced by the type of trip travellers are taking using online review data.

Regarding travellers' different purposes and expectations the effect of trip type needs to be understood with finer granularities (Ariffin & Maghzi, 2012b). Banerjee and Chua (2016) use five travellers' profiles, namely, business, couple, family, friend and solo on TripAdvisor for the first time to investigate travellers' rating patterns difference between independent and chain hotels. There is no doubt that five self-identified trip type could reveal more information about personal characteristic. Hence, this study first shed light on the satisfaction level difference across five trip types.

## ***2.2 Experience Level and Satisfaction***

According to cognitive psychology, another factor relevant to traveller characteristics is reviewers' experience level. TripAdvisor adopts incentive measures to encourage reviewers to express their comments, which motivates users to continue participating in the website and to voluntarily contribute high-quality content (Schuckert et al., 2015; Liu et al., 2015). These incentives signify travellers' trip

experience to some extent. Specifically, a reviewer with higher status in the reviewer hierarchy indicates that he/she has more trip experience and online review experience. Hence, reviewers' level of experience could be considered as an important element of personal characteristic.

Some studies have shown that reviewer experience could influence rating patterns (Liu et al., 2015; Schuckert et al., 2015). Based on assimilation-contrast theory and bounded rationality theory, Liang, Schuckert and Law (2016) suppose that customer online review experience has a positive effect on customer satisfaction. Liu et al. (2015) show that the average quality of the content produced by a reviewer drops as status (experience level) increases. While these studies showed that traveller experience and satisfaction rating are connected, their findings are not conclusive.

### 3 Data and Descriptive Analysis

In this study, we selected trip types and experience level as primary individual characteristics that could impact satisfaction rating. The data used in this study were crawled from the popular online travel community website TripAdvisor.com (<http://www.tripadvisor.com>) using a Java program. According with previous studies, it is usually assumed that comments and reviews on TripAdvisor are generally more trustworthy than other websites (e.g., online travel agencies). TripAdvisor provides individual customer reviews, along with customers' trip type and evaluations of their experiences (ratings) of hotels worldwide. We selected all the available hotels in Hong Kong and collected the related data in May 2016. At the time of data collection, 696 hotels in Hong Kong had been registered on tripadvisor.com. However, due to missing values, we excluded hotels without enough reviews and reviews before 2010. Finally, only 410 hotels remained with a total of 99,397 reviews.

Figure 1 shows information related to hotel reviews provided on tripadvisor.com. Reviewers could give an overall and a number of specific ratings, which could be regarded as representation of satisfaction at the whole and specific level. Travel experience is represented by the "badge" of levels (level 3 contributor in this case). Travellers are classified by self-identification into five profiles, namely business, couple, family, friend and solo. Comparing with simple two categories (i.e., business vs. leisure) in the literature, five-type classification may offer more detailed and nuanced information in terms of how these traveller characteristics impact satisfaction rating. Table 1 displays the variables extracted from the website and used for analysis along with their descriptions.

We first conducted descriptive analysis by examining rating patterns related to personal characteristics and hotel service levels. Although TripAdvisor offers "finer" classification for reviewer level (0–6) and hotel star (0–5), we consolidated them into three levels, i.e., H (for high), M (for medium), and L (for low) (see Table 1). As can be seen from the crosstabs statistics (Table 2), most reviewers



**Fig. 1** Traveller reviews on Hong Kong hotels on Tripadvisor.com

tended to give fairly high ratings since average values of rating values are all higher than three. With respect to trip type, couple and family groups seemed to give generally higher ratings, while travellers of business trip type gave low-level hotels highest ratings.

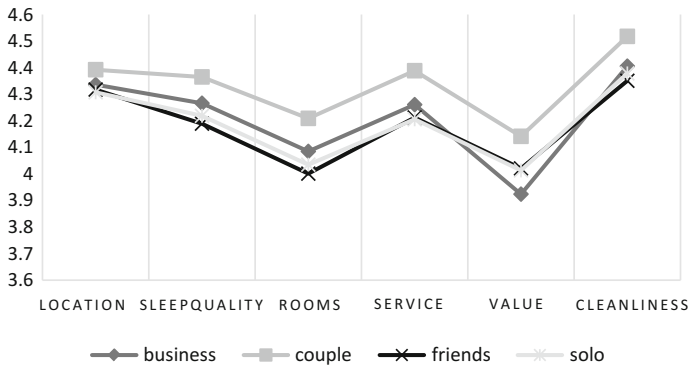
To understand how trip type was related to specific aspect of hotel ratings (i.e., location, sleep quality, rooms, service, value, and cleanliness), we plotted the rating difference across both characteristic chains of hotels and trip types. Figure 2 shows that, among the six aspects ratings on rooms and value appeared to be lower than other aspects, and the pattern was consistent across all travel types. More interestingly, ratings given by couple group appeared to be higher than other groups in all aspects of hotel ratings.

**Table 1** Variables used for analysis

Variable	Description
TripType	Travelers are self-identified as one of the five types, namely, business, couple, family, friend and solo according to their record on TripAdvisor. For reviewers, only one type could be chosen
PLevel	The reviewer experience levels, based on the badges given by TripAdvisor, represent reviewers' experience levels (5–6: H; 4–5: M; 0–3: L)
HotelLevel	Original five levels based on star rating in TripAdvisor are consolidated into three (4–5: H; 2.5–3.5: M; 0–2: L)
Rating	A self-reported measure of how satisfied the individual is with the hotel he has lived in at the whole level
Location	Ratings about the hotel location provided by travelers
SleepQuality	Ratings about sleep quality at the hotel provided by travelers
Rooms	Ratings about the hotel rooms provided by travelers
Service	Ratings about the hotel service provided by travelers
Value	Ratings about the hotel value felt by travelers
PCleanliness	Ratings about the hotel cleanliness provided by travelers

**Table 2** Crosstabs statistics results

Rating	TripType						
	Business	Couple	Family	Friends	Solo	Total	
PLevel	H	4.09	4.25	4.18	4.07	4.07	4.16
	M	4.14	4.29	4.18	4.10	4.11	4.19
	L	4.25	4.33	4.17	4.18	4.18	4.24
HotelLevel	H	4.24	4.41	4.27	4.28	4.29	4.31
	M	3.70	3.87	3.78	3.76	3.85	3.80
	L	3.68	3.37	3.46	3.22	3.29	3.40



**Fig. 2** Specific ratings across trip types

### 4 Empirical Analysis and Findings

Besides the descriptive analysis to gain a preliminary understanding of the data, we also conducted variance analysis and regression analysis to further explore the relationship between satisfaction and personal or hotel characteristics. First, a one-way analysis of variance (ANOVA) was conducted to check for any variation in customer satisfaction with hotels across trip types. The results of the estimation of this simplified model are displayed in Table 3. As can be seen, the variation across trip groups is statistically significant, indicating that group differences in customer satisfaction do exist.

The next analysis conducted aimed to examine how rating was influenced by trip type and experience by including hotel service level as a control variable. To overcome heteroscedasticity of ordinary regression model (OLS), we used generalized regression model (GLS) which was more robust, as follows.

$$Rating_i = \alpha TripType_i + \beta PLevel_i + \gamma Hotellevel_i + e_i \tag{1}$$

As stated above, TripType includes five categories while PLevel and Hotellevel are consolidated into three levels. We select solo group, middle-level hotel and

**Table 3** Results of the one-way ANOVA model

Source	SS	df	MS	F	Prob > F
Between groups	423.65	4	105.91	124.21	0.0000
Within groups	80048.85	93,878	0.85		
Total	80472.50	93,882	0.86		

Bartlett's test for equal variances:  $\chi^2(4) = 211.2846$  Prob >  $\chi^2 = 0.000$

**Table 4** Results from the NLS model

Rating	Coef.	Robust std. err.	t	P >  t	[95% conf. interval]	
Business	-0.076	0.011	-6.66	0.000	-0.098	-0.053
Couple	0.086	0.011	7.81	0.000	0.065	0.108
Family	-0.043	0.012	-3.72	0.000	-0.065	-0.020
Friends	-0.043	0.013	-3.19	0.001	-0.069	-0.017
Hotel_H	0.518	0.007	70.71	0.000	0.504	0.533
Hotel_L	-0.402	0.029	-13.77	0.000	-0.459	-0.345
PLevel_H	-0.041	0.007	-5.84	0.000	-0.055	-0.028
PLevel_L	0.065	0.007	9.27	0.000	0.052	0.079
_cons	3.793	0.011	330.26	0.000	3.770	3.815

$F(8, 93874) = 706.81$ ; Prob > F = 0.0000; R-squared = 0.0642

middle-level reviewer experience as omitted variables (reference variables) to avoid multicollinearity of categorical variables regression. Table 4 displays the coefficient estimates for the variables included in the model. As can be seen, relative to the solo group, there is a positive relationship between the couple group and rating, while travellers with other trip types gave lower satisfaction ratings. Also, travellers who had more experience tended to give lower ratings, indicating that personal experience also influence satisfaction level. As Banerjee and Chua (2016) stated, hotel properties may shape the rating patterns. In terms of hotel attributes, the coefficients of hotel level were different, suggesting travellers gave upscale hotels higher ratings.

## 5 Discussion and Implications

Through this study we gained some preliminary understanding of the differences in satisfaction rating across trip types and experience levels. According to the results, travellers with the couple trip type seemed to have higher level of satisfaction and travellers with more trip experience tended to give lower ratings. It seems some psychological factors played a role in shaping travellers' evaluation of hotel products.

A person's mood may directly affect a judgment of the events, hence mood-state-dependent retrieval of information is indicated (Wright & Bower, 1992). Happiness effect is considered to influence travellers' mood state. Happiness refers to people's feelings or cognitive and affective evaluations of their lives, and it is often used interchangeably with the term subjective well-being (Diener, 2000). There are many individual and environmental factors correlated to happiness. According to Watson (1930), a happy home and good relationships with other people, including a spouse, were conducive to happiness, which was supported by many other studies like Wessman (1956) and Wilson (1967). Generally, marriage and family help improve individual happiness to some extent. Argyle (2013) concluded that happiness depends partly on objective conditions such as being married.

Happiness is closely related to satisfaction with life and other activities. A plethora of previous psychological studies on the effects of happiness have shown that happiness has positive effects for both the individual and society. Veenhoven (1983) points that married persons are easier to be satisfied than the unmarried and have more positive social effects. However, few prior studies on the effects of happiness specifically in a service context have been conducted. Hellén and Sääksjärvi (2011) is only one work we found through our energies on searching the Internet. The result in this study seems to be consistent with the happiness effect stated in prior researches.

In terms of experience level, the preliminary result is somewhat different from the findings in the Liang et al. (2016) study. We found that customer online review experience has a negative effect on customer satisfaction. Cognitive psychological theory stresses the role of cognition and suggests that customers tend to deal with information according to their knowledge. In the era of tourism e-commerce, reviewers posing more comments are considered to have more trip experience, which would help them get more tourism knowledge. Capraro, Broniarczyk, and Srivastava (2003) show that consumer knowledge plays an important role in the likelihood of customer defection. Tuu, Olsen, and Linh, (2011) confirm that objective knowledge has moderating effect in the satisfaction-loyalty relationship.

Although the role of knowledge has been extensively studied in literature, whether more knowledge leads to less satisfaction remains uncertain. However, we could think of it from two angles. Intuitively, it is less likely for a new product or service to excite the curiosity of a person who has more knowledge and experience. In addition, a more knowledgeable person tends to possess higher requirements and expectations, so it is more easily for them to discern more defects. A good explanation could be that people with prior experience are more demanding when evaluating hotel services (their expectations are more and more high according to disconfirmation paradigm). These two angles may help explain the result in this study.



## 6 Conclusions

Traveller satisfaction is an essential indicator of a hotel's performance; however, few studies have explored both the cross-person difference and cross-hotel variation in customer satisfaction. This study performs a preliminary analysis of relationships between traveller characteristics and hotel review ratings. We found that couple group and travellers having less trip experience tend to have higher satisfaction and propose that happiness effect also works in the online environment. This study also offers a preliminary understanding of psychological causes of variations in review ratings by applying happiness theory and cognitive psychology to the online environment in the hospitality industry. This study also has limitations. For example, there may be other influential factors like region effect (i.e., where the reviewers are from) are unaccounted for. Future studies could include more factors especially review textual contents to gain a deeper understanding of the phenomenon.

## References

- Ananth, M., DeMicco, F. J., Moreo, P. J., & Howey, R. M. (1992). Marketplace lodging needs of mature travelers. *The Cornell Hotel and Restaurant Administration Quarterly*, 33(4), 12–24.
- Argyle, M. (2013). *The psychology of happiness*. Routledge.
- Ariffin, A. A. M., & Maghzi, A. (2012a). A preliminary study on customer expectations of hotel hospitality: Influences of personal and hotel factors. *International Journal of Hospitality Management*, 31(1), 191–198.
- Ariffin, A. A. M., & Maghzi, A. (2012b). A preliminary study on customer expectations of hotel hospitality: Influences of personal and hotel factors. *International Journal of Hospitality Management*, 31(1), 191–198.
- Banerjee, S., & Chua, A. Y. (2016). In search of patterns among travellers' hotel ratings in TripAdvisor. *Tourism Management*, 53, 125–131.
- Capraro, A. J., Broniarczyk, S., & Srivastava, R. K. (2003). Factors influencing the likelihood of customer defection: The role of consumer knowledge. *Journal of the Academy of Marketing Science*, 31(2), 164–175.
- Choi, T. Y., & Chu, R. K. (1999). Consumer perceptions of the quality of services in three hotel categories in Hong Kong. *Journal of Vacation Marketing*, 5(2), 176–189.
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34.
- Hellén, K., & Sääksjärvi, M. (2011). Happiness as a predictor of service quality and commitment for utilitarian and hedonic services. *Psychology & Marketing*, 28(9), 934–957.
- Huy Tuu, H., Ottar Olsen, S., & Thi Thuy Linh, P. (2011). The moderator effects of perceived risk, objective knowledge and certainty in the satisfaction-loyalty relationship. *Journal of Consumer Marketing*, 28(5), 363–375.
- Li, H., Ye, Q., & Law, R. (2013). Determinants of customer satisfaction in the hotel industry: An application of online review analysis. *Asia Pacific Journal of Tourism Research*, 18(7), 784–802.
- Liang, S., Schuckert, M., & Law, R. (2016). Multilevel analysis of the relationship between type of travel, online ratings, and management response: Empirical evidence from international upscale hotels. *Journal of Travel & Tourism Marketing*, 1–18.

- Liu, X., Schuckert, M., & Law, R. (2015). Online incentive hierarchies, review extremity, and review quality: Empirical evidence from the hotel sector. *Journal of Travel & Tourism Marketing*, 1–14.
- Oh, H., & Parks, S. C. (1997). Customer satisfaction and service quality: A critical review of the literature and research implications for the hospitality industry. *Hospitality Research Journal*, 20, 35–64.
- Schuckert, M., Liu, X., & Law, R. (2015). Stars, votes, and badges: How online badges affect hotel reviewers. *Journal of Travel & Tourism Marketing*, 1–13.
- Veenhoven, R. (1983). The growing impact of marriage. *Social Indicators Research*, 12(1), 49–63.
- Watson, G. (1930). Happiness among adult students of education. *Journal of Educational Psychology*, 21(2), 79.
- Wessman, A. E. (1956). *A psychological inquiry into satisfactions and happiness*. Doctoral dissertation, Princeton University.
- Wilson, W. R. (1967). Correlates of avowed happiness. *Psychological Bulletin*, 67(4), 294.
- Wright, W. F., & Bower, G. H. (1992). Mood effects on subjective probability assessment. *Organizational Behavior and Human Decision Processes*, 52(2), 276–291.
- 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.
- Ye, Q., Li, H., Wang, Z., & Law, R. (2014). The influence of hotel price on perceived service quality and value in e-tourism an empirical investigation based on online traveler reviews. *Journal of Hospitality & Tourism Research*, 38(1), 23–39.
- Zhang, Z., Zhang, Z., & Law, R. (2013). Regional effects on customer satisfaction with restaurants. *International Journal of Contemporary Hospitality Management*, 25(5), 705–722.
- Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of marketing*, 74(2), 133–148.