

Thesis

Online booking behavior regarding hotel choice: the moderating effect of online reviews.



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Table of contents

Table of contents.....	1
Abstract.....	2
1. Introduction	3
2. Conceptual background.....	6
2.1. The impact of the internet on hotel booking behavior	6
2.2. Hotel attributes.....	7
2.3. Online reviews (electronic word of mouth).....	8
2.4. Valence.....	10
2.5. Motivation of this study and the conceptual model	12
3. Methodology.....	14
3.1. Survey design	14
3.1.1. Identify attributes and levels	15
3.1.2. Choice experiment design	17
3.1.3. Making a review	17
3.1.4. Collection of respondents	18
3.1.5. Analyze the results.	19
3.2. Discrete choice model.....	20
4. Results & discussion	22
4.1. Demographical information about the respondents and important findings	22
4.2. Results not accounting for reviews.....	24
4.3. Results with impact of reading reviews	25
4.4. Results with the impact of valence of reviews	27
5. Conclusion	30
5.1 Management implication	32
5.2. Limitations & further research	32
Bibliography	33
6. Appendix	39
6.1. Survey information about respondent.....	39
6.2. Control survey choice sets	41
6.3. Second survey choice sets including reviews.....	44
6.4. Third survey choice sets including reviews.....	49
6.5. Control survey SPSS results	54
6.6. Second survey with review SPSS results.....	57
6.7. Third survey with review SPSS results.....	60
6.8. STATA models.....	64

Abstract

Nowadays the internet plays a huge part in the decision-making process of a consumer. The hotel industry must depend for a large part on the information that is being provided online. Positive and negative reviews can have a real impact on a hotel's performance. Therefore, this study is to identify significant factors that have an impact on the hotel choice and examine the moderating effect of online reviews on each factor. Along with the help of discrete choice models these factors will display the direct effect on hotel choice. Furthermore, the moderating variable will provide the impact on each significant factor and will provide more insight in the consumer's hotel booking behavior. The results can be quite interesting for hoteliers, and were as follow: For every attribute level except for facilities low there was a moderating effect both positively as negatively. The hotel preference is positively influenced by the valence of reviews of: location near the city center, safety low, safety high and facilities high. The valence of reviews influenced the attributes (location near the famous monuments and price) negatively and has a negative moderating effect on hotel preference. For the attribute level facilities low, there is no significant moderating effect found and therefore this level could not be taken in consideration for hotel preference.

Keywords: Hotel choice; hotel attributes; valence; online reviews; discrete choice model

1. Introduction

Imagine for a moment the scenario of planning a full holiday. Choosing a hotel is one of the decisions you must make. This can be very complicated when you are not familiar with the hotels in another place or country. There are several options to make sure you're making the right decision or at least you hope that you do. You can ask help from your family and friends if they visited the place or country before and ask their opinion about where they stayed during their holiday. Another option is contact a travel agency, they can help you find the best hotel, but of course keep in mind that they do want to sell to make profit. Another option is doing your own research on the internet. You can do this by going on website like www.booking.com or www.trivago.com and reading people's opinions. All these options to collect information about what the best hotel is, shows that consumers often seek the advice of others before they decide.

Choosing a hotel is usually an intrinsically complex and idiosyncratic task (Pan, Zhang, & Law, 2013). Although some of the attributes such as the size of the room, free services, and a nice room view can be perceived as equally important for everyone, consumers tend to have a different preference: one guest may like a hard bed while the other prefers a soft one. Furthermore, the consumers' decision-making process is still a very hard and complicated process. According to the University of Massachusetts (UMass Dartmouth, 2017) there are 7 steps to effective decision making: 1. Identify the decision, 2. Gather relevant information, 3. Identify the alternatives, 4. Weigh the evidence, 5. Choose among alternatives, 6. Take action, and 7. Review your decision & its consequences. These steps are normally taken by each consumer when deciding for a hotel.

To explain the process regarding the hotel choice, the first step 'identifying the decision' refers to the influenced information that is provided online on different websites, which have an important role on the decision-making process of the consumer. The second step is the search for information about the services and attributes offered by the hotel. Consumers use both internal and external information while searching for the right hotel, this search process can take a considerable effort. The consumers' needs can vary, some consumers choose the location over the facilities, because they are outgoing and vice versa. The third step is identifying the alternatives; hence attributes can be very important during the search for a hotel. One consumer that values safety more, will most likely go to a hotel in a safer neighborhood. Therefore, clear information provided about the attributes are important during the consumer's decision-making process. The fourth step is weigh the evidence, this is done by confirming that the hotel provides honest information that is synchronously with the online reviews that can be found on several websites. The fifth step 'choose among alternatives' refers to the choices consumers have while facing a couple similar hotels. Which hotel is attractive and why

are they attractive? The last step is 'review your decision & its consequences'. In this step, the consumer can verify if they made the right decision and what are the consequences of making this decision e.g. higher price or less attributes. When choosing a hotel, both information for attributes or services and online reviews have critical roles on step 3 and 4 respectively. This is supported by recent observation that more than half of the consumers tend to not book a hotel that does not provide any review. According to a survey from TripAdvisor 53% of the consumers will not book a hotel that don't provide a review online. 20% Of the consumers read approximately 11 reviews before they make a travel decision. (TripAdvisor, 2016). For this reason, this research will verify how consumers respond on the attributes towards their hotel choice separately but also after seeing an online review.

Knowing that consumers often search for advice of others can help hotel and marketing managers to respond to the needs and desires of the consumers. Several factors can influence a consumer's decision for a hotel. If a hotel provides the best experience to a hotel guest, the guest will most likely spread the word, both offline and online. Hotel managers know that nowadays for a large part the success depends on the information that is given online. If a consumer is unhappy with a specific hotel service and they mention it in an online review it can have a huge impact on the hotel. Of course, there are scenarios where it is impossible for a hotel to make no mistakes. Mistakes are human and the chance of doing everything perfect will never be 100%. But when a bad situation occurs, hotel managers can make sure that they make up for it and let the guest leave with the idea that the hotel staff did their best to make it better. Thus, the chance that the mistake will be mentioned in an online review is unavoidable but the chance for a higher rating will be bigger, because the hotel guest will remember the effort the hotel made to make up for the mistake. Everyday hotels and marketing managers face different questions: What is the image that our hotel has online? Is the information provided online positive? What kind of impact does a negative review has on the hotel choice and consumers' preference for hotels' attributes? How can we improve our hotel? The answers on these questions would help hotel managers understand the consumer's needs and hopefully maximize the hotel revenues and profit.

Therefore, the purpose of this study is to provide more in-depth insights in the consumer's hotel booking behavior. To achieve that, this study will provide an overview of relevant theories about the decision-making process and the impact of online reviews regarding hotel choice. Along with the use of the discrete choice model this study will determine the attributes that attract user's attention and what the users consider important. With the help of SPSS, the orthogonal designed cards will be generated with the four chosen attributes 'location', 'price', 'safety' and 'facilities'. First the direct impact of these attributes on hotel choice will become visible. Thereafter, the moderating effect of online reviews will be added to experience the

consumer change in attitude towards a hotel and its attributes. This will be done by adding a positive and a negative review on each choice card, to find out how the attitude of the consumers change towards a specific hotel attribute. The attributes were carefully chosen after intensive research which can be found in chapter 2. These attributes are divided in different levels that can be found in *table 1*. The conclusion of this research will provide extensive information about the attributes separately and the impact of online reviews on these attributes. Finally, with all the gathered information the consumer hotel booking behavior will become visible.

2. Conceptual background

The purpose of this study is to create a better understanding of consumers' hotel booking behavior. Here it is necessary to gather relevant information about the importance of the hotel attributes. There were several studies that investigated the different attributes on consumer's hotel booking behavior. A few studies focused on the impact of online reviews directly on consumers' hotel choice. There were no studies that investigated the attributes in combination with the online reviews. Therefore, this study is relevant and will provide more in-depth information about the consumer's hotel booking behavior. This chapter will describe the important findings from existing studies and how this study will contribute.

2.1. The impact of the internet on hotel booking behavior

The internet has changed consumer behavior, it enabled the consumers to arrange everything online (Mills & Law, 2004) However the traditional process of booking a hotel does not go smoothly anymore due to various websites the consumers can use to inform themselves. Consumers are searching on approximately twenty-two websites before making a booking. Consumers communicate with their family and friends via Facebook, conducting mobile search, etc. (Starkov & Safer, 2010). This means that the potential consumers are seeing the hotel marketing messages and reviews through different channels. Travelers have direct access to larger sources of information, tourist organization, private corporations and other users. They don't rely on their travel agency, in fact they use the internet as their main source to find all the relevant information about travel, airplane tickets and accommodation. Internet allows travelers to make reservations in much less time, which is also less expensive and more convenient than conventional methods.

The popularity of the internet applications changed most travel organization's marketing strategy. Organizations use the internet technology in their marketing and communication strategy. But only a website does not guarantee that consumers will be attracted to the website (Kasavana, 2002). The booking sales cycle often includes intermediaries on the path from the hotel to the consumer. In some cases, there can even be five intermediaries between the hotel and the consumer which makes the distribution process a bit more complex and expensive (eBusiness Watch, 2006). In 2010 the online channel was the only channel where growth was being accomplished. The direct online channels should be the most important part of a hotel internet strategy, because travelers that book on a hotel website tend to be more loyal and bring more revenue (Starkov & Safer, 2010). Furthermore, a survey about hotel marketing showed that the hotel business intention in 2009 gave a great advantage to online marketing and accepted the internet as the most cost-effective tool in generating profits (Hospitality eBusiness Strategies, 2009).

2.2. Hotel attributes

Hotel attributes are considered as everything from price to facilities that the hotel offers. These attributes can affect the consumers and their choice among different hotels (Lewis, 1983). Consumers often see services as a bundle of attributes, which can differ what they contribute in service evaluations (Kivela, 1996). Alpert (1971) states that the attributes that have a direct impact on choices are named the 'determinant attributes'. These attributes may arouse consumers purchase intention and are the attributes that distinguish from those of the competitors. As applied to the hospitality industry, Wuest, Tas & Emenheiser (1996) defined perceptions of hotel attributes as the extent to how travelers find facilities and various services important in promoting consumers' satisfaction for staying in a hotel.

Many studies about the hospitality industry have investigated the key attributes which affect consumers hotel choice. For example, a study by Atkinson (1988) showed that the most important attribute for consumers in hotel selection is cleanliness followed by security, services and prices. Huértas-García, García, & Consolación (2012) mentioned that hotel rooms with a lower price have a higher consumers' evaluation. Wilensky & Buttle (1988) mentioned that travelers significantly evaluate physical attractiveness, standard of service, personal service, appealing image, opportunities for relaxation and of course value for money. Rivers, Toh, & Alaoui (1991) mentioned that the hotel selection factors also depends on members and non-members of frequent guest programs. The results reveal that the convenience of location and the service get the most attention from travelers. According to Ananth, DeMicco, Moreo, & Howey, (1992) who did a survey on 510 travelers, where these travelers could rate the importance of 57 hotel attributes in their hotel decision, price and quality were the attributes that were the most important followed by convenience of location and safety. LeBlanc & Nguyen (1996) mentioned that corporate identity, service personnel, physical environment, accessibility and quality of services are the influencers of travelers' perceptions towards the image of a hotel. Therefore, marketing efforts should highlight the environmental cues to attract new consumers. A few studies have examined the difference between leisure and business guests, the results were quite different. Business guest prefer a good location and a clean room, while leisure guests think of safety, personal contact and hotel prices (Lewis & Chambers, 1989; McCleary, 1993; Taninecz, 1990). These authors also found that leisure guests put great importance on the factors safety and security, and they are even willing to pay more for this. Also, leisure travelers express their concerns about the hotel name and reputation. For business guest cleanliness, comfort of mattresses, pillows and towel quality were also important factors while the hotel catering was not important for their hotel choice because of alternative dining places near the hotel. There are a few attributes that are important for both business and leisure guests (Knutson, 1988). Cleanliness, comfort, well

maintained rooms, convenient location, service, security and friendly employees. Lewis (1983) tested 66 different hotel attributes to collect information about hotel selection from 1314 business and leisure travelers in six hotels. The conclusion of this research was that price and location were important for both guests. Cadotte & Turgeon (1988) found that the five frequent compliments were: helpful employees, neatness, cleanliness, service quality, knowledge of the employee. Another study (Barsky & Labagh, 1992) found that three attributes appeal to both leisure and business guest. These attributes were: employee attitude, rooms and location.

From the aforementioned, there can be concluded that hotel attributes have a different value in the hotel selection process. Some attributes have equal importance to all guests but there are differences in priorities between different kind of guests. When analyzing the importance of hotel attributes on the purchase decision, at least two relevant aspects are important. 'Experienced attributes', that means the consumer could reflect on their previous experiences in the same hotel, if the guest had a pleasant stay they will most likely return to the same hotel. 'Presented attributes' is the information given to the consumers like: the attributes of the hotel and online reviews. This information is given to the consumers through different channels of communication, both online and offline. Some attributes are better evaluated when experienced, like: cleanliness and personal contact. However, location and price can be easily evaluated while being presented online. When deciding about which hotel attributes will be tested, there are a few things that should be taken in consideration. First, not all the attributes can be tested, they should be chosen realistically and it has to be appropriate to the situation. The attributes such as: location, price, safety and facilities are chosen for this research because price and safety are two frequent discussed attributes without the impact of reviews. The information that has been collected before can be used for this research. The attributes location and facilities are not discussed often in comparison to price and safety for leisure guests. The impact of online reviews on each of these attributes are therefore interesting and complementary to existing studies.

2.3. Online reviews (electronic word of mouth)

For many consumers looking for online reviews 'what has been said' in the tourism or hospitality industry, reviews are considered a part of the information collection process when selecting a product. Word of mouth (WOM) is defined as an oral, person to person communication between a communicator and the receiver, where the receiver is perceived as non-commercial regarding a product/service or brand (Arndt, 1967; Koenig, 1985). WOM is not the same as advertising because the communicator is not paid by a company (Stern, 1994). Online reviews are eWOM (electronic word of mouth) and since people have the opportunity and ability to post negative or positive reviews related to consumption experiences, potential consumers can get influenced. This increases the credibility for the consumers.

Through eWOM the organizations receive more long-term value than consumers that are acquired through traditional marketing channels (Bateson & Hoffman, 1999; Villanueva, Yoo, & Hanssens, 2008; Trusov, Bucklin, & Pauwels, 2009). These definitions identify the main difference between the concept of WOM and eWOM. The exact meaning of eWOM can be explained a little more detailed. First, eWOM doesn't necessarily have to be direct or oral because these reviews can be written online and can stay online for a long period of time. With eWOM a written review of the consumer can be seen by millions because they are available for a long period of time (Ward & Ostrom, 2002). Secondly, eWOM is not limited to brands, products and services, it can be related to an organization, destinations etc. (Buttle, 1998). Thirdly, eWOM remains a source that provides information differently than advertising but it can be rewarded or incentivized. However, normally eWOM comes from individuals who have no or little relationship with the seeker (Xia & Bechwati, 2008). It can be difficult for a consumer to determine the credibility of a review when it comes from strangers with different backgrounds (Litvin, Goldsmith, & Pan, 2008; Chatterjee, 2001). This is the reason why sometimes intermediaries require the reviewers to fill in personal information like: name, place, state, gender and data (Xie, Miao, Kuo, & Lee, 2011).

For potential consumers, these reviews can detract or enhance from a hotel brand and have consequently impact on a firm's reputation. More importantly online reviews emerge due to different consumers that give their opinion about different ranges of product attributes to provide other consumers with some more insight about the attributes. Consumers often try to obtain more information than the hotel/brand is providing prior to the purchase. Traditionally, WOM (word of mouth) influence consumer information search and buying decisions (Brown, Broderick, & Lee, 2007), but times have changed, consumers are now willing to rely more on online reviews (eWOM) as an information source for service and products (Litvin, Goldsmith, & Pan, 2008). Therefore, to understand how online information and reviews influence consumer behavior is a growing need. Understanding online reviews is especially important for those services or products where consumers need to book or buy online, such as restaurant bookings, airline tickets and hotel bookings. Consumers that are looking for a hotel do often consult online reviews. These reviews help them to provide the information about the hotel that fits with their preferences. Fit is different for every consumer and therefore they may have different preference for the same attribute (Kwark, Chen, & Raghunathan, 2014). WOM can be measured in several dimensions: valence, intensity, speed, persistency, importance and credibility. In this study, the focus lies especially on: valence and importance. Especially here it is important to know how the reviews affect the consumer's' decisions for booking a hotel room.

Online reviews have a key role in the travel and hospitality industry. They are highly trusted sources of information after word-of-mouth from family and friends. There are performance measures that the hospitality industry considers maintaining its reputation. This research is closely looking into the effects of online reviews in the hospitality industry. Nowadays there are more than 100 million reviews written across the internet. More than 75% new reviews are written online every minute. Most of them are positive, namely 81%. Consumers trust the travel reviews of close family and friends with 92%. As mentioned before in the introduction, 53% of the consumers will not book hotel if there are no reviews provided and 97.7% of consumers read other travelers' online reviews. Consumers that plan their holiday use review website to do so. 18% Of the travelers' reviews drive more loyalty towards the hotel.

Social networks and hotel reviews are also closely related. Consumers' loyalty towards a hotel chain can be influenced in seconds by a review provided on review websites. For example, Facebook ads with review content have 4x higher CTR (click-through-rate), 50% cost of acquisition and 50% drop in cost per click. Nowadays 90% of all the hotels have a Facebook page. The Facebook users said their friends' photos inspired their travel plans and vacation choice. The consumers' (55%) original plans changed after researching it on social media. Social network photos and videos inspire 83% of the consumers for their holiday choice. From the social media users 46% post a review after their vacation and 75% of the travelers' post vacation photos on social media. The average conversion rate of a social network is for Facebook 1.85%, Twitter 0.77% and LinkedIn 0.47%. This indicates that consumers are influenced by reviews provided on various platforms.

From all the online reviews provided only 32% of hotels respond to them, regardless if the reviews are negative or positive. These hotels perform higher than those who don't and are also likely to increase their revenue and visibility on review site such as TripAdvisor. 87% Of the potential consumers believe that hotels that respond to a negative review improves their impression of a hotel. If the hotel responds to a negative review 62% of the consumers are being influenced positively to book at that hotel because 71% believes that the management in the hotel is important. When the management of the hotel respond to a negative review 68% of the consumers would choose that hotel. Hotels that respond to a complaint can expect an increase their reviews on their website by 147%.

2.4. Valence

The valence of the success or failure of a hotel can be different in online reviews. When a hotel is positively reviewed the hotel is often seen as a pleasant hotel. With a negative review, the consumer is complaining about different attributes, such as service or cleanliness. A review can also be neutral but this doesn't happen often because a review is most likely derived from

an expectation the consumer had, they can be very satisfied with their stay or could be very disappointed. According to Ye, Law, & Gu (2009) with the use of hotel data, they could conclude that positive reviews significantly contributes to an increase in hotel bookings. However negative reviews tend to be more influential and can be over emphasized. Furthermore, according to Smith, Bolton, & Wagner (1999), service failures in a hotel receive more negative reviews from a consumer than focus on the positive attributes of the hotel. It is researched that negative reviews weigh heavier than positive reviews. Thus, negative reviews can have a greater impact than positive reviews (Papathanassis & Knolle, 2011). When there is a negative review the consumers' negative attitude towards a hotel also increases (Lee, Park, & Han, 2008). The people that post a comment online are extremely satisfied or extremely dissatisfied (Anderson, 1998). Positive reviews indicate to favorable experiences and are meant to recommend the product or service. Negative reviews indicate to unfavorable experiences and are meant to dissuade others from purchasing the product/service. Consumers that post a negative review can be aggressive and alert others about the risk of their own experience (Cheng, Lam, & Hsu, 2006). Sometimes it is possible to find negative and positive reviews online that are fake posted by the company to improve the company's reputation or by the competitors to damage the competitor's reputation.

The valance of the reviews is one of the most considered variables. (Sen & Lerman, 2007) Here it can influence consumer behavior in different ways and it depends on the kind of product/service. When consumers experience satisfaction, they will perceive a high outcome of an exchange and are therefore willing to pay more. Satisfaction can be experienced when reading positive reviews about the hotel. When the satisfaction is lower (i.e. reading negative review), the consumers are not willing to pay more but would want a fair exchange (Homburg, Koschate, & Hoyer, 2005). Vermeulen & Seegers (2009) discovered online reviews that are positive improve the overall perception of the consumer towards the hotels. In a travel agency in China the traveller's reviews were analysed, there was discovered that the valence of reviews has a significant impact on the online sales of the hotel rooms (Ye, Law, Gu, & Chen, 2011).

It is not only about the valence of the reviews, also the amount of positive or negative reviews can be a considered factor (Purnawirawan, De Pelsmacker, & Dens, 2012). In case the consumer has a low consensus, the consumer thinks that the authors of the negative reviews are not able to evaluate the product/service properly. In case of a high consensus on a negative review the consumer will get a negative attitude toward the hotel (Laczniak, De Carlo, & Ramaswami, 2001). As mentioned before a review, despite of the valence, can already influence the consumers, because fit is different for every consumer and therefore they will value different attributes (Kwark, Chen, & Raghunathan, 2014).

2.5. Motivation of this study and the conceptual model

The existing studies focus on the impact of online reviews towards hotel choice and what the impact from each attribute is towards hotel choice. There are no studies that use these two approaches combined to find the moderating effect of the online reviews on each hotel attribute. Therefore, this study could be very interesting. The attributes were extensively researched and are carefully chosen. To find the moderating effect of the online reviews on each attribute, the following research question has been conducted.

Research Question

'Does online reviews affect consumers' preferences (attributes) on hotel choice?'

For this research, it is important that the hypothesis are correctly designed. The reason why the first hypothesis is chosen is because nowadays online reviews are one of the main factors that can influence other potential hotel consumers. The reviews help the consumers in finding what they are looking for, it helps to create a picture of how their hotel experience would be like. The second hypothesis was chosen to find out if the valence of the online reviews has a moderating effect on the attributes. Former research only explained the effect of the online reviews on consumers' hotel choice and therefore this research will provide information about which attributes are getting influenced by the valence of reviews. With the online information that is provided online and the consumers' different preferences, the hypothesis below can extensively research which attributes are the most important and which attributes are easily influenced differentiating for various consumers.

Hypothesis

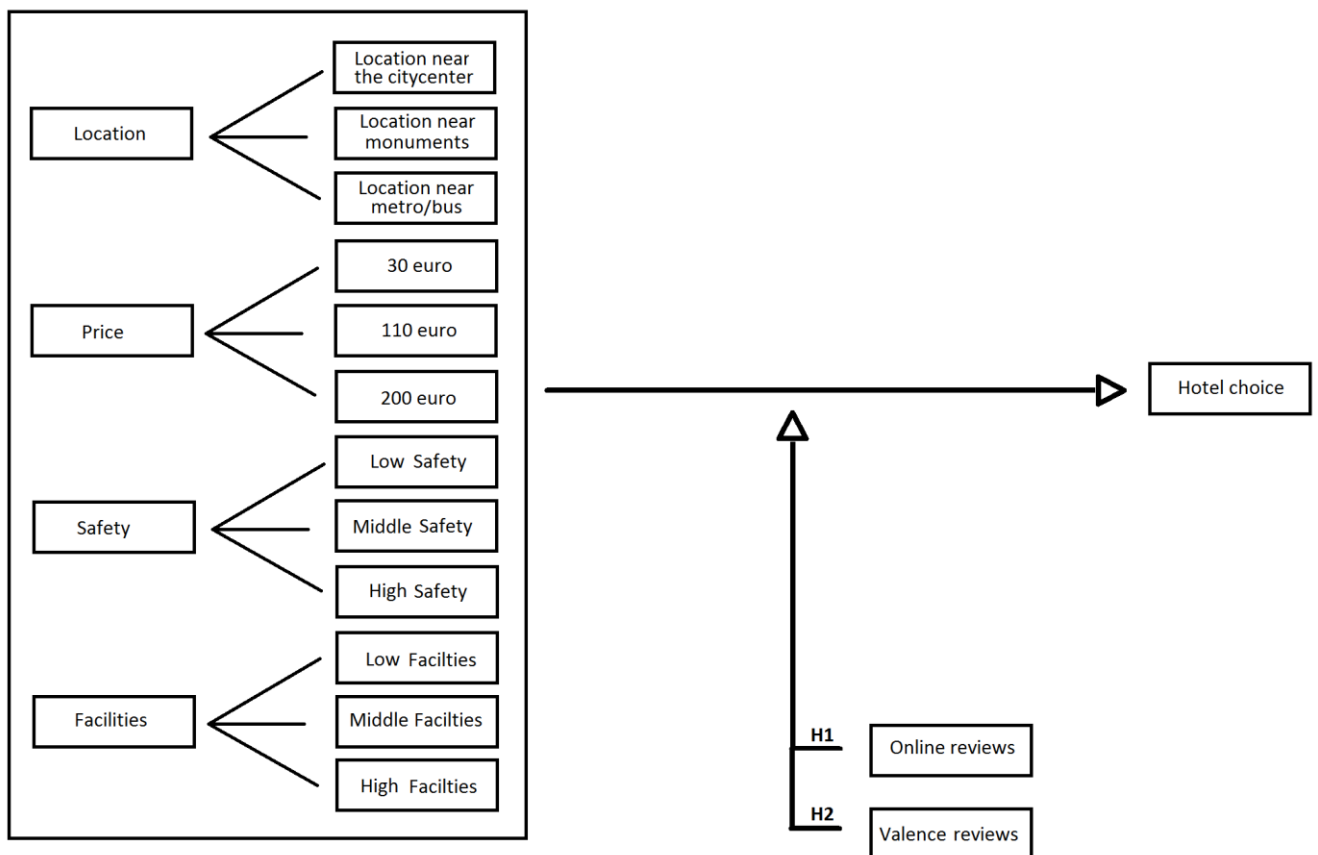
H1: *Online reviews moderates the consumers' preference structures regarding hotel attributes: specifically, H1a) Location, H1b) Price, H1c) Safety, and H1d) Facilities*

H2: *Consumers' preference for hotel attributes varies by the valence of online reviews: specifically, H2a) Location, H2b) Price, H2c) Safety, and H2d) Facilities*

Conceptual model

The dependent variable 'hotel choice' will be influenced by severable independent variables (location, price, safety and facilities). These independent variables have each three levels (see *Figure 1*). This conceptual model will be tested by using the discrete choice model. By conducting the discrete choice experiment the consumers will decide which situation they would prefer while deciding about their hotel choice. The collected data will be analyzed by using logistic regression.

Figure 1. Conceptual model



3. Methodology

This study aims for improvement on the current knowledge by combining the attributes regarding hotel and online reviews in an experimental study to investigate the main and moderating effects. Investigating the four independent variables (i.e. location, price, safety and facilities) are adding an additional layer to previous studies. For this, the discrete choice experiment and the discrete choice model were used. Three surveys were generated with 150 respondents in total to collect significant information. The benefits of doing a quantitative research are, that it can stay anonymous and therefore the respondents are not afraid of giving their real opinion. This method is also cheap, collects fast data and collects demographical details. The survey will be conducted in Dutch because the respondents are from the Netherlands. The collected data will be analyzed using logistic regression and the results will be discussed in chapter 4.

3.1. Survey design

The survey consists of several parts. The first couple of questions are demographical. Basic information like: male or female, age, income. After, a few questions are asked about their travel and hotel booking behavior. Questions like: do you ever consults online reviews while booking a hotel or how many times per year do you book a hotel (see appendix 6.1 – 6.4 for the full survey). From question 9 with the help of SPSS orthogonal design the choice sets are displayed. Respondents can give their opinion which choice set they prefer more. For this study three surveys had to be conducted. All of them are similar from question 1 till question 8 but from question 9 they are different. The first survey (survey 1) is being used as control survey. This survey has just 13 questions, from question 9 the choice sets are being showed and respondents can give their preference from with scenario they would most likely book a hotel. This survey doesn't show any reviews. On the other hand, the second survey (survey 2) shows the respondents the choice sets with a review for each card. The third survey (survey 3) is the same but the respondents see the reviews in the opposite order. If in the second survey the review was positive - negative for that choice set, the reviews in the third survey will be opposite (negative – positive). Thus, each card consists of a positive and a negative review. Furthermore, the respondents that were collected for this research were randomly assigned to a survey.

3.1.1. Identify attributes and levels

For this study, after doing research about which attributes would fit in this study, four attributes are chosen: location, safety, price and facilities. A discrete choice experiment requires different stages. The first stage is to identify all attributes that are relevant to the choice experiment and assign levels for each attribute. To make sure the proper attributes are being used, extensive literature about hotel booking behavior was being used. Each attribute has three levels because previous research (Green & Srinivasan, 1978; Haaijer & Wendel, 2003) pointed out that if there are more levels respondents tend to value them more. Therefore, in all attributes there are three levels which are displayed in Table 1 below. This table provides a clear overview of the attributes, their definition and the three levels that are assigned per attribute.

Previous research of (Wong & Chi-Yung, 2002) described about different attributes such as room type, room rate, brand and star-rating, location. These attributes were chosen after an exhaustively research about previous literature with hotel sales managers and the examination of the marketing and sales database of a busy hotel in the city. Other studies examined other attributes which can be easily experienced, attributes like: cleanliness of the hotel and services. The reason of the attributes chosen for this research is that one of them have not been examined for leisure guest before. The impact of facilities on hotel choice has never been examined before. Previous researched mentioned the most common attributes that were important for consumers without experiencing these attributes. These attributes can be chosen without the self-experience. They are just presented and the consumer can base their choice on these attributes. Take as an example price or star rating, consumers can choose their hotel based on these attributes. Furthermore, this research provides in-depth results by researching the moderating effect of online reviews on the consumers' preference structures regarding hotel attributes.

The survey is structured with demographical questions like age, gender, income. After, a few questions are asked about their holiday behavior like how many times do you travel per year and do you consult any reviews while booking a hotel etc. Furthermore, the questions about the choice sets were asked, with and without the reviews, to get a clear image of how the respondents perceive the chosen attributes.

Table 1. Attribute description

Attributes	Definition	Level
Location	In this study, there are three types of locations.	Near the city center Near the famous monuments Near the metro/bus
Price	In this study, there are three price categories.	30 euros per night 110 euros per night 200 euros per night
Safety	In this study, safety has three different categories. Low, medium and high.	<p>Low: no safe neighborhood, no hotel security and no hotel cameras or safe in the room</p> <p>Medium: safe neighborhood, hotel security, no hotel camera's and no safe in the room.</p> <p>High: safe neighborhood, hotel security, hotel camera's and safe in the room.</p>
Facilities	In this study facilities can be divided in three levels.	<p>Low: room service 14 hours, 14 hours reception, Wi-Fi, television, daily room cleaning, soap and body wash, shower</p> <p>Medium: Swimming pool, room service 14 hours, 14 hours reception, hairdryer, sewing kit, minibar, Wi-Fi, restaurant, valet parking, luggage service, television, daily room cleaning, telephone and a bathtub.</p> <p>High: Swimming pool, Fitness, 24-hour room service, 24-hour reception, luxurious bathroom with bathtub, iron, hairdryer, television full use, Wi-Fi, minibar, laundry service, sewing kit, telephone, daily room cleaning, restaurant, bar, terrace, computer, personalized greeting with flowers or gift, doorman, concierge and valet parking</p>

3.1.2. Choice experiment design

For the research method, discrete choice model, choice sets must be created. The number of possible combinations of the attribute levels in Table 1 is $3 \times 3 \times 3 \times 3$, however showing the respondents all combinations of choice cards is not appropriate because of the many combinations. This can lead to loss of concentration and eventually the respondents can give a wrong answer. Therefore, the fractional factorial orthogonal design was used to generate the choice cards. SPSS generated nine cards with the four attributes, three levels per attribute. The survey used five questions to present the choice sets, and with nine cards one card was used twice. The combination per choice set was carefully made with in mind that the attributes could not be the same. By doing this, each attribute has the chance to be observed correctly.

To measure the effect of online review in this research, it was useful to conduct three surveys'. One control survey with no reviews provided has as purpose to measure the effect of a positive and a negative review respectively. The second and third survey provide the opposite valence of the reviews to collect the data from the same choice sets under a different condition (positive vs. negative) to avoid bias from a restricted sample. Using this method, the cards will both have a positive and a negative review.

The surveys all start with the same eight demographical questions and after, the respondents see the choice sets. The control survey provided question 9 till 13 about which card the respondent would choose in each choice set. Only the cards with the attributes were displayed in the control survey (survey 1), by doing this the between-subject effect of online reviews would become visible. Survey 2 and 3 would then provide the within-subject effect of the online reviews. Both the surveys provided question 9 till 18 because every choice set had two questions. After seeing the choice set the first question would be 'which option do you prefer' if the respondent answered this question, the respondent would see two reviews one positive and one that was negative. After seeing these reviews, again the respondent was confronted with another question 'which option do you prefer after seeing the review' (see figure 2). With this question, it is possible that the respondent will change their first answer which measures the within-subject design.

3.1.3. Making a review

The reviews are gathered from www.tripadvisor.com from real consumers about their experiences. It was necessary to standardize the tone and intensity because strong opinions could lead to action for the respondent. All the reviews were similar lengths and were neutral, so no strong opinions about people telling others what they should and should not do.

E.g. positive review: **Luxurious hotel opposite station and the city center around the corner.** Luxurious hotel with friendly staff and good service. The room nicely quiet. The beds

were comfortable and the shower was great. The option to make your coffee and your own tea was also available. A lot of choice for breakfast. We had nothing to complain!

E.g. negative review: **Too expensive for the quality you get!** The room had an impossible faucet, which was not above the sink and therefore it all became a mess when washing your hands. The shower had a different temperature each time. The promised double bed were two separate beds, which was disappointing.

3.1.4. Collection of respondents

There were a few requirements for selecting a target group. The target group must have some experience with hotel bookings before and they are leisure guests. Potential hotel consumers are gathered to fill in the survey. The survey collects some demographical information and about their hotel booking behavior. Also, the survey collects some results about how people would select a specific hotel with and without the help of reviews. Survey 1 asked the questions about the hotel selection without any reviews, survey 2 with reviews and survey 3 also with reviews but the opposite way to prevent bias please see figure 2 for an example (the **P** is positive **N** is negative). The sample included 150 respondents, 50 respondents for each survey who had been randomly assigned to a survey. The collection of the respondents took place on the campus of the Erasmus University and online through Facebook to reach the target groups.

Figure 2. Survey example

Survey 2

Locatie: Vlakbij de metro/bus

Prijs: 200 euro per nacht

Veiligheid: Laag

Faciliteiten: Gemiddeld

Locatie: Vlakbij de bezienswaardigheden

Prijs: 30 euro per nacht

Veiligheid: Hoog

Faciliteiten: Gemiddeld

A
B

Survey 3

Locatie: Vlakbij de metro/bus

Prijs: 200 euro per nacht

Veiligheid: Laag

Faciliteiten: Gemiddeld

Locatie: Vlakbij de bezienswaardigheden

Prijs: 30 euro per nacht

Veiligheid: Hoog

Faciliteiten: Gemiddeld

A
B

9. Welke optie heeft uw voorkeur? *

A

B

10. Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Heel ouderwets

N Geen lift, smalle trappen, oud meubilair, kleine tv met een paar kanalen die werken, geen comfortabele bed, oude handdoeken, oude slot op de deur, dunne papieren muren, heel kleine kamer en badkamer met douch.

P: Perfecte ligging

Perfect gelegen pal naast de beroemde bezienswaardigheden. Zeer vriendelijk personeel. Kamer van alle gemakken voorzien en zeer ruim wat ons zeker erg goed beviel. Sanitair netjes en schoon. Prijs-kwaliteit goed.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

A

B

9. Welke optie heeft uw voorkeur? *

A

B

10. Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Prima hotel met vriendelijke mensen!

P Het was heerlijk. Prima kamer, heerlijk ontbijt/buffet en 2 minuten lopen van station en 10 minuten van de binnenstad. Koffer kon na uitchecken gewoon in een afgesloten kamer in het hotel blijven zodat we nog lekker konden gaan winkelen.

B: Geen aanrader!

N De bedden waren erg oncomfortabel en niet meer in goede staat. De kamer was vies en stoffig. De badkamer werd heel slecht schoon gemaakt want hier was het erg smerig. Muizen aanwezig in het hotel.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

A

B

3.1.5. Analyze the results.

The surveys were generated on www.thesisstools.com. The reason this tool was chosen was because of prior experience, and it provides the data in an excel sheet. This excel file can be easily exported to SPSS to analyze the demographical data easily. With the help of analyze, descriptive statistics and frequencies, the models explain who the respondents are and how their booking behavior look like. For the questions with the choice sets this was a bit more difficult. The best tool to analyze this data was STATA because it was easier to generate the logistic regression models.

But before this could be done the data needed a few changes, this was done in excel. The excel document with the data consisted of the following: ID, Group, alt, first answer (no review), Y, change in, location-monu, location-metro/bus, price, safety-low, safety-high, facilities-low, facilities-high, review and reviewgroup. 'ID' refers to the variable to identify the respondents. The variable 'group' refers to the identification of the choice sets. 'Alt' refers to identify hotel alternative (card 1-10). 'Firstanswer' refers to the respondents' choice in survey 1 and for survey 2 and 3 it indicates the first answer of the respondents before they saw a review. 'Y' refers to the respondents' hotel choice, for survey 1 and for survey 2 and 3 after seeing the reviews.

For the attributes one level had to be taken as the base level and for location the level 'location near the city center' was the base level. The other levels are described in table 1. The excel sheet contains a lot of data and to explain it a little more clearly each attribute level that was presented on a choice card was indicated with a 1. For example, when there is a 1 on location metro/bus this means that this level was described on the card the respondent saw. For the variable price, it just indicated which price level they saw on each card. For safety and facilities there is also a base level, namely safety medium and facilities medium. The variable 'reviewgroup' points to whether the respondents saw a review, 0 means no review and 1 means they did see a review, however it does not say if the review was positive or negative. The full results are displayed in model 2 in appendix 6.8. The variable 'review' displayed what review the respondent saw, positive or negative. The third model indicates how the respondents reacted after seeing the reviews, only 100 respondents saw the reviews, 0 is seeing a negative review and 1 is seeing positive review.

3.2. Discrete choice model

This section summarized the major theory and description of the discrete choice models by Train (2009). The discrete choice model explains and predicts choices between two or more alternatives. The outcome of the decision is denoted as Y , which indicates the chosen alternative. The goal of this study is to figure out what factors are influencing the consumer decision. Because not every factor can be observed, the observed factors are labeled as x and the unobserved factors are labeled as ϵ . The factors relate to the consumers choice through the function $y = h(x, \epsilon)$. This is called the behavioral process function. Since ϵ is not observed for the researcher, the consumers choice is not deterministic and it can't be exactly predicted. Instead, the probability of any particular outcome is derived. The terms that are unobserved are considered random with density $f(\epsilon)$. The probability that the respondents chooses a particular outcome from the choice set is simply the probability that the unobserved factors are such that the behavioral process leads to the outcome: $P(y | x) = \text{Prob} (\epsilon \text{ s.t.h. } (x, \epsilon) = y)$. This probability can be express in a more usable form. $I[h(x, \epsilon) = y]$ is the indicator function that has the value of 1 when the statements in the brackets are true and 0 when it is false.

Logit is by far the most widely used discrete choice model. To derive the logit model, the general notation below is necessary. Also add the specific distribution for unobserved utility in this notation. The decision maker is labeled n and j stands for the alternatives. The utility that is being obtained by the researcher from alternative j is decomposed into a part that is labeled V_{nj} that is known by the researcher and an unknown part ϵ_{nj} that is treated as random by the researcher: $U_{nj} = V_{nj} + \epsilon_{nj} \forall j$. Each ϵ_{nj} is an independently, identically distributed extreme value. Therefore, the probability density function (eqn. 1) and cumulative probability function (eqn. 2) of unobserved part in the logit model are:

$$f(\epsilon_{nj}) = e^{-\epsilon_{nj}} e^{-\exp(-\epsilon_{nj})} \quad \text{Eqn. (1)}$$

$$f(\epsilon_{nj}) = e^{-\exp(-\epsilon_{nj})} \quad \text{Eqn. (2)}$$

By assuming that the variance is $\pi^2/6$, it normalizes the scale of utility. The extreme value distribution mean is not equal to zero, however the mean is immaterial, since the differences in utility only matter, and the difference in two random terms that have a mean of zero when they have the same mean. A logistic distribution is the difference between two extreme value variables. That is when ϵ_{nj} and ϵ_{ni} are extreme value and then $\epsilon_{nji}^* = \epsilon_{nj} - \epsilon_{ni}$ follows the logistic distribution.

$$F(\varepsilon_{nij}^*) = \frac{\exp(\varepsilon_{nij}^*)}{1 + \exp(\varepsilon_{nij}^*)} \quad \text{Eqn. (3)}$$

The formula above is often used for describing binary logit models, models with 2 alternatives. The extreme value distribution is being used for the errors is almost the same as assuming that the errors are normal independently. This means that the unobserved utility for one alternative is not related to the unobserved utility for another alternative. As mentioned before the decision makers are labeled as n and the alternatives as j . The formula of the probability that the decision maker n chooses alternative i is:

$$P_{ni}: \text{Prob}(V_{ni} + \varepsilon_{ni} > V_{nj} + \varepsilon_{nj} \forall j \neq i) = \text{Prob}(\varepsilon_{ni} < \varepsilon_{nj} + V_{nj} - V_{ni} \forall j \neq i)$$

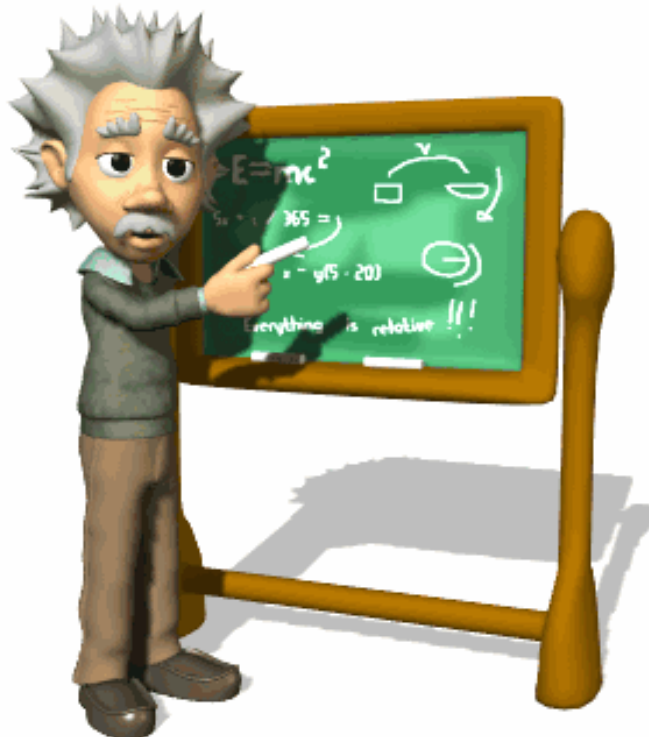
ε_{ni} is not given and therefore the choice probability is the integral of $P_{ni} | \varepsilon_{ni}$ over all values of ε_{ni} weighted by its density.

$$P_{ni} = \int \left(\prod_{j \neq i} e^{-\exp(-(\varepsilon_{ni} + V_{ni} - V_{nj}))} \right) e^{-\varepsilon_{ni}} e^{-\exp(-\varepsilon_{ni})} d \varepsilon_{ni} \quad \text{Eqn. (4)}$$

With some algebraic manipulation, this integral can be formed in the following expression.

$$P_{ni} = \frac{\exp(V_{ni})}{\sum_j \exp(V_{nj})} \quad \text{Eqn. (5)}$$

This formula is the logit choice probability.



4. Results & discussion

This chapter will provide detailed information about the results that were found. Firstly, some demographical information about the respondents (Table 2) and afterwards the results of the choice experiments will be discussed. To clearly describe the results, three models are being conducted from STATA. With the help of binary outcomes, logistic regression the models can be explained in three different ways. The first model (Table 3) illustrates the outcomes without the impact of the reviews. The second model (Table 4) provides insights in the differences from the survey's with and without reviews despite that the reviews are positive or negative. The third model (Table 5) shows the impact of the valence (positive & negative) reviews.

4.1. Demographical information about the respondents and important findings

From the 150 respondents, the age varied between 17 – 60 years old, their average age was 29.2 years old. One question in the survey was about the respondent's travel behavior. Here, we could conclude from the 150 respondents, the average travel was 2.073 times per year. One question about the hotel booking behavior revealed that the average hotel booking was 2.28 times per year. The table below gives an overview of the other collected details. For the SPSS models see appendix 6-5 – 6.7.

Table 2. Demographical information

Information	Category	Frequency	Share %
Gender	Male	40	26.67%
	Female	110	73.33%
Income	€0 - €750	30	20%
	€751 - € 1500	40	26.67%
	€1501 - €2250	41	27.33%
	€2251 - €3000	23	15.33%
	€3001 - €3750	13	8.67%
	€3751 - €4500	1	0.67%
	> €4500	2	1.33%
Do you travel a lot?	Yes	74	49.33%
	No	40	26.67%
	Seldom	36	24%

Hotel booking platform	Booking website e.g. www.trivago.com	97	64.67%
	Hotel website	28	18.67%
	Travel agency	17	11.33%
	Other	8	5.33%
Consult online reviews	Never	9	6%
	Rarely	16	10.67%
	Every occasionally	17	11.33%
	Sometimes	45	30%
	Always	63	42%

This part will describe what was noticed during the data collection. The data was modified in excel (see paragraph 3.1.5). With this data excel sheet the data could be filtered to find important aspect of this research. It became clear how many respondents changed their opinion after they saw the valence of a review. The average change in answer for the 10 cards were 4.3 times after seeing the valence of reviews. From the 5 choice sets the average change in answer was 2.15 times. From the 1000 answers collected from the 100 respondents that saw a review, there were 222 times that there was a change in answer if the respondent saw a card with a positive review. The unusual happened when seeing a negative review, 3 respondents that saw a positive review on the card they chose, decided to change their answer to the card where the negative review was provided. Because this group is too small, there is a chance that this was a mistake. There were 24 respondents that stuck to their first answer after seeing a negative review, because this group is too small we can't predict which attributes has the most importance.

4.2. Results not accounting for reviews.

Table 3 below describes the most important findings of the data that is displayed in model 1 (see appendix 6.8). This table measured only the first answer of the 150 respondents before seeing a review, thus 1500 answers. To understand the table better it is important to know that this study assumed the utility regarding all attributes except for the price as the non-linear function. The base level for location was location near the city center, for safety it was medium safety and for facilities it was medium facilities.

Table 3. Data not accounting for reviews derived from model 1.

	Coefficient	Std. Error	P-value
Location monuments	-0.043251	0.2805103	0.887
Location metro/bus	-0.7771946	0.2325686	0.001
Price	-0.0289584	0.0020588	0.000
Safety Low	-2.096091	0.2567598	0.000
Safety High	0.9416114	0.3775261	0.013
Facilities Low	-0.5428479	0.3540108	0.000
Facilities High	-0.5428479	0.4068823	0.182

Table 3 displays the data from the first answer of all the 1500 answers of 150 respondents which displays the effect of the attributes on hotel choice without any influence of the reviews. As mentioned before for all the attributes except for price there is a base level. For the first attribute level location near the famous monuments there is no significant effect ($0.887 > \alpha = 0.05$) this means that there is no difference in utility for the location near the famous monuments and location near the city center. For the second attribute level location near the metro/bus there is a significant ($0.001 < \alpha = 0.05$) decrease of -0.7771 on the utility to choose the hotel near the metro/bus rather than the location near the city center. For the attribute price, there is a significant effect on the utility, when the price increases by 1 euro the utility decreases with -0.0289. For the next attribute level safety low which is significant ($0.000 < \alpha = 0.001$), here a one-unit increase from a medium safety to a low safety has a negative impact of -2.0960 on the utility for choosing the hotel with a low safety rather than the hotel with a higher safety. For the attribute level safety high, there is a significant increase ($0.013 < \alpha = 0.05$) on utility of 0.9416 for choosing a hotel with a higher safety rather than a hotel with a medium safety. For the attribute level, low facilities there is a significant decrease ($0.000 < \alpha = 0.05$) of -0.5428 in the utility for choosing lower facilities rather than medium facilities. For the last attribute level in the model, facilities high there is no significant effect ($0.182 > \alpha = 0.05$), this indicates that there is no difference in utility for medium facilities and high facilities.

4.3. Results with impact of reading reviews

Table 4 below, displays the most important data from model 2 (see appendix 6.8). This model displays the interaction variables where the differences between the control group and other groups are visible despite of the valence of the reviews.

Table 4. Data accounting for reviews derived from model 2.

	Coefficient	Std. Error	P-value
Location monuments	-0.2574395	0.2525116	0.308
Location metro/bus	-0.0120051	0.2568424	0.963
Price	-0.0129147	0.0014699	0.000
Safety Low	-0.5050790	0.2571423	0.050
Safety High	0.9370063	0.2675529	0.000
Facilities Low	-0.9159375	0.2582585	0.000
Facilities High	0.6915719	0.273456	0.011
Location monuments_reviewgroup	-0.2834203	0.2901788	0.329
Location metro/bus_reviewgroup	-0.4080033	0.2967012	0.169
Price_reviewgroup	0.009511	0.0015808	0.000
Safety low_reviewgroup	0.1115554	0.2873485	0.698
Safety high_reviewgroup	-1.385143	0.3002675	0.000
Facilities low_reviewgroup	0.4458274	0.2910331	0.126
Facilities high_reviewgroup	-1.177352	0.3105562	0.000

Table 4 above, explains the interaction variables with the effect of review, despite of the review valence. The first attribute level location near the famous monuments is not significant ($0.308 > \alpha = 0.05$) which states that there is no significant difference between the utility of the location near the famous monuments and the location near the city center. The next attribute level is location near the metro/bus, this variable is also not significant ($0.963 > \alpha = 0.05$) which explains that there are no significant differences between the utility of the location near metro/bus rather than location near the city center. The attribute price is significant ($0.000 < \alpha = 0.05$), this indicates that when the price goes up by 1 euro there will be a decrease of -0.01291 on the utility. The next attribute level, safety low has a negative significant ($0.05 \leq \alpha = 0.05$) impact of -0.5050 on the utility for choosing a lower safety over a higher safety. Safety high is significant ($0.000 < \alpha = 0.05$) and has an increase of 0.9370 on the utility for choosing a higher safety rather than a medium safety. For low facilities, there is a significant

($0.00 < a = 0.05$) decrease on the utility of -0.9159 when choosing low facilities rather than high facilities. For high facilities, there is a significant increase ($0.011 < a = 0.05$) of 0.6915 on the utility when choosing high facilities rather than medium facilities.

From the next variable, the interactions are included. From here it will be clear what the respondent's choice was on each card after seeing a review despite of the valence. The first variable location near the monuments has no significant effect ($0.329 > a = 0.05$) and therefore we can conclude that seeing a review does not moderate the utility for choosing the location near the monuments rather than the location near the city center. For the next variable location near the metro/bus does not have a significant effect ($0.169 > a = 0.05$), this indicates that seeing a review does not moderate the utility for choosing the location near the metro/bus over the location near the city center. The next attribute price has a significant effect ($0.000 < a = 0.05$), this means that seeing a review does moderate the utility positively with 0.0095. When there is a review provided the respondents are willing to pay more as the marginal disutility of price decreased by 0.0095. The next variable safety low has no significant effect ($0.698 > a = 0.05$), when the respondents see a review it does not moderate the utility for choosing low safety rather than high safety. For a high safety, there is a significant effect ($0.000 < a = 0.05$), this means that when the respondents see a review it does moderate the utility negatively with -1.3851 for choosing high safety rather than a medium safety. After seeing a review, despite of the valence the respondents prefer a medium safety over a higher safety. For low facilities, there is no significant effect ($0.126 > a = 0.05$), this means that seeing a review does not moderate the utility for choosing low facilities rather than medium facilities. The last variable is facilities high with a significant effect ($0.00 < a = 0.05$), which indicates that seeing a review moderates the utility negatively with - 1.1773 for choosing a high facilities over medium facilities. The respondents are satisfied with medium facilities and do not need more.

4.4. Results with the impact of valence of reviews

Table 5 only displays the data from the respondents that saw a positive/negative review. The negative reviews were indicated with a 0 and the positive reviews with a 1. The first attribute (levels) were measured for the respondents that saw a negative review (0). From the interaction variable, the table measures the respondents that saw a positive review (1).

Table 5. Data with impact of valence of reviews derived from model 3.

	Coefficient	Std. Error	P-value
Location monuments	2.205602	0.9972343	0.027
Location metro/bus	5.210792	1.488427	0.000
Price	-0.0403664	0.007321	0.000
Safety Low	-3.622996	0.8095174	0.000
Safety High	-7.053655	1.400399	0.000
Facilities Low	-0.9158504	0.5394682	0.090
Facilities High	-9.749638	1.970555	0.000
Location monuments_positive	-2.967897	1.31851	0.024
Location metro/bus_ positive	-5.021576	1.870612	0.007
Price_positive	0.0347462	0.0058013	0.000
Safety low_ positive	4.706183	1.030583	0.000
Safety high_positive	7.633917	1.333182	0.000
Facilities low_positive	1.349659	0.9009226	0.134
Facilities high_positive	9.917937	1.970472	0.000

The first attribute location near the famous monument has a significant ($0.027 < \alpha = 0.05$) increase of 2.2056 on the utility for location near the famous monuments rather than location near the city center after seeing a negative review. After the respondents see a positive review for the location near the famous monuments, there is a significant effect ($0.024 < \alpha = 0.05$), which indicates that seeing a positive review moderates the utility negatively by -0.7622 ($2.2056 - 2.9678$) for choosing the location near the famous monuments over the location near the city center. The location near the metro bus also has a significant ($0.000 < \alpha = 0.05$) increase of 5.2107 on the utility for the location near the metro/bus rather than location near the city center after seeing a negative review. After the respondents see a positive review for the location near the metro/bus there is a significant effect ($0.024 < \alpha = 0.05$) which displays that seeing a positive review moderates the utility positively with 0.1892 ($5.2107 - 5.0215$) for

choosing the location near the metro/bus over the location near the city center. These results shows that the preference for the location may differ by the valence of review that respondents read. However, considering the insignificant moderating effect of online review on the preference for the location as shown in Table 4, it is hard to tell that the difference in the valence of the review fully contributes to the significantly different preference for the location. Also, this study manipulated the reviews, that it does not contain any information about the attributes as described in Table 1. So, the negative reviews did not point out a defect of the hotel due to its location, and the positive reviews also did not highlight the benefits of hotel location. Therefore, the preference of hotel location was decided by the trade-off between other attributes. From this reason, the hotel near the city center or the monuments might happen to be the least preferred one by respondents who read the negative or positive review after trading off with other attributes.

For the attribute price, there is a significant ($0.000 < a = 0.05$) decrease of -0.0403 on the utility after seeing a negative review. However, the impact of seeing a positive review leads to a significant effect ($0.000 < a = 0.05$), which indicates that seeing a positive review moderates the utility negatively with -0.0369 ($-0.0403 + 0.0034$) for a 1 euro increase in price than no increase in price. Table 4 indicated that the respondent would want to pay more if a review is provided, however Table 5 shows a positive coefficient but the utility stays negative.

For the attribute level safety low, there is a significant ($0.000 < a = 0.05$) effect, this explains that seeing a negative review moderates the utility negatively with -3.622 for choosing the safety low rather than a medium safety. However seeing a positive review leads to a significant effect ($0.000 < a = 0.05$), which indicates that a positive review moderates the utility positively with 1.0832 ($-3.6229 + 4.7061$) for choosing safety low over a medium safety. For safety high, there is also a significant effect ($0.000 < a = 0.05$), which indicates that seeing a negative review moderates the utility negatively with -7.0536 for choosing the safety high rather than the medium safety. However, seeing a positive review leads to a significant effect ($0.000 < a = 0.05$), which displays that seeing a positive review moderates the utility positively with 0.5803 ($-7.0536 + 7.6339$) for choosing safety high rather than medium safety.

For the next attribute level facilities low, which does not have a significant effect of 95% ($0.090 > a = 0.05$) but does have a significant effect for 90% ($0.090 < a = 0.1$). With 90% trust interval, we can conclude that seeing a negative review moderates the utility negativity with -0.9158 for choosing low facilities rather than medium facilities. However, seeing a positive review does not moderate the utility for choosing low facilities over medium facilities. For facilities high, there is a significant effect ($0.000 < a = 0.05$), which indicates that seeing a negative review moderates the utility negatively with -9.749 for choosing the high facilities rather than medium

facilities. When seeing a positive review there is a significant effect ($0.000 < a = 0.05$), which indicates that seeing a positive review moderates the utility positively with 0.1683 (-9.7496 + 9.9179) for choosing facilities high over facilities medium.

For the attribute levels safety low and facilities low there is a negative coefficient for the respondent when they see a negative review, which is normal. But for a high safety and high facilities there is a negative coefficient which states that the respondents prefer a medium safety and facilities over the higher ones. This can be explained based on the prospect theory of Kahneman & Tversky, (1979). Respondents expect a higher utility for the hotel having the high level of safety and facilities over the hotels with a medium level so, the reference point of utility is higher for the former than the latter. Due to the negative review, respondents get more disappointed with the hotel that have a higher safety and facility and perceive more disutility (i.e. loss) because their reference utility was already higher. Therefore, the negative and significant coefficient for the high safety and the high facilities can be justified. It can also justify the positive and significant coefficient of the low safety for the respondents reading the positive review. Due to the less reference utility of the low safety than the medium safety of the hotel, the positive review will give more unexpected utility (i.e. gain) for the former than the latter.

5. Conclusion

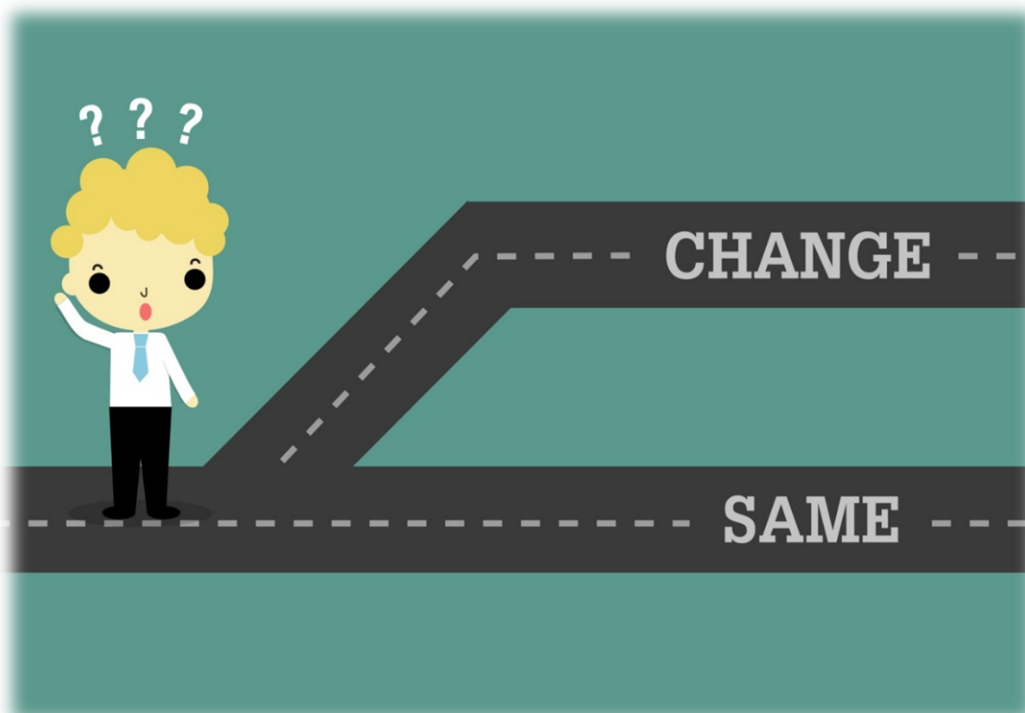
This chapter will contain a summary of the information that was found and will explain how this research contributes to existing research. The conclusion if the hypothesis is supported will also become clear. The managerial implication, how organizations could use this research, will become clear and the limitations of this research will be discussed. In the discussion section, there will be a few points which are important to consider for next research.

The data that was analyzed of survey 1 'first answer' displayed the following: The attribute level location near the city center has the preference over location near the metro/bus. The location near the famous monuments does not have a significant effect on the utility of choosing the location near the famous monuments over the location near the city center. For the attribute price, there is a significant decrease in utility of the hotel preference after the price increases by 1 euro. This research also measured the safety of a hotel. It is found that a medium safety has a preference over a low safety, but a high safety has the preference over a medium safety. The higher the safety before seeing a review the better it is for the respondents. For the attribute facilities, we could conclude that medium facilities have the preference over the low facilities in a hotel. However high facilities do not have the preference over the medium facilities and therefore we could conclude that the respondents are satisfied when the hotel offers medium facilities.

Table 4 (see appendix 6.8 for model 2) described how the respondents reacted on a review, despite of the valence. The important data that was analyzed was as follow: For the attribute location, we can't significantly conclude if the preference structure for location was different for one another. The willingness to pay more increases when the respondents were confronted with a review, despite the valence. Therefore, we can conclude that the respondents are willing to pay a small fee extra when the hotel has a review. A review helps the respondents to find the hotel that fits with their preference. For the attribute safety, we can't conclude if a lower safety has a preference over medium safety after seeing a review without the valence. However, we can conclude that a higher safety does not have the preference over a medium safety. For low facilities, we can't conclude if this has the preference over the medium facilities after seeing a review without the valence. However, we can conclude that the respondents are satisfied with medium facilities. This unusual conclusion can be explained by Kahneman & Tversky, (1979) as mentioned in paragraph 4.4. Respondents expect a higher utility for higher level of safety and facilities over the medium levels. The negative review leads to disappointed respondents and disutility. Also it can be explained for the opposite, low safety and facilities with a positive review can lead to unexpected utility that satisfies the respondents.

The results for the third survey were also analyzed and the most important findings were as follow: Location near the city center has the preference over the location near the famous monuments even with a positive review. However, a positive review for the location near the metro/bus has the preference rather than the location near the city center. A positive review on the attribute price still has a negative utility, therefore we can conclude that the respondents don't like to pay extra even though the hotel has positive reviews. A positive review on a hotel with a lower safety caused a positive utility for booking a hotel with a lower safety rather than medium safety. A hotel with high safety and a positive review, also has a positive utility on choosing a hotel with a higher safety rather than a medium safety. For low facilities, we can't conclude if this has the preference rather than the medium facilities. However, for high facilities there is a positive utility, the respondents would choose a hotel with higher facilities and a positive review over a hotel with medium facilities.

Two hypothesis were conducted to find the moderating effect of the (valence) online reviews on the attributes. The first hypothesis is true except for H1d: facilities. In this case we can conclude that for every attribute (level) except for facilities low there was a moderating effect both positively as negatively. The second hypothesis is also true except for H2d: facilities. Here, the hotel preference is positively influenced by the valence of reviews of: location near the city center, safety low, safety high and facilities high. The valence of reviews influenced the attributes (location near the famous monuments and price) negatively and has a negative moderating effect on hotel preference. For the attribute level facilities low, there is no significant moderating effect found and therefore this level could not be taken in consideration for hotel preference.



5.1 Management implication

This research is useful for hoteliers, and it adds more in-depth information about the impact of the reviews specifically on each attribute. This research contributes the understanding of online reviews and their moderating effect. The main contribution lies in the theory and the chosen discrete choice model to investigate the impact of online reviews on each hotel attribute to predict the consumers' hotel preference. This research is the first to study the moderating effect of each attribute on the consumer's preference. Prior studies mentioned the effect of online reviews on hotel preference separately from the impact of the attributes on hotel preference. By using the impact of the valence of the reviews this study could conclude which attributes could be easily manipulated and which attribute are strong and less easy to manipulate. Online reviews are very important for a hotel and therefore a better understanding is mandatory. Based on the discussion of paragraph 4.4. where the respondents read the negative review about the described high level of safety and facilities may cause the worst effect even though the review is not against those attributes. For a hotel manager it is not possible to have control over the valence of the review, thus the best strategy would be to provide the best service, at least in order to avoid the negative reviews.

5.2. Limitations & further research

To add more meaning to this research, further research can be done. Further research can connect the demographical details with this research to find specific consumer behavior information. For example, a conclusion that mentions that consumers with a higher income have a higher willingness to pay for a hotel that provides a positive review. Furthermore, this research was conducted in the Netherlands, and the respondents were all Dutch. To make this research more interesting this could be done in other countries where the consumers have different backgrounds, interest and a different culture. Also, further research can investigate the impact of different writing styles, source likability, identification, rating and anonymity. Another limitation is the use of discrete choice model namely: the attribute levels on the cards can't be measured on its own and will only be measured in the group of different attribute levels. Therefore, we can't conclude if the other attributes do influence each other, e.g. price is more important than location and therefore the respondent chooses the card where the price is always the lowest. Furthermore, this research was done by using the quantitative method, a survey. This method has its limitations, like the respondents don't understand exactly what is being asked, no influence on the response and consumers opinions are limited. To make this research even better, a combination of the qualitative and quantitative method can explain more about the consumer's actual booking behavior.

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6. Appendix

In the appendix, the survey will be displayed and the conducted models to describe the demographical information of the respondent.

6.1. Survey information about respondent

1.

Wat is uw geslacht? *

- Man
- Vrouw



2.

Wat is uw leeftijd? *



3.

Wat is ongeveer uw maandinkomen? *

- €0 - €750
- €751 - €1500
- €1501 - €2250
- €2251 - €3000
- €3001 - €3750
- €3751 - €4500
- > €4500

4.

Reist u vaak? *

- Ja
- Nee
- Zelden



5.

Hoe vaak per jaar gaat u op reis? *



6.

Hoe vaak per jaar boekt u een hotel? *

7.

Hoe boekt u meestal een hotel? *

- Boekingswebsite vb. www.trivago.com
- Op de hotel website
- Via een reisbureau
- Anders



8.

Als u een hotel wilt boeken raadpleegt u dan online reviews?

Bijvoorbeeld op Tripadvisor

Nooit



Altijd

6.2. Control survey choice sets

De onderstaande informatie is nodig voor de volgende vragen.

Er zijn 3 verschillende locaties

- Vlakbij het stadscentrum
- Vlakbij de metro/bus
- Vlakbij de bezienswaardigheden

3 verschillende prijscategorieën:

- 30 euro per nacht
- 110 euro per nacht
- 200 euro per nacht

3 verschillende categorieën over veiligheid:

- Laag: Geen veilige omgeving/buurt, geen beveiliging, hotel camera's en kluis afwezig in het hotel.
- Gemiddeld: Een veilige omgeving/buurt, beveiliging in het hotel, hotel camera's en kluis afwezig in het hotel.
- Hoog: Een veilige omgeving/buurt, beveiliging in het hotel, hotel camera's en kluis aanwezig

De faciliteiten van een hotel kunnen worden onderverdeeld in drie categorieën:

- Hoog: Zwembad, 24 uur room service, 24 uur receptie, luxe badkamer met bad, strijkijzer, fohn, volle gebruik van televisie, Wi-Fi, minibar, wasserette, telefoon, naai kitje, dagelijkse house keeping, restaurant, bar, terras, computer, persoonlijke bericht met bloemen of cadeau, portier, concierge en valet parking
- Gemiddeld: Zwembad, 14 uur room service, 14 uur receptie, fohn, naai kitje, Wi-Fi, restaurant, televisie, dagelijkse house-keeping, telefoon, concierge en badkamer met bad.
- Laag: Room service 14 uur, receptie 14 uur, Wi-Fi, dagelijkse house-keeping en badkamer met douch (zeep inbegrepen).

Locatie: Vlakbij de metro/bus

Prijs: 200 euro per nacht

Veiligheid: Laag

Faciliteiten: Gemiddeld

A

Locatie: Vlakbij de
bezienswaardigheden

Prijs: 30 euro per nacht

Veiligheid: Hoog

Faciliteiten: Gemiddeld

B



9.

Zie foto hierboven.

Welke optie heeft uw voorkeur? *

- A
 B

Locatie: Vlakbij het stadscentrum

Prijs: 30 euro per nacht

Veiligheid: Laag

Faciliteiten: Laag

A

Locatie: Vlakbij het stadscentrum

Prijs: 200 euro per nacht

Veiligheid: Hoog

Faciliteiten: Hoog

B



10.

Zie foto hierboven.

Welke optie heeft uw voorkeur? *

- A
 B

Locatie: Vlakbij de metro/bus

Prijs: 30 euro per nacht

Veiligheid: Gemiddeld

Faciliteiten: Hoog

A

Locatie: Vlakbij de
bezienswaardigheden

Prijs: 200 euro per nacht

Veiligheid: Gemiddeld

Faciliteiten: Laag

B



11.

Zie foto hierboven.

Welke optie heeft uw voorkeur? *

- A
 B

Locatie: Vlakbij de
bezienswaardigheden

Prijs: 110 euro per nacht

Veiligheid: Laag

Faciliteiten: Hoog

A

Locatie: Vlakbij de metro/bus

Prijs: 110 euro per nacht

Veiligheid: Hoog

Faciliteiten: Laag

B



12.

Zie foto hierboven.

Welke optie heeft uw voorkeur? *

- A
 B

Locatie: Vlakbij het stadscentrum

Prijs: 110 euro per nacht

Veiligheid: Gemiddeld

Faciliteiten: Gemiddeld

A

Locatie: Vlakbij de
bezienswaardigheden

Prijs: 200 euro per nacht

Veiligheid: Gemiddeld

Faciliteiten: Laag

B



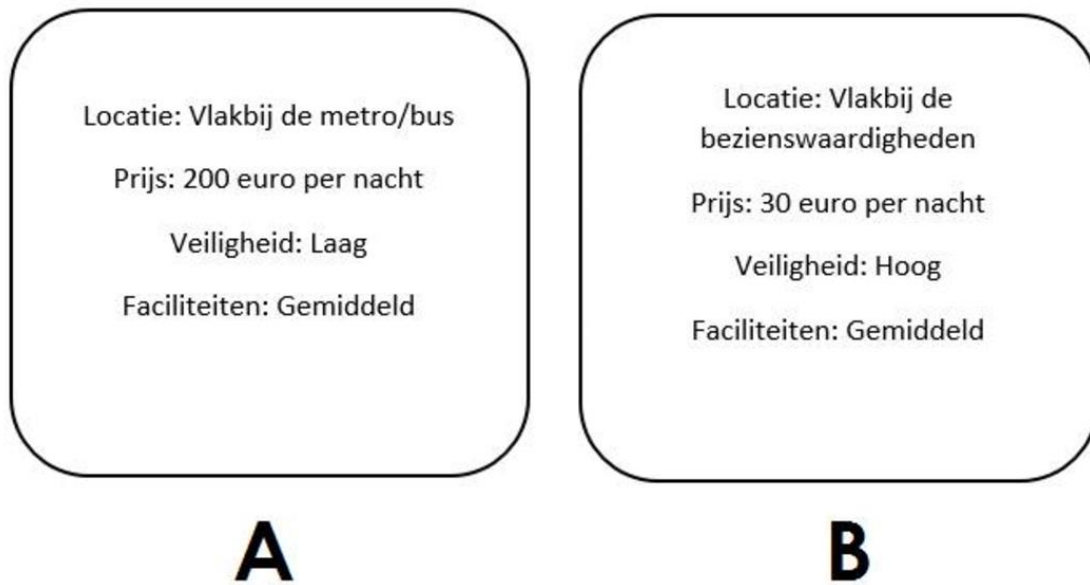
13.

Zie foto hierboven.

Welke optie heeft uw voorkeur? *

- A
 B

6.3. Second survey choice sets including reviews



9.

Welke optie heeft uw voorkeur? *

- A
 B



10.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Prima hotel met vriendelijke mensen!

Het was heerlijk. Prima kamer, heerlijk ontbijtbuffet en 2 minuten lopen van station en 10 minuten van de binnenstad. Koffer kon na uitchecken gewoon in een afgesloten kamer in het hotel blijven zodat we nog lekker konden gaan winkelen.

B: Geen aanrader!

De bedden waren erg oncomfortabel en niet meer in goede staat. De kamer was vies en stoffig. De badkamer werd heel slecht schoon gemaakt want hier was het erg smerig. Muizen aanwezig in het hotel.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij het stadscentrum
Prijs: 30 euro per nacht
Veiligheid: Laag
Faciliteiten: Laag

A

Locatie: Vlakbij het stadscentrum
Prijs: 200 euro per nacht
Veiligheid: Hoog
Faciliteiten: Hoog

B

11.

Welke optie heeft uw voorkeur? *

- A
 B



12.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Matig hotel

Hotel is gedateerd en de kamer was klein. Er kwam een vieze geur uit de badkamer, een rioollucht. De kamer en de badkamer waren beide te klein. Maar voor wat je betaald kan je echt wel wat beters krijgen.

B: Prima ligging en vriendelijk personeel!

Het hotel is midden in het centrum gelegen. Alles is op loopafstand te doen. Het personeel is erg vriendelijk en behulpzaam. Mooie, ruime kamers.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij de metro/bus
Prijs: 30 euro per nacht
Veiligheid: Gemiddeld
Faciliteiten: Hoog

A

Locatie: Vlakbij de
bezienswaardigheden
Prijs: 200 euro per nacht
Veiligheid: Gemiddeld
Faciliteiten: Laag

B

13.

Welke optie heeft uw voorkeur? *

- A
 B



14.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Mooi hotel

Paar nachtjes in dit hotel geweest en het is erg goed bevallen. Mooie ruime kamer, goed bed en nette badkamer. Het ontbijt was royaal goed en het diner ook. Zeer tevreden.

B: Heel slecht bevallen.

De kamer leek op een gevangenis. De lakens hadden vieze vlekken. Geen deken om mee te slapen alleen een laken. De badkamer was ook vies en erg klein. Er hing een vieze geur in de kamer.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij de
bezienswaardigheden
Prijs: 110 euro per nacht
Veiligheid: Laag
Faciliteiten: Hoog

A

Locatie: Vlakbij de metro/bus
Prijs: 110 euro per nacht
Veiligheid: Hoog
Faciliteiten: Laag

B

15.

Welke optie heeft uw voorkeur? *

- A
 B



16.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Geen goede ervaring gehad.

Het enige goede was de locatie. Hotel ruikt naar gefrituurd lucht, kamers zijn klein en badkamer beschimmeld. Personeel is ook niet aardig en behulpzaam.

B: Net hotel lekker met perfecte locatie

Een net hotel, smaakvolle inrichting, ook de stoffering van de kamer. Voorzien van TV, minibar, bad en safe. Personeel was zeer vriendelijk. Voor herhaling vatbaar.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij het stadscentrum

Prijs: 110 euro per nacht

Veiligheid: Gemiddeld

Faciliteiten: Gemiddeld

A

Locatie: Vlakbij de
bezienswaardigheden

Prijs: 200 euro per nacht

Veiligheid: Gemiddeld

Faciliteiten: Laag

B

17.

Welke optie heeft uw voorkeur? *

- A
 B



18.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Prima hotel!

Mooi hotel, goed personeel, ontbijt is absoluut een aanrader. Leuke ervaring gehad in dit hotel. Ligt dicht bij het centrum. Ik zou het zo nog een keer doen!

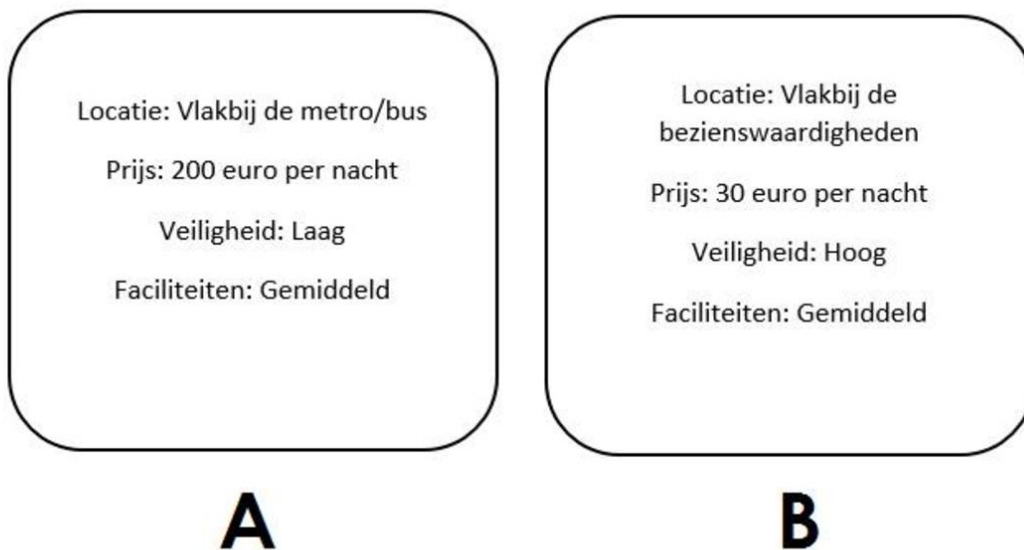
B: Heel teleurstellend dit.

Hotel ziet er op de foto's goed uit maar in het echt zien de muren er niet uit. Kamers zijn erg klein. Wij gaan er niet meer heen. Personeel ook onvriendelijk en niet behulpzaam.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

6.4. Third survey choice sets including reviews



9.

Welke optie heeft uw voorkeur? *

- A
 B



10.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Heel ouderwets

Geen lift, smalle trappen, oud meubilair, kleine tv met een paar kanalen die werken, geen comfortabele bed, oude handdoeken, oude slot op de deur, dunne papieren muren, heel kleine kamer en badkamer met douch.

B: Perfecte ligging

Perfect gelegen pal naast de beroemde bezienswaardigheden. Zeer vriendelijk personeel. Kamer van alle gemakken voorzien en zeer ruim wat ons zeker erg goed beviel. Sanitair netjes en schoon. Prijs-kwaliteit goed.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij het stadscentrum
Prijs: 30 euro per nacht
Veiligheid: Laag
Faciliteiten: Laag

A

Locatie: Vlakbij het stadscentrum
Prijs: 200 euro per nacht
Veiligheid: Hoog
Faciliteiten: Hoog

B

11.

Welke optie heeft uw voorkeur? *

- A
 B



12.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Geslaagd weekend

Hotel voldeed aan onze verwachtingen. Ruime kamer, badkamer en toilet was erg schoon. Aardig personeel, wij kwamen niets tekort. Lekker wezen shoppen in de stad en daarna lekker relaxen in het hotel.

B: Slechter dan verwacht

Slechte geluidsisolering hoort alles van de andere kamers. Bij het inchecken was de kamer nog niet gereed. Badkamer was niet schoon en kamer was erg stoffig. Personeel was niet vriendelijk.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij de metro/bus
Prijs: 30 euro per nacht
Veiligheid: Gemiddeld
Faciliteiten: Hoog

A

Locatie: Vlakbij de
bezienswaardigheden
Prijs: 200 euro per nacht
Veiligheid: Gemiddeld
Faciliteiten: Laag

B

13.

Welke optie heeft uw voorkeur? *

- A
 B



14.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Muizen op de kamer.

De prijs van de locatie was redelijk. De kamer zelf was erg klein met nauwelijks ruimte om je koffer te openen. We hebben muizen in ons kamer gezien, het leek meer op een hostel.

B: Super netjes en ontspannen

De kamer was ontzettend mooi, rustig en schoon. We verbleven er 1 nachtje, maar hadden met groot gemak langer kunnen blijven. We hebben het erg naar ons zin gehad hier.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij de
bezienswaardigheden
Prijs: 110 euro per nacht
Veiligheid: Laag
Faciliteiten: Hoog

A

Locatie: Vlakbij de metro/bus
Prijs: 110 euro per nacht
Veiligheid: Hoog
Faciliteiten: Laag

B

15.

Welke optie heeft uw voorkeur? *

- A
 B



16.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Leuk hotel, zeer goede receptie die meedenkt.

Leuk hotel. De kamers zagen er heel goed uit alles was erg schoon. Het uitzicht van de kamer was ook prachtig. Receptie denkt goed mee en helpt waar zij kunnen. Wij hebben een zeer aangename ervaring gehad.

B: Veel te duur voor de kwaliteit die je krijgt!

Kamer met een onmogelijke wastafelkraan. De kraan zat niet boven de kom dus handen wassen werd een waterballet. Douche met wisselende watertemperatuur! En er waren twee losse bedden i.p.v. het beloofde 2 persoonsbed.

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

Locatie: Vlakbij het stadscentrum
Prijs: 110 euro per nacht
Veiligheid: Gemiddeld
Faciliteiten: Gemiddeld

A

Locatie: Vlakbij de
bezienswaardigheden
Prijs: 200 euro per nacht
Veiligheid: Gemiddeld
Faciliteiten: Laag

B

17.

Welke optie heeft uw voorkeur? *

- A
 B



18.

Bijhorende reviews voor bovenstaande opties (zie afbeelding hierboven):

A: Een kamer waarin veel ontbrak.
weinig voorzieningen: geen nachtkastje, slechts een opbergplank aan één kant van het bed; kledingkast ging niet geheel open; geen ophangvoorzieningen voor de handdoeken; in de douche geen voorziening voor toilet artikelen.

B: Luxe hotel tegenover het station en het centrum om de hoek
Luxe hotel met zeer vriendelijk en service gericht personeel. Heerlijke rustige kamer. Zalige bedden en een super lekkere douche. Ook gelegenheid om zelf thee of koffie te kunnen maken. Ontbijt heel uitgebreid. Wij hadden niets te klagen!

Welke optie heeft uw voorkeur na het lezen van de reviews? *

- A
 B

6.5. Control survey SPSS results

Table 5

		Gender			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Man	18	36,0	36,0	36,0
	Woman	32	64,0	64,0	100,0
	Total	50	100,0	100,0	

Table 6

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	50	18	57	29,62	7,772
Valid N (listwise)	50				

Table 7

		Income			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	€0 - €750	10	20,0	20,0	20,0
	€751 - € 1500	10	20,0	20,0	40,0
	€1501 - €2250	13	26,0	26,0	66,0
	€2251 - €3000	9	18,0	18,0	84,0
	€3001 - €3750	7	14,0	14,0	98,0
	> €4500	1	2,0	2,0	100,0
	Total	50	100,0	100,0	

Table 8

		Travel_alot			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	yes	26	52,0	52,0	52,0
	no	13	26,0	26,0	78,0
	seldom	11	22,0	22,0	100,0
	Total	50	100,0	100,0	

Table 9

Travel_howmany					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	34,0	34,0	34,0
	2	14	28,0	28,0	62,0
	3	13	26,0	26,0	88,0
	4	3	6,0	6,0	94,0
	5	3	6,0	6,0	100,0
	Total	50	100,0	100,0	

Table 10

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Book_howmany	50	0	15	3,04	2,814
Valid N (listwise)	50				

Table 11

Book_how					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	bookingwebsite e.g. www.trivago.com	33	66,0	66,0	66,0
	hotelwebsite	10	20,0	20,0	86,0
	travel agency	4	8,0	8,0	94,0
	other	3	6,0	6,0	100,0
	Total	50	100,0	100,0	

Table 12

		Book_howmany			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	2,0	2,0	2,0
	1	16	32,0	32,0	34,0
	2	14	28,0	28,0	62,0
	3	4	8,0	8,0	70,0
	4	5	10,0	10,0	80,0
	5	3	6,0	6,0	86,0
	6	1	2,0	2,0	88,0
	7	2	4,0	4,0	92,0
	8	2	4,0	4,0	96,0
	10	1	2,0	2,0	98,0
	15	1	2,0	2,0	100,0
	Total	50	100,0	100,0	

Table 13

		Onlinereviews			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	2,0	2,0	2,0
	never	4	8,0	8,0	10,0
	rarely	8	16,0	16,0	26,0
	every once in a while	3	6,0	6,0	32,0
	sometimes	16	32,0	32,0	64,0
	always	18	36,0	36,0	100,0
	Total	50	100,0	100,0	

6.6. Second survey with review SPSS results

Table 14

Gender				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
Man	11	21,6	21,6	23,5
Woman	39	76,5	76,5	100,0
Total	51	100,0	100,0	

Table 15

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	50	17	57	28,30	8,539
Valid N (listwise)	50				

Table 16

Income				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
€0 - €750	13	25,5	25,5	27,5
€751 - €1500	14	27,5	27,5	54,9
€1501 - €2250	15	29,4	29,4	84,3
€2251 - €3000	6	11,8	11,8	96,1
€3001 - €3750	2	3,9	3,9	100,0
Total	51	100,0	100,0	

Table 17

Travel alot				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
yes	23	45,1	45,1	47,1
no	14	27,5	27,5	74,5
seldom	13	25,5	25,5	100,0

Total	51	100,0	100,0
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Table 18

	N	Minimum	Maximum	Mean	Std. Deviation
Travel_howmany	50	0	10	1,96	1,470
Valid N (listwise)	50				

Table 19

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	2	3,9	4,0	4,0
1	18	35,3	36,0	40,0
2	19	37,3	38,0	78,0
3	8	15,7	16,0	94,0
4	2	3,9	4,0	98,0
10	1	2,0	2,0	100,0
Total	50	98,0	100,0	
Missing System	1	2,0		
Total	51	100,0		

Table 20

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	4	7,8	8,0	8,0
1	13	25,5	26,0	34,0
2	14	27,5	28,0	62,0
3	6	11,8	12,0	74,0
4	6	11,8	12,0	86,0
5	3	5,9	6,0	92,0
6	1	2,0	2,0	94,0
7	1	2,0	2,0	96,0
10	1	2,0	2,0	98,0
15	1	2,0	2,0	100,0
Total	50	98,0	100,0	

Missing	System	1	2,0	
Total		51	100,0	

Table 21

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Book_howmany	50	0	15	2,72	2,611
Valid N (listwise)	50				

Table 22

Book_how

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
bookingwebsite e.g. www.trivago.com	29	56,9	56,9	58,8
hotelwebsite	11	21,6	21,6	80,4
travel agency	8	15,7	15,7	96,1
other	2	3,9	3,9	100,0
Total	51	100,0	100,0	

Table 23

Onlinereviews

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
never	3	5,9	5,9	7,8
rarely	3	5,9	5,9	13,7
every once in a while	8	15,7	15,7	29,4
sometimes	12	23,5	23,5	52,9
always	24	47,1	47,1	100,0
Total	51	100,0	100,0	

6.7. Third survey with review SPSS results

Table 24

Gender				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
man	11	21,6	21,6	23,5
woman	39	76,5	76,5	100,0
Total	51	100,0	100,0	

Table 25

Age				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 19	2	3,9	4,0	4,0
20	2	3,9	4,0	8,0
21	1	2,0	2,0	10,0
22	3	5,9	6,0	16,0
23	4	7,8	8,0	24,0
24	2	3,9	4,0	28,0
25	3	5,9	6,0	34,0
26	7	13,7	14,0	48,0
27	7	13,7	14,0	62,0
29	2	3,9	4,0	66,0
30	2	3,9	4,0	70,0
32	2	3,9	4,0	74,0
33	2	3,9	4,0	78,0
34	1	2,0	2,0	80,0
35	1	2,0	2,0	82,0
36	1	2,0	2,0	84,0
37	1	2,0	2,0	86,0
41	1	2,0	2,0	88,0
42	2	3,9	4,0	92,0
50	2	3,9	4,0	96,0
57	1	2,0	2,0	98,0
60	1	2,0	2,0	100,0
Total	50	98,0	100,0	

Missing	System	1	2,0	
Total		51	100,0	

Table 26

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	50	19	60	29,66	9,279
Valid N (listwise)	50				

Table 27

Income				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
€0 - €750	7	13,7	13,7	15,7
€751 - €1500	16	31,4	31,4	47,1
€1501 - €2250	13	25,5	25,5	72,5
€2251 - €3000	8	15,7	15,7	88,2
€3001 - €3750	4	7,8	7,8	96,1
€3751 - €4500	1	2,0	2,0	98,0
> €4500	1	2,0	2,0	100,0
Total	51	100,0	100,0	

Table 28

Travel_alot				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
yes	25	49,0	49,0	51,0
no	13	25,5	25,5	76,5
seldom	12	23,5	23,5	100,0
Total	51	100,0	100,0	

Table 29

		Travel_howmany			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	1	22	43,1	44,0	44,0
	2	14	27,5	28,0	72,0
	3	6	11,8	12,0	84,0
	4	6	11,8	12,0	96,0
	5	2	3,9	4,0	100,0
	Total	50	98,0	100,0	
Missing	System	1	2,0		
Total		51	100,0		

Table 30

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Travel_howmany	50	1	5	2,04	1,195
Valid N (listwise)	50				

Table 31

		Book_howmany			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	0	3	5,9	6,0	6,0
	1	15	29,4	30,0	36,0
	2	14	27,5	28,0	64,0
	3	4	7,8	8,0	72,0
	4	5	9,8	10,0	82,0
	5	2	3,9	4,0	86,0
	6	2	3,9	4,0	90,0
	7	3	5,9	6,0	96,0
	8	1	2,0	2,0	98,0
	9	1	2,0	2,0	100,0
Total		50	98,0	100,0	
Missing	System	1	2,0		
Total		51	100,0		

Table 32

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Book_howmany	50	0	9	2,70	2,197
Valid N (listwise)	50				

Table 33

Book_how				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
bookingwebsite e.g. www.trivago.com	35	68,6	68,6	70,6
hotelwebsite	7	13,7	13,7	84,3
travel agency	5	9,8	9,8	94,1
other	3	5,9	5,9	100,0
Total	51	100,0	100,0	

Table 34

Onlinereviews				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2,0	2,0	2,0
never	2	3,9	3,9	5,9
rarely	5	9,8	9,8	15,7
every once in a while	6	11,8	11,8	27,5
sometimes	17	33,3	33,3	60,8
always	20	39,2	39,2	100,0
Total	51	100,0	100,0	

6.8. STATA models

Model 1: Results not accounting for the reviews

```
Iteration 0:  log likelihood = -1039.7194
Iteration 1:  log likelihood = -583.40359
Iteration 2:  log likelihood = -566.85427
Iteration 3:  log likelihood = -566.30614
Iteration 4:  log likelihood = -566.3041
Iteration 5:  log likelihood = -566.3041
```

```
Logistic regression           Number of obs   =       1,500
                              LR chi2(7)        =       946.83
                              Prob > chi2         =       0.0000
Log likelihood = -566.3041    Pseudo R2       =       0.4553
```

Firstanswer	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Locationmonu	-.043251	.2805103	-0.15	0.877	-.5930411	.506539
Locatationmetrobus	-.7771946	.2325686	-3.34	0.001	-1.233021	-.3213684
Price	-.0289584	.0020588	-14.07	0.000	-.0329936	-.0249233
SafetyLow	-2.096091	.2567598	-8.16	0.000	-2.599331	-1.592851
SafetyHigh	.9416114	.3775261	2.49	0.013	.2016738	1.681549
FacilitiesLow	-2.766062	.3540108	-7.81	0.000	-3.459911	-2.072214
FacilitiesHigh	-.5428479	.4068823	-1.33	0.182	-1.340323	.2546266
_cons	5.664126	.4316271	13.12	0.000	4.818153	6.5101

Model 2: Results with impact of reviews

Iteration 0: log likelihood = -1039.7154
 Iteration 1: log likelihood = -936.45448
 Iteration 2: log likelihood = -935.18997
 Iteration 3: log likelihood = -935.18554
 Iteration 4: log likelihood = -935.18554

Logistic regression

Number of obs = 1500
 LR chi2(14) = 209.06
 Prob > chi2 = 0.0000
 Pseudo R2 = 0.1005

Log likelihood = -935.18554

Y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Locationmonu	-.2574395	.2525116	-1.02	0.308	-.7523531	.2374741
Locatationmetrobus	-.0120051	.2568424	-0.05	0.963	-.5154069	.4913968
Price	-.0129147	.0014699	-8.79	0.000	-.0157957	-.0100337
SafetyLow	-.5050798	.2571423	-1.96	0.050	-1.009069	-.0010902
SafetyHigh	.9370063	.2675529	3.50	0.000	.4126122	1.4614
FacilitiesLow	-.9159375	.2582585	-3.55	0.000	-1.422115	-.4097601
FacilitiesHigh	.6915719	.273456	2.53	0.011	.155608	1.227536
locationmonu_reviewgr	-.2834203	.2901788	-0.98	0.329	-.8521603	.2853196
locationmetro_reviewgr	-.4080033	.2967012	-1.38	0.169	-.9895269	.1735204
price_reviewgroup	.009511	.0015808	6.02	0.000	.0064127	.0126092
SafetyLow_reviewgroup	.1115554	.2873485	0.39	0.698	-.4516373	.674748
Safetyhigh_reviewgroup	-1.385143	.3002675	-4.61	0.000	-1.973657	-.7966298
Facilitieslow_reviewgroup	.4458274	.2910331	1.53	0.126	-.124587	1.016242
facilitieshigh_reviewgr	-1.177352	.3105562	-3.79	0.000	-1.786031	-.5686733
_cons	1.446734	.1846998	7.83	0.000	1.084729	1.808739

Model 3: Results with impact valence of reviews

Logistic regression

Number of obs = **1000**

LR chi2(14) = **997.24**

Prob > chi2 = **0.0000**

Pseudo R2 = **0.7194**

Log likelihood = **-194.52438**

Y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Locationmonu	2.205602	.9972343	2.21	0.027	.2510586	4.160145
Locatationmetrobus	5.210792	1.488427	3.50	0.000	2.293528	8.128056
Price	-.0403664	.0073213	-5.51	0.000	-.0547158	-.026017
SafetyLow	-3.622996	.8095174	-4.48	0.000	-5.209621	-2.036371
SafetyHigh	-7.053655	1.400399	-5.04	0.000	-9.798387	-4.308923
FacilitiesLow	-.9158504	.5394682	-1.70	0.090	-1.973189	.1414879
FacilitiesHigh	-9.749638	1.970555	-4.95	0.000	-13.61186	-5.887421
locmon_rev	-2.967897	1.31851	-2.25	0.024	-5.55213	-.3836653
locme_rev	-5.021576	1.870612	-2.68	0.007	-8.687909	-1.355243
price_rev	.0347462	.0058013	5.99	0.000	.0233758	.0461166
safel_rev	4.706183	1.030583	4.57	0.000	2.686278	6.726088
safeh_rev	7.633917	1.333182	5.73	0.000	5.020929	10.2469
facl_rev	1.349659	.9009226	1.50	0.134	-.4161164	3.115435
fach_rev	9.917937	1.970472	5.03	0.000	6.055883	13.77999
_cons	3.307429	.7349218	4.50	0.000	1.867009	4.747849