Generating Trust in Online Consumer Reviews through Signaling: An Experimental Study

Tobias Riasanow  
Technische Universität München  
riasanow@in.tum.de

Hua (Jonathan) Ye  
University of Auckland  
jonathan.ye@auckland.ac.nz

Suparna Goswami  
Technische Universität München  
suparna.goswami@in.tum.de

Abstract

With the availability of online consumer reviews, consumers’ consumption behaviors are gradually changing. They are increasingly relying on reviews for information prior to purchase. The influences of reviews on sales have been identified and verified by many empirical studies. However, little research has explored how review content characteristics affect the trustworthiness in online consumer reviews (TIOCR) and consumers’ willingness to purchase (WTP) experience goods. Based on signaling theory and related literature, we construct a model to explain the TIOCR and WTP for experience goods. We hypothesize that TIOCR and WTP are influenced by review content characteristics, i.e., prevalence of negative statements, prevalence of conflicting information, and availability of emotions. A pilot laboratory experiment is carried out to test the hypotheses. Preliminary results are discussed. The results will be validated in a large scale experiment.

1. Introduction

In 2014, 30% of U.S. consumers consult product reviews on Amazon.com before their purchase [53]. Studies commissioned by Google also found that consumers visit on average 10.4 sources of information before making a purchase [53]. It is not surprising that they increasingly use and tend to rely on online reviews during the process of purchase [26, 53]. These reviews provide consumer-oriented consumption experience information and product evaluations [45] and are found to help to reduce uncertainty about the quality of a product or service [35, 39]. Online consumer reviews are especially useful to guide the purchase decision for experience goods, e.g., wine, music or the booking of a hotel room [39]. This is because it is hard to evaluate the quality of experience goods before the purchase without any try-out in person. In contrast, for search goods information is available before the purchase and the quality is relatively easier to evaluate compared to experience goods [39, 41, 42]. Therefore, as it is difficult to evaluate experience goods due to the need of a sampling prior to purchase [39], and evaluation criteria are different among consumers because of personal taste, experience, and expectations [41, 42] it is of particular interest to study online consumer reviews of experience goods.

Previous research found that online consumer reviews help to predict product sales [13, 15, 64]. Usually, consumers refer to the review content, valence, the number of reviews, and ratings for information. While the other factors have been extensively studied in research [10, 13, 15, 20, 22, 30, 31, 33, 37, 39, 46, 50, 52], little research has focused on how review content affects consumers’ purchase decision. There is no systematic examination how review content affects TIOCR and WTP. Trust is a critical issue for successful online transactions, especially for intangible products or services [4, 59], as online consumer reviews of experience goods are inherently unverifiable as they contain subjective statements of previous consumers [45]. Trustworthiness is important for these reviews, but it is hard to decide which review is trustworthy [50, 61]. One reason is the lack of knowledge about what features make reviews of experience goods trustworthy.

Therefore, the first aim of this article is to identify the review content characteristics influencing TIOCR. Second, we aim to explore the influences of online review content characteristics on WTP. We will test the model through a laboratory experiment on hotel reviews. This study is expected to contribute to the literature in two ways. First, we attempt to extend the applicability of signaling theory to explain TIOCR and WTP for experience goods. Second, we aim to extend the literature of online consumer reviews by investigating the influences of review content. Practitioners may use the insights in two ways. First, we identify what consumers’ value. Based on that, companies may be able to direct their marketing strategy towards these identified important aspects, or include the consumer feedback to enforce open
innovation. Second, we identify consumers’ criticism. One solution is to directly communicate with the consumers, as research showed the positive impact of feedback mechanisms on buyer trust [47] to reduce the information asymmetry of an online purchase.

The rest of this paper is organized as follows. First, the theoretical background is presented. Then extant research on online consumer reviews is described. Subsequently, we hypothesize the effects of the identified content characteristics on both TIOCR and WTP for experience goods. Then, the experimental setting to test the hypotheses is explained and afterwards a data analysis of the pilot study is presented. Finally, we conclude the paper with a discussion of the expected contributions.

2. Theoretical Foundation

This section introduces the theoretical foundation of this paper, consisting of signaling theory, trustworthiness in online consumer reviews, online consumer reviews in general, and their impact and the factors influencing them. We first give a brief overview of signaling theory in recent economic background, and then explore its suitability for explaining online consumer reviews. Second, we review the literature on the trustworthiness in an online environment, which is the basis for our understanding of trustworthy online consumer reviews. Finally, extant literature of online consumer reviews is reviewed.

2.1 Signaling theory

Signaling theory provides a holistic approach to analyze the signals in economic exchanges in order to reduce the inherent information asymmetry of a specific market [56]. Information asymmetry exists when one party is not fully aware of the characteristics of another party [57]. Connelly et al. [18] propose that signaling theory provides a realistic and empirically verifiable perspective on problems of social selection under conditions of imperfect information. The condition of imperfect information reflects the information asymmetry between consumers and sellers in the purchase process. Social selection means an individual chooses one product among a huge offered variety based on information provided by others. Signaling theory has already been applied in several research areas, e.g., economic or finance research (e.g., [8, 40, 55]) (Connelly et al. [18] provide an excellent review on signaling theory).

In the context of an online purchase, a fundamental information asymmetry exists since consumers lack the information about the product or service [9]. Hence, consumers refer to online consumer reviews to reduce the information asymmetry [44]. Ott et al. [44] interpret online consumer reviews as a signal towards the underlying product’s true and unknown quality. The main task of online review communities is to reduce the intrinsic information asymmetry through the consumption experience and evaluation information from past consumers to inform about the quality of the products [44].

Figure 1 shows the basic elements of the signaling theory in a timeline (adapted from Connelly et al. [18]), which we adapted to the context of online consumer reviews.

<table>
<thead>
<tr>
<th>t = 0</th>
<th>t = 1</th>
<th>t = 2</th>
<th>t = 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGNALER</td>
<td>SIGNAL</td>
<td>RECEIVER</td>
<td>FEEDBACK</td>
</tr>
<tr>
<td>(previously consumer)</td>
<td>(online consumer review) is sent to receiver</td>
<td>(potential consumer) observes and interprets signal “Was this review helpful?” answered with Yes or No is sent to signaler</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Signaling timeline for online reviews

In the context of online consumer reviews, the signaler is represented by a previous consumer, publishing an online consumer review in the signaling environment, i.e. on the website of an online review community (see t=0 in Figure 1). On account of this, the online consumer review is a signal of the product’s true quality, which is yet unknown for the potential consumer [44] (see t=1 in Figure 1). Receiver of the signal is every potential consumer reading the signal in order to reduce the information asymmetry in the purchase decision process (see t=2 in Figure 1). Many online platforms, e.g., Amazon or TripAdvisor, offer the possibility of sending transparent feedback to the signaler, which can be expressed by answering the question about the helpfulness of the review [39] (see t=3 in Figure 1). A notable difference in our study is that the signaling only occurs between previous and potential consumers but not between consumers and the seller. Nonetheless, signaling theory is applicable in the consumer to consumer approach, as the previous consumer has experience-based knowledge about the product, which potential consumers like to know [18]. In our study, review content characteristics are interpreted as signals towards TIOCR and WTP for experience goods.

2.2 TIOCR

Investigating the characteristics of online consumer reviews serves as a first step to help to reduce the
uncertainty about the quality of the target experience good. As online consumer reviews contain subjective statements of previous consumers and there is often a lack of contextual information it is hard to decide which review is trustworthy [50, 61]. However, trust is a critical issue for successful online transactions, especially for intangible products or services [4, 59]. But still, we have little evidence about which online consumer review is more trustworthy.

Trust is seen as an essential basis for human exchange [6]. However, there is no universally accepted definition of trust, but two widely accepted trust conceptualizations exist [2]. On one hand, trust is defined as an expectation regarding the behavior of an interaction partner to reduce social complexity [36], on the other hand, defined as accepting and exposing to vulnerability to the actions of others based on the expectation that the latter will perform a particular action important to the former, irrespective of the ability to monitor and control the latter [38]. Other studies combine both constructs into one concept [19].

Online transactions are characterized as intangible, and trust has to be formed by companies to reduce the anxiety and concerns of potential consumers [4]. Trust is a central fulcrum for successful online transactions [4, 59] and there exists a positive influence towards purchase intentions [17]. Trust is especially important for experience goods because their quality is difficult to verify online [45].

Following Mayer et al. [38], we argue that online retailers are perceived as trustworthy if they have the competency to fulfil the demanded service, if they do not have an intention to harm, and if they ensure integrity. We assume that consumers base their reviews on this conceptualization of trustworthiness in an online purchase environment. Adapting it to our study, we define an online consumer review as trustworthy if it is presenting valuable information for the potential consumers to gain value in the purchase decision process (competency to fulfil demand), if they do not have an intention to harm, and if integrity is insured.

2.3 Online consumer reviews

Online consumer reviews are “peer-generated product evaluations posted on company or third party websites” [39]. Individual consumption experience provides value-adding information that sellers have not mentioned or explained [33], for example, information about the quality in different application areas [35]. They are also more valued by consumers than information, which is provided by the seller because it reflects independent information [32, 45], whereas replies of hotel managers are less credible because they are related to the company and thus not independent [37]. With the increasing influence of online consumer reviews, especially due to the vast impact of online social networks [20], researchers have gained interest in analyzing the impact of online consumer reviews on different dependent variables.

We conducted a structured literature review according to Webster and Watson [60] to identify the impact of online consumer reviews and the factors influencing online consumer reviews. The key words that were used on databases such as “google scholar”, “IEEE Xplore”, “Emerald”, “SpringerLink”, and “EBSCOhost” include “online consumer reviews”, “online customer reviews” and “online word-of-mouth”. We analyzed only publications related to the purchase decision process. In total, 21 relevant publications have been identified. These publications are closer investigated in the following subsections.

2.3.1 Impact of Online Consumer Reviews.

Previous literature has investigated the influences of online reviews on product sales [10, 13, 15, 20, 64], purchase decision [22, 37], purchase intention [46] or the booking intention [61]. Specifically, Zhu and Zhang [64] find a strong positive link between the volume and rating of online consumer reviews and sales for less popular products in the video games industry. For booking a hotel room, consumers’ purchase intention is increasing in case of a prevalence of positive reviews and vice versa in case of a prevalence of negative reviews [37]. Fagerström and Ghinea [22] state if the online price equals the market price, price and reviews have the same influence on online purchases. Chevalier and Mayzlin [13] disclose that negative online consumer reviews negatively influence the book sales on Amazon.com and bn.com, measured by the sales ranking. In most of their samples, the influence of negative online consumer reviews is higher than the influence of positives and simple enhancement in the reviews allows a quick increase in the sales [13].

Some literature has investigated the influences of online consumer reviews’ helpfulness [39, 50, 62] or usefulness [11, 12, 52], and persuasiveness [63]. Their studies focus on the information perception from the readers’ perspective in the purchase decision process. Mudambi and Schuff [39] interpret helpfulness as “perceived value in the decision-making process”, which can create diagnostic value in manifold steps of a purchase decision. They find that product type moderates the effect on helpfulness, i.e., extremely negative or positive online consumer reviews are less helpful than moderate ones for experience goods [39]. For negatively reviewed experience goods, the reader
is more likely to attribute non-product related or internal motivations to the reviewer [52].

The third stream of research focuses on the causal link between online consumer reviews and product attitude [33, 45], product preference [30], and product evaluation [31]. Some studies also investigate the consumer approach/avoidance behavior [34] or the switching/repatronage behavior [58]. These studies often include additional consumer characteristics, e.g., the consumers’ personal involvement or expertise, or psychological mechanisms in the purchase decision process. For example, Lee et al. [33], note that high quality negative reviews have a stronger impact on the product attitude of highly involved consumers than of lowly involved consumers. They also discovered that the psychological state of pleasure is significantly positively affecting the consumers’ product attitude.

So far, Sparks and Browning [54] report that predominately positive online consumer reviews increase the trust in a hotel, but negatively framed online consumer reviews in a constant valence setting have a negative effect on the trust in a hotel. However, to the best of our knowledge, apart from that there is little understanding of the factors driving readers’ TIOCR and WTP for experience goods.

2.3.2. The Factors Influencing Online Consumer Reviews. Following Zhu and Zhang [64], we ordered the factors of the identified studies into consumer characteristics, product characteristics, overall characteristics, and review content characteristics.

Studies focusing on consumer characteristics investigate the effect of expertise level [11, 46], decision precommitment [30, 61], user involvement [33], consumption goals [63], or their internet experience [64]. Prominent investigations of product characteristics are the product type [39, 45, 52], the product cost or price [11, 22], and the brand popularity [10, 45]. As overall characteristics of online consumer reviews, we find that studies mainly focus on the valence or extremity of online reviews [10, 13, 20, 22, 30, 31, 39, 50, 52, 58, 63, 64], review length [13, 39, 63], and the review volume [10, 20, 30, 64]. These characteristics related to online consumer reviews were extensively examined in extant research. However, there is a lack of research investigating the impact of review content characteristics, especially their effects on TIOCR. This is important since consumers read these reviews to make their purchase decision. Since online consumer reviews are widely interpreted as online word-of-mouth [11, 20, 30, 46] the four-sides model of Schulz von Thun [51] can be applied. According to this communication model, every message has four facets: factual information (content), self-revealing, relationship, and appeal. Since we can only observe the content (and do not know the reviewer, the relationship, and the reviewer’s intentions) we concentrate on the review content.

Among the review content characteristics, we summarized the identified factors from extant literature to three common characteristics used as signals to the reader. These characteristics are a prevalence of negative statements [30, 33, 37], prevalence of conflicting information [30, 45, 50, 61], and availability of emotions [31, 34, 62].

We refer to the prevalence of negative statements as a proportion benchmark because it is defined as the proportion of negative statements in a set of reviews, i.e. between 0 and 100% (i.e., [30, 33]). A high prevalence of negative statements, compared to single negative statements, influences the purchase decision process stronger because they create a greater social pressure [30].

Similar to the prevalence of negative statements, the prevalence of conflicting information is also calculated as proportional variable measuring the consensus between the online consumer reviews [30]. Since previous studies concerning about conflicting information calculated the variance between the review ratings or measured the existence of two-sided reviews [30, 52], we adapt the approach to review content and calculate the prevalence of conflicting information as the proportion of conflicting information about the product’s attributes.

For the third content characteristic, availability of emotions, we follow Kim and Gupta [31], who interpret emotions in reviews as dichotomous construct, which implies that a review is either emotional or not. We refer to emotions as “high intensity, valenced feeling states that are associated with the product of interest” [21], such as anxiety, anger, happiness and excitement [3, 31, 62]. Previously, the influence of emotion towards product evaluation [31], the consumer approach [34] and review helpfulness [62] has been examined. There is evidence that negative emotions in many negative online reviews decrease the product evaluation [31].

We examine these three content characteristics because previous studies showed their influence in the decision making process but the effects on TIOCR and WTP for experience goods have not been investigated.

3. Research Model and Hypotheses Development

Based on signaling theory and related literature, we propose the research model for the signaling effect of the review content characteristics on TIOCR as well as on WTP for experience goods. Figure 2 shows the key
concepts and hypotheses, summarized in the proposed research model.

![Figure 2. Research Model and Constructs](image)

3.1 Prevalence of Negative Statements

Since signals can be also negative [49], a negative statement in an online consumer review can be interpreted as a signal towards a low product or service quality. Additionally, extreme online consumer reviews, i.e., extremely negative ratings, like a 1-star (out of 5 stars) rating, positively influences the perceived helpfulness of the review in the purchase decision [39]. Chung and Kalnins [14] studied the lodging industry in Texas and ascertain more signals increase the signaling effectiveness, while Filatotchev and Bishop [23] highlight that an increasing signal frequency enhances the likelihood for an accurate evaluation. Following Chung and Kalnins [14] and Filatotchev and Bishop [23], we interpret a high prevalence of conflicting information as a strong signaling effect towards the true quality of the product or service, which is stronger in case of high quality reviews [33]. Summarized, if the signaling effect is stronger by an increase in the prevalence of negative statements and thus consumers are more likely to make accurate decisions it can be interpreted as an increased trust in the prevalence of negative online consumer reviews, thus we expect:

\[
H1a: \text{An increase in the prevalence of negative statements in online consumer reviews of experience goods increases the TIOCR.}
\]

Publishing a negative statement on a review community website is a signal of unsatisfied consumers [33, 58]. Especially in the lodging industry, consumers’ review a hotel negatively if they were not satisfied with the service, sanitation, or if they received incorrect information [37]. Therefore, an increasing prevalence of unsatisfied consumers is a good signal for poor service quality. If there is a positive precommitment towards a product, a low prevalence of negative online consumer reviews has no effect on the preference [30]. Otherwise, there exists a strong negative influence on product attitude which is stronger if the prevalence of high quality negative online consumer reviews increases [33]. To conclude, several authors verify the negative relationship between negative online consumer reviews and product sales [13, 22], as well as a stronger negative effect by an increased prevalence of these negative reviews on product attitude [33, 37], e.g., because the seller might not have the competency to fulfill the proposed service [38]. Simultaneously, negative online reviews empirically increase the switching behavior and reduce the repatronage behavior of consumers [58]. Considering the negative effects on product sales and an increased signaling effectiveness [14] by an increased prevalence of negative statements, we expect:

\[
H1b: \text{An increase in the prevalence of negative statements in online consumer reviews of experience goods decreases the WTP.}
\]

3.2 Prevalence of Conflicting Information

Conflicting information in either only one or in a multitude of online consumer reviews are difficult to interpret [61]. It signals low consensus among the reviewers [24]. If both extreme sides are able to find support for their arguments, the difficulty and complexity increases. This is supported by Khare et al. [30], who found that a high prevalence of highly conflicting negative online consumer reviews increase the product preference, while a high prevalence of highly conflicting positive reviews decreases the product preference. Similar is the observation of highly-regarded brands receiving a favorable product attitude in case of highly conflicting reviews [45]. Summarized, consumers tend to prefer the opposite in a situation with highly conflicting information, i.e. consumers prefer a product with negative reviews. Both studies support that conflicting information does not help consumers to collect valuable information for the purchase decision process because they increase the uncertainty. Gao et al. [24] suggest that signals can be conflicting and Chung and Kalnins [14] highlights that conflicting signals confuse the receiver. Since more signals increase the signaling effectiveness [14], an increase in conflicting signals can be interpreted as an increasing uncertainty for the consumer because the perceived information diagnosticity is negatively influenced [39]. Summarized, it is not possible for the consumer to decide which online consumer review is trustworthy. Thus, we expect:
**H2a: An increase in the prevalence of conflicting information in online consumer reviews of experience goods decrease the TIOCR.**

Online consumer reviews of experience goods are difficult to verify if the previous consumers express subjective experiences [45]. Pre-decisional information distortion is one of the factors leading to different interpretations of conflicting information in online reviews [61]. These factors might cause conflicting reviews which are a signal towards a low consensus among the reviewers [24]. Contrasting interpretations of conflicting reviews do not only negatively affect the booking intention in case of a negative or neutral pre-decisional disposition, but also for a positive pre-decisional disposition [61]. Based on that and the increasing uncertainty due to an increasing signaling effect [14] as a result of a high prevalence of conflicting information in online consumer reviews, we therefore suggest:

**H2b: An increase in the prevalence of conflicting information in online consumer reviews of experience goods decrease the WTP.**

### 3.3 Availability of Emotions

Emotions and psychological mechanisms can have a strong influence on the product perception [62]. Anger, anxiety, happiness, and excitement are the most frequently expressed emotions in online consumer reviews [31, 34, 62]. According to Lee et al. [34], the attitude towards technology products and the cognitive state “pleasure”, positively influence the consumer approach. If convergent emotions are expressed in multiple reviews, it is considered as more informative [31]. As explicitly studied emotions, anxiety and anger embedded reviews both increase the helpfulness of online consumer reviews [62]. We interpret emotions as personal signal from the consumer regarding the respective experience good based on personal taste [41, 42]. Since an increased number of the same signal increases the signaling effectiveness [14] and reduces uncertainty [27], and emotions are considered to increase the helpfulness, we expect that:

**H3a: The availability of emotions in online consumer reviews of experience goods increases the TIOCR.**

The impact on WTP for experience goods is dependent on the actual valence of these online consumer reviews [31]. Convergent emotions strongly influence product evaluations, i.e. if convergent positive emotions are expressed the product is evaluated more positively than without the expression of emotions, whereas, if convergent negative emotions are expressed, the evaluation is more negative than without the expression of emotions [31]. This is supported by Balboa and Marti [1], who document that signaling can repetitively increase the effectiveness of the signaling process especially if different signals (i.e., anxious or angry reviews) are used to communicate the same message (i.e., consumers are not satisfied), we hypothesize:

**H3b: The availability of emotions in online consumer reviews of experience goods decreases the WTP if the signaled emotions are negative.**

### 4. Research Methodology

#### 4.1 Experimental Setting

The six hypotheses proposed in the present study will be tested through a laboratory experiment with a 2 x 2 x 2 design (i.e., high/low prevalence of negative statements x high/low prevalence of conflicting information x emotions available/not available). In each of the eight conditions, 16 online consumer reviews are provided to the subjects. These online consumer reviews are extracted for one experience good, i.e. one hotel from a current online review platform, i.e. TripAdvisor. We are not manipulating the content, syntax or wording, but we intentionally manipulate the order in which the identified reviews will be presented to the subjects according to the configuration of each condition.

#### 4.2 Manipulations

The prevalence of negative statements is operationalized in two conditions: high and low. In the low prevalence condition one of 16 reviews contains negative statements, whereas in the high prevalence condition 50% of the online reviews (i.e. 8 reviews) contain negative statements. Similar ranges are applied in literature to manipulate the prevalence [30, 33, 37].

The prevalence of conflicting information is manipulated in two ways: high and low. We focus on the attributes of the chosen hotel. In the condition of a low prevalence of conflicting information, only one of the 16 reviews presents conflicting information about the same attributes, while in the condition of a high prevalence of conflicting information in 50% of the reviews conflicting information about the same attributes is presented. The magnitude of manipulation is in line with recent studies (i.e., [30, 45]).
Emotions are manipulated as available or not available. For the condition with emotional signals we follow the approach of Kim and Gupta [31] and extract online consumer reviews that highlight emotional context. In the condition with availability of emotions, all 16 online consumer reviews are emotional. Whereas, in the condition where no emotions are available none of the online consumer reviews is emotional. The emotions are operationalized in terms of anger, anxiety, happiness, and excitement, as they are most frequently used in online reviews [3, 31, 62]. Table 1 shows the manipulation checks.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence of negative statements (PONS)</td>
<td>PONS1: The reviewers’ opinions about the hotel were favorable&lt;br&gt;PONS2: Indicate the extent to which you think the reviewers’ opinions about the hotel were positive</td>
<td>Adapted from Khare et al. [30]</td>
</tr>
<tr>
<td>Prevalence of conflicting information (POCI)</td>
<td>POCI1: It was hard to know exactly what information is valuable for the decision&lt;br&gt;POCI2: It was easy to interpret the reviews (rev)&lt;br&gt;POCI3: We often experienced disagreements&lt;br&gt;POCI4: The information could have meant different meanings to different people</td>
<td>Adapted from Carson et al. [7]</td>
</tr>
<tr>
<td>Availability of emotions (AOE)</td>
<td>Indicate the extent to which you experienced these emotions by reading the online review:&lt;br&gt;AOE1: anger&lt;br&gt;AOE2: anxiety&lt;br&gt;AOE3: happy&lt;br&gt;AOE4: excited</td>
<td>Adapted from Beaudry and Pinsonneault [3]</td>
</tr>
</tbody>
</table>

Table 1. Manipulation checks

4.3 Pilot Experimental Procedure and Subjects

As an initial step, we conducted a pilot study, to finalize the manipulation of the independent variables (IVs) as well as improve the experimental procedures and instructions [48]. For this purpose, 30 subjects were recruited. To avoid the selection bias, subjects were only told that it was an experiment about online reviews. The objective of the study was not revealed. Each subject received $10 for participation. The experiment begins with manipulation checks to verify the manipulation of our IVs. Afterwards, covariates, i.e., age, gender, education level, attitude towards online consumer reviews, monthly online purchases, internet experience, and internet use are collected. Finally, to ensure that the total amount of the subjects’ previous experience is homogeneous across the conditions, we randomly assign the subjects to the eight treatments [29]. Each condition provides the subjects 16 reviews about the chosen hotel. The subjects recruited for the pilot study were 60% males and on average 21 years old. 87% were undergraduate students. On average, they had a very positive attitude towards online reviews (6.07 of 7), high internet experience (6.77 of 7). 63% of them are online more than four hours a day and on average they buy 3.57 products or services per month online. We choose students as subjects as they have more internet use experience and tend to spend more time online. As next, we will measure the research constructs throughout a questionnaire, which is developed by adapting existing validated scales, shown in Table 2.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trustworthiness in online consumer reviews (TIOCR)</td>
<td>TIOCR1: I believe these online consumer reviews would be honest&lt;br&gt;TIOCR2: I believe the reviewers of these online consumer reviews would care about consumers&lt;br&gt;TIOCR3: I believe these online consumer reviews would be not opportunistic&lt;br&gt;TIOCR4: I believe these online consumer reviews would be trustworthy&lt;br&gt;TIOCR5: I believe the reviewers of these online consumer reviews would know the hotel</td>
<td>Adapted from Gefen et al. [25]</td>
</tr>
<tr>
<td>Willingness to purchase (WTP)</td>
<td>WTP1: Considering these online consumer reviews I plan on booking this hotel&lt;br&gt;WTP2: Considering these online consumer reviews I intend to try this hotel&lt;br&gt;WTP3: After reading these online consumer reviews, I</td>
<td>Adapted from Bishop and Barber [5]</td>
</tr>
</tbody>
</table>

3313
Table 2. Operationalization of the research constructs

5. Data Analysis

5.1 Manipulation Checks

The manipulation on PONS was assessed using two perceptual questions according to Khare et al. [30], on a 1 to 7 Likert scale. A t-test (t=-16.575, p<0.01) showed that subjects in the condition of a high prevalence of negative statements received more negative statements (mean=5.52, std=0.62) than those in the low condition (mean=2.52, std=0.79).

The manipulation on POCI was assessed using four perceptual questions according to Carson et al. [7], on a 1 to 7 Likert scale. A t-test (t=-4.346, p<0.01) showed that subjects in the condition of a high prevalence of conflicting statements received more conflicting statements (mean=5.18, std=0.73) than those in the low condition (mean=3.93, std=1.10).

The manipulation of AOE was assessed using the perceptual questions of Beaudry and Pinsonneault [3], on a 1 to 7 Likert scale. A t-test (t=-4.240, p<0.01) showed that subjects in the condition with available emotions recognized emotion (mean=4.12, std=0.46) compared to those in the condition of no emotions available (mean=3.74, std=0.44). Overall, all manipulations are successful.

5.2 Measurement Validation

An Explanatory Factor Analysis (EFA) with principal component analysis and varimax rotation using SPSS was conducted to test instrument’s convergent and discriminant validity. The sample size of the pilot study is n=30. TIOCR3 was dropped because of a low loading. The loading could be so low because TIOCR3 is the only negated negative expression (“not opportunistic”) in the construct. After that, all items were loaded on target factors with loadings above 0.7 and loaded on other factors below 0.35 [28]. Thus, discriminant validity was established. Second, internal consistency was measured by Cronbach’s alpha with 0.7 as the cut-off value [43]. The alpha of WTP is 0.92 while TIOCR reached 0.51. After dropping TIOCR2 and TIOCR4, the alpha increased to 0.74. Thus, convergent validity was established.

5.3 Results on TIOCR and WTP

Because n=160 is required to gain sufficient statistical power of 0.80 [16], we are reporting indications of the relationship between the IVs and DVs, but are not mainly focused on presenting results regarding the statistical significance of the one-way analysis of variance (ANOVA) for the pilot study.

Firstly, prevalence of negative statements has a positive effect on TIOCR, while prevalence of conflicting information and availability of emotions have a negative effect on TIOCR. This would be in line with H1a, H2a, but not with H3a since emotions were expected to increase TIOCR.

As expected, an increase in prevalence of negative statements, prevalence of conflicting information, and emotions tend to decrease WTP. Even for n=30, the negative effect of an increase in the prevalence of negative statements (F=9.424, p<0.05) was significant, suggesting a strong signal of negative statements on WTP, which supports previous studies [13, 22]. Thus supporting H1b, and in line with H2b, and H3b.

6. Expected Contributions and Conclusion

This study attempts to advance theoretical development of online consumer reviews in three important ways. First, signaling theory has been applied to online consumer reviews to estimate the prevalence of deception in online review communities [44], but, to the best of our knowledge, it is not yet applied to investigate the antecedents of TIOCR. Additionally, we aim to examine the applicability of signaling theory to the context of online consumer reviews. Based on signaling theory, we identify the review content characteristics, i.e., prevalence of negative statements, prevalence of conflicting information and availability of emotions in online consumer reviews as indicators of the true quality of the investigated product or service. Second, the literature on online consumer reviews is extended by investigating the effects of manipulating the mentioned factors influencing the TIOCR and thirdly by investigating the effects on WTP for experience goods. We can confirm the negative effect of a high prevalence of negative statements on WTP. Another interesting finding of the pilot study is the negative relationship of the availability of emotions on TIOCR.

Practitioners may use the results of this study in to identify what consumers’ value and criticize. Based on that, they may be able to direct their marketing strategy towards these identified valued product attributes, or include the consumer feedback to enforce open innovation. Best practice towards criticism is direct
communication, as the positive impact of feedback mechanisms on buyer trust show [47].

To conclude, as a study in progress, we have completed the model development, the experimental design, conducted a pilot study with 30 subjects. In the next step, we will perform a laboratory experiment with at least 160 subjects. Finally, to test the proposed hypotheses we statistically investigate the experiment data by ANOVA using SPSS.

Signaling theory suggests to interpret online reviews as inherent signals towards the quality of a product or service [18, 40, 44, 56]. For further research, we will include perceived product quality to control for mediation effects in the main study.

Because experience goods are difficult to evaluate prior to purchase, this study suggests that further research in this direction is both theoretically and practically important.

7. References