Examining the moderating effect of inconsistent reviews and its gender differences on consumers’ online shopping decision

Kem Z.K. Zhang, Christy M.K. Cheung, Matthew K.O. Lee

Abstract

The prevalence of social media has provided consumers with many opportunities to post online reviews on a wide range of products on the Internet. In this study, we attempt to investigate the moderating effect of inconsistent reviews (i.e., a mix of positive and negative reviews) on consumers’ purchase decision. We further examine whether the effect will differ from female to male consumers.

We explain the moderating effect and its gender differences based on the theory of reasoned action, trust literature, and information processing literature. The research hypotheses are empirically tested in a laboratory experiment using structural equation modeling approach. Our findings show that consumers’ cognitive trust to online retailers affects emotional trust, which further leads to purchase intention. When consumers are exposed to inconsistent reviews, the influence of emotional trust on purchase intention is significantly stronger. Moreover, the moderating effect of inconsistent reviews is stronger for female consumers than for male consumers. We expect that this study can enrich the understanding of how inconsistent reviews play a role in consumers’ online shopping decision. Online retailers may apply our findings and leverage the influence of online consumer reviews in social media. Implications for both researchers and practitioners are discussed.

Introduction

The prevalence of social media, including online discussion forums, blogs, social networking sites, microblogs, and online review sites has greatly facilitated consumers to publish and share their reviews on products, services, or retailers based on their prior purchase experience. Online reviews, also known as electronic word-of-mouth (eWOM), can be an important form of information that affects consumers’ purchase decision. Recent industrial survey reports show that 90% of online shoppers read online reviews, while 83% believe that these reviews affect their purchase behavior. Ipsos Global pointed out that 78% of online users are influenced by online reviews in their purchase decision-making process.

The influence of online reviews has received empirical support from a growing number of studies in the information systems (IS) literature (e.g., Cheung, Luo, & Chen, 2009; Forman, Ghose, & Wiesenfeld, 2008; Khammash & Griffiths, 2011; Qiu, Pang, & Lim, 2012). Among these studies, negative reviews are often viewed to posit a stronger effect on consumer behavior than positive ones (Park & Lee, 2009). The disproportional power of negative reviews may be attributed to the fact that they are more diagnostic and informative (Lee, Park, & Han, 2008). This is consistent with the impression formation literature, where people are found to place more emphasis on negative than positive information (Skowronska & Carlson, 1989). Prior research has shown that the effect of negative reviews may be complicated. In Chatterjee’s (2001) work, she pointed out that negative reviews have less effects if consumers patronize a familiar online retailer. Chiou and Cheng (2003) found that negative reviews are more likely to hurt brands with low image than high image. Sen and Lerman (2007) indicated that consumers tend to find negative reviews of hedonic products less useful than utilitarian products. A recent study from Berger, Sorensen, and Rasmussen (2010), however, pointed out negative reviews may produce positive effects. They found that these reviews may help companies improve product awareness and then increase consumers’ purchase likelihood.

While a majority of prior studies tend to focus on the harmful effects of negative reviews (e.g., Park & Lee, 2009; Sen & Lerman, 2007; Verhagen, Nauta, & Feldberg, 2013), this study follows Berger et al.’s (2010) research and highlights the beneficial effect of negative reviews. In specific, we examine the influence of negative reviews...
reviews along with the coexistence of positive ones. We refer to a mix of positive and negative reviews as inconsistent reviews. In reality, consumers are often exposed to inconsistent reviews in online environments (Tsang & Prendergast, 2009). For instance, a consumer may find one review stating that an online retailer is very helpful in answering consumers' questions (positive review), meanwhile s/he may also find another review pointing out that the retailer seems busy all the time and does not provide assistance in answering questions (negative review). To understand how consumers make decision in this circumstance, it will be important for online retailers to investigate the influence of inconsistent reviews.

If online retailers simply think that negative reviews have opposite and stronger effects than positive ones, then they are likely to infer the effect of inconsistent reviews from an additive effects of both positive and negative ones. In this respect, negative information in inconsistent reviews may be overemphasized. The primacy response strategy for online retailers may be to control such information and avoid any negative effects from it (Chiou & Cheng, 2003; Lee et al., 2008). However, it may not be easy or harmless to manipulate negative reviews in social media, even in retailer-hosted discussion forums. Consumers are savvy, and manipulating online reviews in aggressive roles may hamper the effect of reviews and the credibility of online retailers (Godes et al., 2005).

In this study, we provide an alternative perspective for online retailers. Drawing upon the theoretical insights from the information processing literature, we argue for the positive moderating effect of inconsistent reviews on consumers' online purchase behavior. We examine whether this moderating effect exists on the attitude–intention link in the online shopping context. We also consider whether the moderating effect may differ for female and male consumers. Gender differences have been shown to occur in the electronic commerce (e-commerce) context (e.g., Garbarino & Strahilevitz, 2004; Rodgers & Harris, 2003; Yeh, Hsiao, & Yang, 2012). However, how gender may interact with the influence of online reviews is little investigated in the extant literature. An exception from Awad and Ragowsky (2008) suggested that the effect of review quality on trust is stronger for males than females, whereas the influence of trust on intention to shop online is stronger for females than males. Thus, it will be theoretically interesting and useful to advance research on inconsistent reviews by considering the role of gender. In summary, we ask two research questions in this study:

1. How do inconsistent reviews moderate consumers' online shopping decision?
2. Whether the moderating effect of inconsistent reviews will differ for female and male consumers?

To approach the two research questions, we investigate the moderating effect of inconsistent reviews in the trust-based acceptance model developed by Komiak and Benbasat (2006). This model is employed to delineate the belief–attitude–intention process of consumers' online shopping decision. The rest of this paper is organized as follows. First, we present the theoretical background of this research. We then develop and empirically test our research model using a laboratory experiment. Finally, we discuss the findings and conclude this study with discussions of theoretical and practical implications, limitations, and directions for future studies.

2. Theoretical background

In this section, we introduce the trust-based acceptance model to demonstrate consumers' behavioral decision. We further derive two theoretical perspectives from the information processing literature, including the heuristic–systematic model and selectivity hypothesis, for explicating the moderating effect of inconsistent reviews and its gender differences.

2.1. Trust-based acceptance model

Komiak and Benbasat's (2006) trust-based acceptance model is built upon the theory of reasoned action. This theory has been widely used in e-commerce studies (e.g., Hansen, Jensen, & Solgaard, 2004; Hoehle, Scornavacca, & Huff, 2012; Komiak & Benbasat, 2006). It suggests that individuals' behavior is predicted by their behavioral intention (Fishbein & Ajzen, 1975). The theory further delineates the causal relationships among individuals' behavioral intention, attitude, beliefs, and subjective norms. Behavioral intention captures an individual's likelihood of performing a behavior. Attitude pertains to the affective evaluation of whether performing this behavior is favorable or not. Beliefs are defined as the cognitive assessments or perceived consequences of this behavior. Subjective norms refer to the pressure from "important" others who believe the individual should perform this behavior. According to the theory of reasoned action, individuals' behavioral intention is primarily determined by attitude and subjective norms; while attitude is further a function of beliefs about the behavior (Fishbein & Ajzen, 1975).

Extant research shows that online trust is a key driver for the success of e-commerce (e.g., Awad & Ragowsky, 2008; Becerra & Korgaonkar, 2011; Cheung & Lee, 2006; Hong & Cho, 2011). It is critical for online retailers to build consumer trust (Kim & Park, 2013). Given the importance of trust, Komiak and Benbasat (2006) proposed the trust-based acceptance model to understand the adoption of online recommendation agents. They examined two types of trust in the model: cognitive trust and emotional trust. Cognitive trust is conceptualized as trusting beliefs. It highlights trustors' beliefs from rational expectations of trustees' attributes that can be relied on. Meanwhile, emotional trust, also viewed as affective trust, is a form of trusting attitude. It refers to trustors' attitude and emotional feelings, such as feeling secure or comfortable, about relying on trustees. Emotional trust is different from cognitive trust (Komiak & Benbasat, 2004). It captures consumers' affective evaluation of performing trusting behavior (Sun, 2010). In online environments, consumers often affectively evaluate trusting behavior. A high level of emotional trust suggests that consumers have favorable feelings toward performing the behavior. Ignoring the emotional dimension may hamper the understanding of consumers' behavioral decision (Komiak & Benbasat, 2006).

The trust-based acceptance model highlights that cognitive trust affects emotional trust, which further leads to individuals' adoption intention. Although the theory of reasoned action indicates that subjective norms affect individuals' behavioral intention, the influence of this factor is not considered in the trust-based acceptance model. This is because that consumers' adoption behavior is often voluntary in the context of recommendation agent and online shopping (Komiak & Benbasat, 2006), and subjective norms may be more important for a behavior in mandatory rather than voluntary settings (Miller & Hartwick, 2002). In summary, this trust-based acceptance model depicts a process of belief–attitude–intention (i.e., cognitive trust → emotional trust → behavioral intention) for understanding consumers' adoption behavior.

2.2. Heuristic–systematic model and selectivity hypothesis

In the information processing literature, the heuristic–systematic model suggests that two strategies are available for individuals when they need to process information (Chaiken, 1980). The first strategy is heuristic processing. It refers that "people consider a few informational cues—or even a single informational cue—and
form a judgment based on these cues” (Todorov, Chaiken, & Henderson, 2002, p. 196). The second one is systematic processing. It indicates that “people consider all relevant pieces of information, elaborate on these pieces of information, and form a judgment based on these elaborations” (Todorov et al., 2002, p. 196). Since heuristic processing requires less cognitive effort than systematic processing, individuals tend to adopt the first strategy and will adopt the second later in certain situations (Chaiken & Ledgerwood, 2012).

The sufficiency principle of the heuristic–systematic model provides a good explanation on when systematic processing will occur. This principle suggests two forms of judgmental confidence: actual confidence and desired confidence (Chen & Chaiken, 1999; Davis & Tuttle, 2013). The level of actual confidence is generally lower than that of desired confidence. The reason of performing systematic processing is that individuals cognitively process information to improve their actual confidence, thus, meeting the level of desired confidence (Chaiken & Ledgerwood, 2012; Todorov et al., 2002). In this regard, individuals may have to perform systematic processing when the disparity between actual and desired confidence enlarges. The disparity will enlarge when individuals are under the situation of requiring a high level of desired confidence, or when they encounter a low level of actual confidence. According to the study of Todorov et al. (2002), motivational factors and inconsistent information may engender individuals to perform systematic processing. Motivational factors, like task importance, may increase the disparity of the two confidences by improving desired confidence. On the other hand, ambiguous or inconsistent information may increase the disparity by reducing actual confidence. When individuals encounter inconsistent information, they may find that heuristic information processing alone is insufficient to reach their desired confidence. Thus, it may become necessary to perform a high level of elaboration on such information to make judgments (Davis & Tuttle, 2013).

Scholars also posit that individuals’ information processing patterns may differ across genders (e.g., Putrevu, 2001). The selectivity hypothesis is an important perspective that explains why females and males respond differently when they process information (Richard, Chebat, Yang, & Putrevu, 2010). This perspective refers to females as comprehensive processors and males as selective processors (Meyers-Levy & Stenthal, 1991). Comprehensive processors suggest that females are inclined to treat all pieces of information equally and integrate the information comprehensively. On the other hand, selective processors convey the tendency of males to process information selectively. Males prefer to process the information that they are most interested in and believe to be important. The selectivity hypothesis postulates that females may have a lower information elaboration threshold than males (Meyers-Levy & Stenthal, 1991; Richard et al., 2010). Scholars have been applying the selectivity hypothesis to explain why females may be easier to perform systematic processing than males under similar information processing circumstances (e.g., Kempf, Laczniak, & Smith, 2006; Kim, Lehto, & Morrison, 2007; Noseworthy, Cotte, & Lee, 2011).

3. Research model and hypotheses development

In this research, we build a research model to examine the moderating effect of inconsistent reviews and its gender differences. First, we refer to Komiak and Benbasat’s (2006) trust-based acceptance model to demonstrate consumers’ decision-making process of online shopping. We propose that consumers’ cognitive trust will positively affect emotional trust, which further leads to their purchase intention. Then, we point out that emotional trust will place a stronger impact on purchase intention if consumers are exposed under the situation of inconsistent reviews. This moderating effect of inconsistent reviews will be greater for female consumers than males. In summary, Fig. 1 depicts the research model of this research.

We choose the trust-based acceptance model as our theoretical lens for two primary reasons. First, trust has been widely regarded as one of the most critical factors in the online shopping context. It will be theoretically important to investigate how inconsistent reviews may interact with trust and then affect consumers’ purchase behavior. Second, this model is built upon the theory of reasoned action. It proposes that emotional trust, as a form of attitude, may mediate the relationship between cognitive trust and purchase intention. Thus, the relationship between emotional trust and purchase intention reflects the attitude–intention link in the online shopping context. This helps us highlight the extent to which attitude can predict intention and test whether inconsistent reviews posit a moderating effect on their relationship.

3.1. Antecedents of purchase intention

Drawing upon Komiak and Benbasat’s (2006) trust-based acceptance model, we propose the relationships among cognitive trust, emotional trust, and purchase intention in the context of online shopping. In this study, cognitive trust is defined as consumers’ perceptions or confident expectations that online retailers may have attributes that they can rely upon (McKnight, Choudhury, & Kacmar, 2002). Prior research has proposed different dimensions of cognitive trust (e.g., Hong & Cho, 2011). Through a comprehensive literature review of articles and books on trust, McKnight et al. (2002) summarized cognitive trust into three salient categories: competence, benevolence, and integrity. Competence refers to the extent to which consumers perceive an online retailer as having skills and abilities to behave what they need (Mayer, Davis, & Schoorman, 1995). Benevolence is consumers’ perception that the retailer will behave in their interest (Hong & Cho, 2011). Integrity captures consumers’ perception about honesty and promise-keeping from the retailer (McKnight et al., 2002).
In this study, emotional trust is defined as consumers’ affective evaluation about relying on online retailers. Consumers’ emotional trust may develop according to consumers’ cognitive perceptions toward online retailers (Sun, 2010). For instance, when a consumer uses a totally strange online retailer’s website, s/he may feel uncomfortable at first (low emotional trust). However, after the consumer finds professional information and reputable certification authority on the website, s/he may feel more comfortable about shopping on the website (high emotional trust). According to the theory of reasoned action, beliefs lead to attitude (Fishbein & Ajzen, 1975). Thus, this study proposes that consumers’ cognitive trust may produce a positive influence on their emotional trust. Given that cognitive trust includes perceptions regarding the competence, benevolence, and integrity of online retailers (Hong & Cho, 2011; Lin, 2011; McKnight et al., 2002), the following hypothesis is provided:

**H1.** Cognitive trust in competence, benevolence, and integrity will positively affect emotional trust to an online retailer.

Trusting intention pertains to trustees’ willingness to depend on trustees for certain behavior (Komiak & Benbasat, 2006; McKnight et al., 2002). In this study, we adopt purchase intention to denote consumers’ trusting intention of willing to purchase from online retailers’ websites. Following the theory of reasoned action, intention will be predicted by attitude (Fishbein & Ajzen, 1975). Hence, we propose that emotional trust may positively affect purchase intention. If a consumer feels comfortable about relying on an online retailer for shopping, then s/he will be likely to purchase in the retailer’s website. The following hypothesis is provided:

**H2.** Emotional trust to an online retailer will positively affect purchase intention.

### 3.2. Influence of inconsistent reviews and the role of gender

As mentioned earlier, the heuristic–systematic model suggests that inconsistent information is likely to entice individuals to perform systematic information processing. In this research, we expect that inconsistent reviews may render similar effects. Prior research postulates that a high level of information elaboration may moderate the relationship between newly formed attitude and behavioral intention (Jonas, Diehl, & Brömer, 1997; Sengupta & Johar, 2002). For objects with pre-established attitudes (e.g., a consumer has already had an attitude toward an online retailer), positive or negative information may be likely to strengthen different directions of behavioral intention through direct effects (Chiou & Cheng, 2003). For new or unfamiliar objects (e.g., a consumer visits an unfamiliar online retailer for the first time), the moderating effect of inconsistent information may become salient due to the need of forming a judgment by systematic information processing (Jonas et al., 1997). Intensive information elaboration indicates that individuals are closely involved in the cognition process, making the newly formed attitude more accessible and consistent till they perform the behavior (Harreveeld, Rutjens, Rotteveel, Nordgren, & Pligt, 2009; Petty, Hagtvedt, & Smith, 1995). In this regard, a favorable attitude is much more likely to predict behavioral intention in this circumstance. Therefore, we propose that emotional trust, consumers’ trusting attitude toward an online retailer, is more likely to influence purchase intention when consumers are exposed to inconsistent reviews. The following hypothesis is proposed:

**H3.** The relationship between emotional trust and purchase intention will be stronger under the situation of inconsistent reviews.

To further investigate the influence of inconsistent reviews, the role of user types is also considered in this research. In specific, we examine whether the moderating effect of inconsistent reviews may differ for female and male consumers. According to the selectivity hypothesis (Meyers-Levy & Stemthul, 1991; Richard et al., 2010), we contend that female consumers may have a higher tendency to perform systematic processing than male consumers. In the context of this study, female consumers may be more likely to integrate inconsistent reviews and obtain a comprehensive picture on the online retailer. From this perspective, we expect that female consumers are easier to engage in intensive review elaboration, making their newly formed emotional trust (i.e., trusting attitude) more accessible and consistent. Thus, the relationship between emotional trust and purchase intention may be stronger for females than males when consumers are exposed to inconsistent reviews. The following hypothesis is provided:

**H4.** Under the situation of inconsistent reviews, the relationship between emotional trust and purchase intention will be stronger for female consumers than male consumers.

### 4. Research method

The objectives of this study involve understanding the moderating effect of inconsistent reviews and how it may differ across genders in the online shopping context. To achieve the objectives and control other possible confounding factors, such as Internet speed, online retailers’ websites, types of social media, and products to purchase, we tested the hypotheses by conducting a laboratory experiment. Subjects were provided with a real online retailer’s website to make their purchase decision. Inconsistent reviews were listed in an online discussion forum. Details of the experimental design are presented as follows.

#### 4.1. Experimental task and participants

The experiment task required subjects to decide whether to purchase in a watch website under a hypothetical scenario: “Suppose you are planning to use US$40 (around HK$320) to buy a watch as a birthday gift for a good friend in the U.S.” A real watch website was used as the experimental site (i.e., http://www.easywatch.com/). We chose this website because it was new and unfamiliar to subjects, and the price of products in this website was within the purchasing power of subjects. Only subjects who had never shopped via this website were allowed to participate in this experiment.

The invitations to participate in this study were distributed via email broadcasting, posters, and flyers inside the campus of a university in Hong Kong. Several studies have found that many online consumers are young adults and attend university for at least one year (e.g., Horrigan, 2008; Lim, Sia, Lee, & Benbasat, 2006). University students are recognized as a good sample of Internet shoppers (Kim, Ferrin, & Rao, 2009; Pavlou & Fygenson, 2006). Similar sampling approach in experimental settings has also been employed in the trust and e-commerce literature (e.g., Komiak & Benbasat, 2006; Lim et al., 2006; Sia et al., 2009). In this regard, student subjects were chosen to demonstrate Internet shoppers’ online decision-making process.

To encourage participations, students were given around US$7 (i.e., HK$50) as a reward for their time spent in the experiment. Finally, a total of 100 subjects participated. There were one control group and one treatment group in this study. Each group had 50 subjects. For the treatment group, 24 were females, and 26 were male. The age of all the subjects ranged from 19 to 33. They had around eight years of Internet usage experience and two years of online shopping experience. Supplementary information about the characteristics of the participants is depicted in Table 1. It shows that 85% of subjects tended to seek online reviews or comments from others when considering shopping online.
Table 1
Characteristics of subjects.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>44</td>
</tr>
<tr>
<td>Male</td>
<td>56</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>23.5</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.8</td>
</tr>
<tr>
<td>How much experience do you have with online shopping?</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.2</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.7</td>
</tr>
<tr>
<td>Have you bought anything online in the last year?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51</td>
</tr>
<tr>
<td>No</td>
<td>49</td>
</tr>
<tr>
<td>Have you bought anything online in the last month?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
</tr>
<tr>
<td>No</td>
<td>82</td>
</tr>
<tr>
<td>Did you seek out or search for other consumers’ reviews or comments online regarding what you wanted to buy?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>85</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: It was measured with 7 point Likert scales from 1 = not at all to 7 = a lot.

4.2. Experimental procedures and measures

At first, participants were randomly seated and were not allowed to discuss with each other. Next, the experiment administrator introduced the task procedures. For the control group, subjects were told to view the watch website for about 15 min. Then, they had to complete an online questionnaire. For the treatment group, apart from browsing through the watch website, subjects were also required to login and browse through a discussion forum before filling the questionnaire.

The online questionnaire contained the instrument of constructs in this research. The measurements were adapted from previous studies (Gefen, Karahanna, & Straub, 2003; Komiak & Benbasat, 2006; McKnight et al., 2002). Minor modifications were applied to fit the online shopping context. Items of the measurements used 7 point Likert scales. Items that had low factor loadings on their corresponding constructs were deleted to enhance reliability. The detailed measurements of constructs are listed in Appendix A.

We established the inconsistent information situation by posting a mix of positive and negative reviews in the online discussion forum. These reviews were adapted from real reviews in some retailers’ forums on the Internet. The review information was controlled to limit the content to consumers’ comments on their experience with the online watch retailer, while the valence differences (i.e., valence inconsistency) of these reviews were emphasized. For example, a positive review is “I am very impressed with this company! They have amazing service and lighting fast shipping!” Accordingly, the negative review is “This company is not so good to do business with, and their price and speed with which they ship are not attractive.” In total, around ten positive and ten negative reviews were randomly displayed in the forum. Two research assistants helped examine all the reviews to ensure that they disseminated either positive or negative information from perspective consumers of the watch website.

5. Data analysis and results

To analyze the data, we firstly checked the experiment’s control and manipulation. Then, we used the structural equation modeling and group comparison techniques to test the hypotheses. Details of the analysis and corresponding results are presented as follows.

5.1. Control and manipulation checks

We compared the control group and treatment group regarding their demographic data. No significant differences were found. We then performed manipulation checks to ensure that only subjects in the treatment group, not in the control group, were exposed to inconsistent reviews in the discussion forum. We examined the login record of the forum and found that only the treatment group subjects had browsed through the forum. In addition, all the treatment group subjects agreed that there were a mix of positive and negative reviews in the forum. Therefore, the control and manipulation checks of this study appeared to be successful.

5.2. PLS analysis

In this study, we employed the structural equation modeling (SEM) approach to test the research model. Compared with regression methods, SEM has a number of advantages (Gefen, Rigdon, & Straub, 2011). For instance, it is capable of analyzing latent variables with multiple items, while recognizing measurement error. It estimates the measurement model and structural model simultaneously and can also assess many stages of variables into one model. In particular, this study used PLS-Graph 3.0, which is a widely adopted SEM technique in the IS literature (e.g., Ahuja & Thatcher, 2005; Lee, Shi, Cheung, Lim, & Sia, 2011; Sun, 2012). It is component-based and suitable for theory development, capable of dealing with relatively small sample size, and without restriction of normal distribution for the sample (Chin, Marcolin, & Newsted, 2003). Based on these concerns, we expect that PLS is suitable for the data analysis of this study. Following the two procedures as indicated in prior research (Hair, Anderson, Tatham, & Black, 1998), we examined the measurement and structural models.

Measurement model. There are two types of validities in a measurement model: convergent validity and discriminant validity. Convergent validity indicates that items under the same construct should be highly correlated; while discriminant validity refers to the extent to which constructs should differ from each other as conceptualized. Composite reliability (CR) and averaged variance extracted (AVE) are two indicators of convergent validity. If CR values are higher than 0.7, and AVE values are higher than 0.5, then convergent validity is regarded as sufficient (Fornell & Larcker, 1981). As shown in Table 2, all CR and AVE values of constructs were sufficient in this study. To reach enough discriminant validity, correlation values of different constructs should be lower than any of

Table 2
Correlations between constructs.

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>AVE</th>
<th>Mean</th>
<th>SD</th>
<th>COM</th>
<th>BEN</th>
<th>INT</th>
<th>ET</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>0.886</td>
<td>0.721</td>
<td>4.08</td>
<td>1.011</td>
<td>0.849</td>
<td>0.846</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEN</td>
<td>0.883</td>
<td>0.716</td>
<td>3.85</td>
<td>1.128</td>
<td>0.647</td>
<td>0.846</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>0.919</td>
<td>0.738</td>
<td>4.38</td>
<td>1.041</td>
<td>0.531</td>
<td>0.642</td>
<td>0.859</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ET</td>
<td>0.901</td>
<td>0.820</td>
<td>4.01</td>
<td>1.145</td>
<td>0.653</td>
<td>0.732</td>
<td>0.597</td>
<td>0.906</td>
<td></td>
</tr>
<tr>
<td>PI</td>
<td>0.952</td>
<td>0.799</td>
<td>3.38</td>
<td>1.439</td>
<td>0.675</td>
<td>0.634</td>
<td>0.507</td>
<td>0.637</td>
<td>0.894</td>
</tr>
</tbody>
</table>

Note: SD, standard deviation. The bold values in diagonal lines are square roots of relevant AVEs.
Fig. 2. Results of the structural model. Note: *significance at \( p < 0.05 \); **significance at \( p < 0.01 \).

Fig. 3. Moderating effect of inconsistent reviews and its gender differences (in the treatment subgroup).

Table 3
Confirmatory factor analysis with PLS.

<table>
<thead>
<tr>
<th></th>
<th>COM</th>
<th>BEN</th>
<th>INT</th>
<th>ET</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM1</td>
<td>0.845</td>
<td>0.479</td>
<td>0.419</td>
<td>0.546</td>
<td>0.572</td>
</tr>
<tr>
<td>COM2</td>
<td>0.862</td>
<td>0.542</td>
<td>0.422</td>
<td>0.520</td>
<td>0.534</td>
</tr>
<tr>
<td>COM3</td>
<td>0.840</td>
<td>0.620</td>
<td>0.505</td>
<td>0.592</td>
<td>0.609</td>
</tr>
<tr>
<td>BEN1</td>
<td>0.675</td>
<td>0.807</td>
<td>0.428</td>
<td>0.613</td>
<td>0.675</td>
</tr>
<tr>
<td>BEN2</td>
<td>0.531</td>
<td>0.886</td>
<td>0.604</td>
<td>0.678</td>
<td>0.498</td>
</tr>
<tr>
<td>BEN3</td>
<td>0.430</td>
<td>0.844</td>
<td>0.597</td>
<td>0.559</td>
<td>0.435</td>
</tr>
<tr>
<td>INT1</td>
<td>0.429</td>
<td>0.567</td>
<td>0.842</td>
<td>0.431</td>
<td>0.347</td>
</tr>
<tr>
<td>INT2</td>
<td>0.429</td>
<td>0.516</td>
<td>0.874</td>
<td>0.498</td>
<td>0.452</td>
</tr>
<tr>
<td>INT3</td>
<td>0.451</td>
<td>0.582</td>
<td>0.852</td>
<td>0.541</td>
<td>0.456</td>
</tr>
<tr>
<td>INT4</td>
<td>0.508</td>
<td>0.545</td>
<td>0.868</td>
<td>0.564</td>
<td>0.470</td>
</tr>
<tr>
<td>ET1</td>
<td>0.585</td>
<td>0.675</td>
<td>0.540</td>
<td>0.913</td>
<td>0.622</td>
</tr>
<tr>
<td>ET2</td>
<td>0.598</td>
<td>0.651</td>
<td>0.541</td>
<td>0.898</td>
<td>0.528</td>
</tr>
<tr>
<td>PI1</td>
<td>0.644</td>
<td>0.597</td>
<td>0.474</td>
<td>0.586</td>
<td>0.923</td>
</tr>
<tr>
<td>PI2</td>
<td>0.646</td>
<td>0.627</td>
<td>0.447</td>
<td>0.613</td>
<td>0.923</td>
</tr>
<tr>
<td>PI3</td>
<td>0.583</td>
<td>0.549</td>
<td>0.385</td>
<td>0.501</td>
<td>0.888</td>
</tr>
<tr>
<td>PI4</td>
<td>0.459</td>
<td>0.474</td>
<td>0.427</td>
<td>0.535</td>
<td>0.804</td>
</tr>
<tr>
<td>PI5</td>
<td>0.671</td>
<td>0.577</td>
<td>0.521</td>
<td>0.597</td>
<td>0.925</td>
</tr>
</tbody>
</table>

Table 4
Path coefficient comparisons on the ET–PI relationships.

<table>
<thead>
<tr>
<th>ET → PI</th>
<th>Control</th>
<th>Treatment</th>
<th>Group comparison</th>
<th>Female (treatment)</th>
<th>Male (treatment)</th>
<th>Subgroup comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path coefficient</td>
<td>0.610</td>
<td>0.723</td>
<td>-0.764**</td>
<td>0.798</td>
<td>0.650</td>
<td></td>
</tr>
<tr>
<td>R² of PI</td>
<td>37.2%</td>
<td>52.3%</td>
<td>-76.4%</td>
<td>63.7%</td>
<td>42.3%</td>
<td></td>
</tr>
</tbody>
</table>

Note: The female and male subgroups are in the treatment subgroup.
** Significance at \( p < 0.01 \).

Structural model. First, we included age and online shopping experience as control variables in the model with full sample size. No significant effects were found. We then computed the structural model. As depicted in Fig. 2, competence (\( \beta = 0.275, t = 2.782 \)), benevolence (\( \beta = 0.450, t = 3.948 \)), and integrity (\( \beta = 0.162, t = 2.023 \)) were found to have positive impacts on emotional trust, which further affected purchase intention (\( \beta = 0.637, t = 10.464 \)). The variance explained in emotional trust was 60.6% and in purchase intention was 40.5%. In sum, Hypotheses 1 and 2 were supported.

To test Hypothesis 3, we adopted previous studies’ procedure to perform a group comparison (c.f., Ahuja & Thatcher, 2005; Keil et al., 2000). Appendix B depicts the group comparison method. For the control group and treatment group, we tested the relationship between emotional trust (ET) and purchase intention (PI) in PLS, respectively, and obtained their corresponding path coefficients and standard errors. Then, we calculated them to compare the difference. As shown in Table 4 and Fig. 3a, the ET–PI relationships between the two groups were significantly different (\( t = -7.614 \)). It indicated that emotional trust would be more likely to predict purchase intention when consumers are exposed to inconsistent reviews, rather than visiting the retailer’s website alone. Thus, Hypothesis 3 was supported. Similarly, to test Hypothesis 4, we compared the ET–PI relationships between the female and male subgroups in the treatment group. As shown in Table 4 and Fig. 3b, we found the ET–PI relationships were their square roots of AVEs (Fornell & Larcker, 1981). Table 2 shows that this AVE analysis was fulfilled. A further confirmatory factor analysis with PLS indicated that all items had high factor loadings in their corresponding constructs (see Table 3). In sum, convergent validity and discriminant validity were adequate in this study.
significantly different between the two gender subgroups \((t = 6.780)\). It suggested that the ET–PI relationship would become stronger for female subjects than male subjects under the situation of inconsistent reviews. Therefore, Hypothesis 4 was supported.

As a supplementary analysis, we also examined the mediating effects of emotional trust based on Baron and Kenny’s (1986) procedure (see Table 5). We found that emotional trust partially mediated the relationship between competence and purchase intention, and the relationship between benevolence and purchase intention. Meanwhile, it fully mediated the relationship between integrity and purchase intention. The findings further indicated that emotional trust played an important role in consumers’ online shopping behavior.

### 6. Discussion and conclusion

Prior research has shown that negative online reviews may affect consumers’ purchase behavior in a complex manner. Motivated by the need to investigate whether online retailers may benefit from a mix of positive and negative reviews (i.e., inconsistent reviews), this study refers to the theoretical perspectives in the information processing literature. We develop our research model based on Komiak and Benbasat’s (2006) trust-based acceptance model and then highlight the positive moderating effect of inconsistent reviews and its gender differences. A laboratory experiment is administrated to empirically test the research hypotheses.

Our results firstly show that the three dimensions of cognitive trust positively affect emotional trust, which further influences consumers’ online purchase intention. Cognitive trust explains a large extent of variance (60.6%) in emotional trust, while emotional trust demonstrates an important mediating role between cognitive trust and purchase intention. The results suggest that if consumers find an online retailer to be competent, benevolent, and honest, then they will establish favorable feelings toward relying on the online retailer for shopping behavior. Moreover, emotional trust may largely develop from consumers’ cognitive trust to online retailers and then increase consumers’ likelihood of shopping online. Our findings are consistent with Komiak and Benbasat’s (2006) and Sun’s (2010) research on trust in the e-commerce context. Although some prior studies indicate that emotional trust may be more important in close interpersonal relationships (Lewis & Weigert, 1985), and thus less relevant to business settings (Gefen et al., 2003), our research provides additional empirical support to show that emotional trust is important in affecting consumers’ online purchase decision.

Our results further show that inconsistent online reviews can significantly strengthen the link between emotional trust and purchase intention. It suggests that, at the same level of emotional trust, consumers under the situation of inconsistent reviews are more likely to purchase online. The positive moderating effect of these reviews implies that online retailers may consider shifting their focus from controlling or avoiding negative reviews to leveraging the effect of negative reviews along with the coexistence of positive ones. This is an important finding, which shows that negative reviews can also produce favorable marketing opportunities (Berger et al., 2010). It further confirms the view that inconsistent information may moderate the predictive value of attitude on individuals’ behavior in the marketing and social psychology literature (Jonas et al., 1997; Sengupta & Johar, 2002). In addition, this study examines gender differences regarding the influence of inconsistent reviews. Awad and Ragowsky (2008) pointed out that it will be important for both academics and practitioners to understand how gender interacts with trust, purchase behavior, and online reviews in the e-commerce context. In responding to their call, our results show that the positive moderating effect of inconsistent reviews differs across genders. Female consumers are found to be more responsive to a mix of positive and negative reviews, thus, are more prone to shop online than males in such circumstance. This empirical finding confirms with the perspective that females can be regarded as comprehensive information processors, whereas males can be viewed as selective information processors (Meyers-Levy & Stelthal, 1991).

#### 6.1. Implications for research

We believe that this study can call forth several important implications for researchers. First, this research contributes to the existing trust literature by testing cognitive trust and emotional trust in the online shopping context. Building upon the theory of reasoned action (Fishbein & Ajzen, 1975), Komiak and Benbasat’s (2006) proposed these two types of trust to explain users’ information technology acceptance behavior. While a majority of prior studies focus on cognitive trust and neglect emotional trust in the IS literature (e.g., Gefen et al., 2003; Hong & Cho, 2011; Hu, Wu, Wu, & Zhang, 2010), this study applies Komiak and Benbasat’s trust-based acceptance model and demonstrates that consumers’ emotional trust develops from cognitive trust and further affects their online shopping intention. Emotional trust supplements cognitive trust especially when it is unable for consumers to obtain complete information about online retailers (Sun, 2010). Empirical findings from this research help to show that emotional trust is a crucial and indispensable factor in the online shopping context.

Second, this study adds to the existing research on online reviews by showing that inconsistent reviews demonstrate a moderating effect on the relationship between emotional trust and purchase intention. Previous studies have primarily emphasized the direct impacts of online reviews on consumer trust or purchase behavior (e.g., Awad & Ragowsky, 2008; Pavlou & Dimoka, 2006). Negative reviews are often found to posit stronger direct effects than positive ones in this line of research (e.g., Park & Lee, 2009). In contrast, this research argues for an alternative perspective to understand the influence of online reviews. We derive the heuristic–systematic model from the information processing literature (Chaiken, 1980). We show that a mix of positive and negative reviews provoke consumers’ information elaboration on the reviews and then strengthen the effect of emotional trust (attitude)
on purchase intention (behavioral intention) (Jonas et al., 1997). On one hand, this new perspective corresponds with the insight that negative reviews can also yield positive outcomes (Berger et al., 2010). On the other hand, the moderating role of inconsistent reviews can be linked to the concept of attitude–behavior consistency in the social psychology literature. Glasman and Albarracín (2006) pointed out that examining the attitude–behavior consistency, or attitude–intention consistency, can provide key insights on understanding when attitude is most likely to predict future behavior. Hence, research on how online reviews moderates the attitude–intention link, that is, the relationship between emotional trust and purchase intention, is important because it helps to understand the predictive value of emotional trust toward consumers’ purchase behavior.

Finally, this research enriches the understanding of gender differences in the e-commerce literature. Gender differences have been found to exist in a number of e-commerce studies (e.g., Garbarino & Strahilevitz, 2004; Yeh et al., 2012). The differences are considered as a key aspect of the overall cultural differences that affect individuals’ behaviors (Gefen & Straub, 1997). Gender is also an important strategic tool for market segmentation because of its accessibility and identifiability (Simon, 2001). In the online shopping context, however, few studies have paid attention to the interaction effect between gender and online reviews (Awad & Ragowsky, 2008). In this research, we fill the gap and examine whether female and male consumers respond to inconsistent reviews differently. We derive the theoretical perspective of selectivity hypothesis from the information processing literature (Meyers-Levy & Stempthal, 1991). We provide empirical evidence to show that the moderating effect of inconsistent reviews is more likely to increase for female consumers than for males.

6.2. Implications for practice

This study also offers new insights to online retailers and website designers regarding their understanding of online reviews in social media. In recent years, social media have greatly facilitated the production of online reviews. The influence of these reviews is increasingly recognized by online retailers. For many retailers, they are highly concerned about negative reviews. Avoiding any negative impacts from these reviews tends to be one of the most important strategies. However, it is often difficult for online retailers to control the production and diffusion of these reviews. Prior research further points out that if retailers respond to negative reviews in their discussion forums, the credibility of the forums may be hampered due to this unwarranted intervention (Chiou & Cheng, 2003). In this research, we find that negative reviews are not always bad, especially when there are also positive ones. We show that inconsistent reviews in discussion forums may exhibit a positive moderating effect in consumers’ purchase decision-making process. Hence, we suggest that online retailers and websites designers should provide clear indicators to show the numbers of both positive and negative reviews. A selected sample of the two types of reviews can also be placed nearby in an obvious manner. In this respect, consumers will be well aware of the existence of inconsistent reviews. Further, online retailers may consider using their real identity to respond to negative reviews in the forums where both positive and negative reviews co-exist. Through this active and interactive participation strategy, online retailers should try to demonstrate their competence, benevolence, and integrity in dealing with prior consumers’ feedback. The efforts may help future consumers improve their cognitive trust to the retailers. As hypothesized in this research, cognitive trust positively affects emotional trust, which can further exhibit a stronger impact on purchase intention under the situation of inconsistent reviews.

Thus, future consumers, especially female consumers, may be more likely to purchase from the retailers’ websites.

6.3. Limitations and future research

We have to point out that this study has several limitations and future research opportunities. First, we invited a relatively small sample of students from a local university to participate in the laboratory experiment. Scholars may generalize the findings of this research to other sectors of the population with a larger sample size and examine whether there would be different findings. Second, we posit that the inconsistent information situation increases the cognitive effort of information processing, which may strengthen the relationship between emotional trust and purchase intention. However, we did not explicitly measure the extent of changes for cognitive effort. One of the reasons for this limitation is that improved elaboration of information processing may happen implicitly. Thus, subjects’ self-reported measure on cognitive effort may be insufficient to capture its actual changes. Nevertheless, future empirical studies are encouraged to resolve this measurement difficulty. A possible and novel method may be to adopt the eye-tracking technology (Kuo, Hsu, & Day, 2009), which keeps track of the location and duration of subjects’ eye fixations in approximating their changes of cognitive effort. Third, similar to inconsistent information, motivational factors (e.g., task importance) may also induce individuals’ systematic information processing. In the laboratory experiment, we provided a hypothetical scenario of shopping a watch for all the subjects. Thus, subjects were likely to have homogeneous motivations for this shopping task. Nevertheless, future studies may consider potential moderating effects of motivational factors and manipulate their levels (e.g., low vs. high motivation) when consumers process information in online discussion forums. Finally, the hypothetical scenario was about purchasing gifts for friends. Although similar experimental approaches have been used in the e-commerce literature (e.g., Kumar & Benbasat, 2006; Wang & Benbasat, 2009), some studies suggest that consumers’ shopping behavior may be different between gift-giving oriented (purchase for others) and pure commodities oriented (purchase for oneself) purchases (Belk, Wallendorf, & Sherry, 1989). Future research may extend this research and examine whether findings of this study may be different for these two types of shopping behavior.

6.4. Conclusion

Social media have great potential to influence transactions between online retailers and consumers. In this research, we shed light on user-generated content (e.g., inconsistent reviews) and gender differences in this context. The findings provide new insights for marketers to understand how online trust may develop and vary its impacts on purchase decision when different consumers are exposed to inconsistent reviews. We expect that e-marketers can receive growing knowledge about online reviews in social media and create incremental business value in the future.

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Appendix A. Measures and sources of constructs

Cognitive trust in competence (McKnight et al., 2002)
1. Easywatch.com is competent and effective in offering high-quality watch.
2. Easywatch.com performs its role of offering high-quality watch very well.
3. Overall, Easywatch.com is a capable and proficient online watch store.
4. In general, Easywatch.com is very knowledgeable about the watch.*

Cognitive trust in benevolence (McKnight et al., 2002)
1. I believe that Easywatch.com would act in my best interest.
2. If I required help, Easywatch.com would do its best to help me.
3. Easywatch.com would be concerned about my well-being, not just its own.

Cognitive trust in integrity (McKnight et al., 2002)
1. Easywatch.com is truthful in its dealings with me.
2. I would characterize Easywatch.com as honest.
3. Easywatch.com would keep its commitments.
4. Easywatch.com is sincere and genuine.

Emotional trust (Komiak & Benbasat, 2006)
1. I feel comfortable about relying on Easywatch.com for my shopping decision.
2. I feel content about relying on Easywatch.com for my shopping decision.

Purchase intention (Gefen et al., 2003)
1. I am very likely to buy watch from the Easywatch.com.
2. I intend to use the Easywatch.com to buy watch.
3. I intend to use the Easywatch.com frequently to buy watch
4. If I would seriously contemplate buying from the Easywatch.com.
5. It is likely that I am going to buy from the Easywatch.com

* This item for cognitive trust in competence was deleted due to low factor loading.

Appendix B. Group comparison method from Keil et al. (2000)

\[
S_{\text{pooled}} = \sqrt{\left(\frac{(N_i - 1)}{(N_i + N_j - 2)}\right) \cdot SE_i^2 + \left(\frac{(N_j - 1)}{(N_i + N_j - 2)}\right) \cdot SE_j^2}
\]
\[t = \frac{(PC_i - PC_j)}{S_{\text{pooled}} \cdot \sqrt{\left(\frac{1}{N_i} + \frac{1}{N_j}\right)}}\]

Note: \(S_{\text{pooled}}\) denotes the pooled estimator for the variance; \(N_i\) denotes the sample size for group \(i\); \(SE\) denotes the standard error of path in the structural model of group \(i\); \(PC\) denotes the path coefficient in the structural model of group \(i\); \(t\) denotes the \(t\)-statistic with \((N_i + N_j - 2)\) degrees of freedom.

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The heuristic–systematic model
Effects of conflicting aggregated rating on ewom
An exploratory study of cognitive effort
Information direction, website reputation and ewom
Sellers' trust and continued use of online marketplaces.

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