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The role of emotions and conflicting online reviews on consumers' purchase intentions

Abstract

Drawing on dual-process theories, this paper explains how the systematic and heuristic information processing of online reviews with conflicting information can influence consumers' purchase decision making. The study adopts major assumptions of complexity and configuration theory in employing fuzzy-set qualitative comparative analysis on 680 TripAdvisor users to test the complex interrelationships between emotions and the systematic and heuristic cues used in processing reviews. The results show that the systematic and heuristic processing of online reviews can produce independent impacts on consumer decision making. Both processing routes can interact with each other—owing to the online reviews' mixed response sequence—to affect the domination of one route over the other. In the case of a positive–negative sequence, consumers mainly follow a heuristic processing route. In the reverse sequence, consumers' concerns about the credibility of the reviews leads them to think more deeply (systematic processing) and actively evaluate both the argumentation quality and the helpfulness of the online reviews.

Keywords: Online reviews, Heuristic–systematic processing model, Emotions, Fuzzy-set qualitative comparative analysis

1. Introduction

The development of travel review websites has radically changed the hospitality industry. Such platforms are a valuable source of information for consumers and, as a result, are a growing driver of decision making in booking hotels, restaurants, and tourist attractions. As a major form of electronic word of mouth (eWOM), which refers to “any statement made by potential, actual, or former consumers about a product, service, or company, which is available to a multitude of people and institutions via Internet” (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004), online reviews are peer-generated evaluations posted on third-party websites (e.g., TripAdvisor). Thus, online reviews fall under the eWOM category of asynchronous, “one-to-many” communications (Bronner & De Hoog, 2011) and constitute one of the most important and influential forms of eWOM because they can directly and significantly explain consumers’ online behavior (Banerjee & Chua, 2016). Given the increasing competition in the hospitality industry, the investigation of how consumer-generated reviews affect the consumption decision of tourism services is important.

Dual-process theories provide comprehensive information on how individuals process information, establish their validity assessments, and later form decision outcomes (Eagly & Chaiken, 1993). These theories posit that consumers process information using two routes: central/systematic processing (i.e., analysis of all relevant pieces of information) and peripheral/heuristic processing (i.e., decision making by assessing whatever information is available). Dual-process theories recognize consumer information processing and persuasion as a complex combination of systematic and heuristic processing (Petty & Brinol, 2008). The co-occurrence of the two information-processing modes means that the two types of processing can occur simultaneously and affect each other (bias effect). Despite the bias effect having received considerable support in psychological literature, scant online review literature has examined it (Zhang, Zhao, Cheung, & Lee, 2014).

While practitioners recognize emotions as being critical to the success of the tourist experience, and researchers agree on the importance of relationships among emotion-related variables, consumer information processing, and behavioral intentions, findings are inconclusive about the interplay between emotions and cognition (Bigné, Andreu, & Gnoth, 2005; Pappas, Kourouthanassis, Giannakos, & Chrissikopoulos, 2016; Petty & Brinol, 2008). This is because, despite the undoubtedly complex and idiosyncratic nature of the phenomenon, researchers mostly investigate it using regression techniques, which fail to examine the combined effects of cognitive and affective perceptions on the intention to purchase (Pappas et al., 2016). This knowledge gap motivated the current research, whose conceptual contribution involves the identification and modeling of the interrelationships of emotions with cognitive information cues and behavioral intentions.

Drawing on dual-processing theories, this research adopts the major assumptions of complexity and configuration theories to shed new light on the roles of different systematic and heuristic informational cues of online reviews in consumers' decision making. The study employs the fuzzy-set qualitative comparative analysis (fsQCA) to model the complex causal relationships and detect common patterns between emotions and systematic and heuristic information cues that can lead to high scores for customer purchase intentions. By successfully combining the advantages of both qualitative and quantitative research, the method has increasingly become a significant methodological tool for the analysis of various business topics (e.g., Chatzipanagiotou, Veloutsou, & Christodoulides, 2016; Fiss, 2011; Gounaris, Chatzipanagiotou, Boukis, & Perks, 2016; Ordanini, Parasuraman, & Rubera, 2014; Woodside, 2014).

The study contributes significantly to the knowledge on online reviews and eWOM in three ways. First, it aims to identify the key configurations of systematic and heuristic information cues for understanding the influence of online reviews in purchase decisions.

Second, the study empirically examines whether additive or attenuation effects exist when consumers process online reviews by switching between the two processing routes. Third, to the best of our knowledge, this study is among the first to expand knowledge on how information cues interact with the sequence of the nature of online reviews (i.e., the order of positive and negative online reviews) to influence consumers' purchase intentions.

The study proceeds as follows: we first present the theoretical background, after which we develop the conceptual framework and research propositions to explain how consumers process online reviews. Then, we empirically test the model through an fsQCA of 680 TripAdvisor users. Finally, we discuss the findings, limitations, and opportunities for future research, summarizing the implications for both researchers and practitioners.

2. Literature review

In the dual-process literature, the two prevalent models are the elaboration likelihood model (ELM; Petty & Cacioppo, 1986) and the heuristic–systematic model (HSM; Chaiken, 1980). The two models provide similar mechanisms to explain individuals' information-processing strategies. For example, the *central route* in the ELM and the *systematic processing* in the HSM indicate that individuals exert high cognitive effort to elaborate information. By contrast, the *peripheral route* in the ELM and the *heuristic processing* in the HSM suggest that individuals adopt heuristic and simple decision rules to quickly form judgments. Both models can be applied to online reviews, though the HSM is still under-researched.

The HSM (Chaiken, 1980) is a widely recognized communication model that attempts to explain how people receive and process persuasive messages. Under the HSM are two models of information processing: systematic processing and heuristic processing. During systematic processing, a message recipient examines all the pieces of information carefully for their relevance and importance to the task before making a final decision. In heuristic processing,

the message recipient uses a few informational cues, such as simple decision rules, to reach a conclusion by assessing available information. For example, the “source credibility” cue may trigger the “credibility implies correctness” rule, leading the recipient to favorably assess the validity of a message received from a more credible source.

The HSM does not treat dual processes as a case of a straightforward tradeoff (as the ELM does) but suggests that they can occur concurrently and affect each other in complex ways (Eagly & Chaiken, 1993). Their interaction can be explained through the following three effects: (1) the additivity effect, which produces independent effects on consumers’ decision making; (2) the attenuation effect, which explains how the systematic mode of persuasion can attenuate the heuristic mode; and (3) the bias effect, which means that heuristic processing can bias systematic processing by affecting individuals’ expectations of or inferences about the validity of arguments (Zhang et al., 2014). Drawing on the HSM, this study investigates how different systematic and heuristic informational cues of online reviews interact with and influence consumers’ purchase decision making.

2.1. Systematic processing route: cognitive processing

Eagly and Chaiken (1993, p. 35) define argument quality as “the strength or plausibility of persuasive argumentation.” Argument quality refers to the perception of strong and convincing arguments rather than weak and implausible ones. When applying the dual-process theory of human information processing in the online review context, researchers tend to consider the quality of reviews (argument quality) to explain central processing (Cheung & Thadani, 2012). Previous research on online reviews analyzes argument quality as a composite construct, thus failing to discern the importance of different argument quality dimensions on consumers’ information processing (Zhang et al., 2014). We focus on the behavioral outcomes of argument quality using two dimensions—informativeness and persuasiveness.

Informativeness refers to consumers' overall perception of whether the online review provides complete, consistent, accurate, or adequate information (Sussman & Siegal, 2003), while persuasiveness represents consumers' perceptions of the degree of relevance embedded in online reviews (Zhang, 1996). High-quality online consumer reviews are persuasive because the information is relevant for evaluating the product and contains understandable, reliable, and sufficient reasoning. High-quality, informative arguments contribute to favorable decision outcomes (Cheung, Sia, & Kuan, 2012; Zhang et al., 2014). Therefore, in the context of online review websites, a consumer is more likely to visit a particular restaurant, for example, if he or she finds the reviews about it highly informative and relevant.

In addition, the perceived helpfulness of a review captures the extent to which potential consumers perceive a peer-generated evaluation as useful and valuable in their decision process to choose a product/service (Yin, Bond, & Zhang, 2014). Therefore, helpfulness can be understood as a measure of information diagnosticity. We argue that the perceived helpfulness interacts with argument quality. As messages with high argument quality provide more complete information, a message with stronger arguments should positively influence the way people perceive the usefulness of information (Cheung & Thadani, 2012). Perceived helpfulness can be a cognitive cue because consumers need to read a review carefully to assess whether it is useful for their decision making. According to the technology acceptance model, perceived usefulness is a fundamental predictor of user adoption (Davis, 1989). In line with that model, we posit that consumers who find information in an online review helpful will have higher purchase intentions.

2.2. Heuristic processing route: affective processing

Online review credibility involves consumers perceiving the online recommendation as believable, true, or factual as a whole (Nabi & Hendriks, 2003). In this research, the subject of the credibility assessment refers to the online recommendation or review, and not trusting

beliefs about a person or an organization. Findings from the literature on the impact of credibility of online information on sales are inconclusive. Some researchers claim that the fact that online information is posted by experienced travelers makes it more credible than information from traditional media (e.g., Fang, Kucukusta, & Law, 2016). Conversely, other studies posit that the online information can be posted by any individual without any editing or fact-checking processes and, therefore, is less credible than other types of information sources (e.g., Magnini, 2011). The current work supports previous research on online reviews regarding the influence of review credibility on consumer purchase intentions (Cheung & Thadani, 2012).

2.3. The role of emotions

Although a clear definition of emotion is missing in the literature, in this study we adopt Bagozzi, Gopinath, and Nyer's (1999, p. 184) definition as a "mental state of readiness that arises from cognitive appraisals of events or thoughts." The choice to include the concept of emotions in this study, instead of other factors that reside under the umbrella term "affect" (e.g., moods), is based on the notion that emotions are often associated with a specific, known source and influence consumers' tendency to act and behave in a certain way (Lerner & Keltner, 2000). In addition, many researchers recognize the role of emotions in the online environment and stress the importance of investigating the substantial role of emotions in consumers' processing and interpretation of online reviews (e.g., Yin et al., 2014).

According to Russell's (1980) model, emotions consist of two independent dimensions: arousal and pleasure. The intensity dimension of affective reactions is operationalized as arousal, which refers to a feeling state that varies along a single dimension from drowsiness to frantic excitement. In addition to their intensity, affective reactions can be characterized by their polarity (i.e., pleasure vs. displeasure). Pleasure is the degree to which a person feels good, joyful, or happy. Recent marketing studies have reached consensus on the two-

dimensional character of emotions (e.g., Bigné et al., 2005), which reflects the degree to which different individuals incorporate subjective experiences of pleasantness/unpleasantness and feelings of being activated/deactivated into their emotional experiences.

By contrast, empathy is the extent to which readers find resonance with the reviewer and think about how they would feel if they were in the situation described in the review (Xia & Bechwati, 2008). An online review of a restaurant, for example, could be highly relevant if the reviewer has the same profile as the reader or describes a situation with which the reader is familiar. Empathy could affect consumer behavior indirectly by making salient to the consumer the product/service benefits that other consumers are enjoying; alternatively, empathy could affect consumers through direct emotional “contagion,” such as when one finds oneself laughing when reading a funny review or feeling disturbed after a distressing one. From this perspective, the enthusiasm of a reviewer describing the joys of a particular experience at a restaurant could generate similar feelings in the minds of readers. Previous research finds empirical support for the relationship between emotions and several consumer outcomes, including attitude toward travel review websites (Ruiz, Tronch, & Sanz, 2016) and intention to repatronize (e.g., Hume, 2008).

2.4. Interactions in systematic and heuristic processing of online reviews

The debate over the interplay between emotions and cognition continues to be popular in psychology (Bigné, Mattila, & Andreu, 2008; Chebat & Michon, 2003; Pappas et al., 2016). On the one hand, research argues for the emotions-lead-to-cognition approach (Zajonc & Markus, 1985). According to this approach, affect enables consumers to handle greater informational complexity. The same reasoning can apply when they have negative feelings. For example, the information in an online review written by an intoxicated person in a restaurant may generate intense feelings of arousal in the reader and therefore spark the need to search for more information about this restaurant. On the other hand, the cognition-leads-

to-emotions school of thought (Lazarus, 1991) posits the causal role of cognition as a necessary, but not sufficient, condition to elicit emotions. Bigné et al. (2008) show how cognitive disconfirmation leads to pleasure and arousal. In the tourism context, for example, a positive appraisal of the environment might generate feelings of pleasure associated with visiting a winery. Pappas et al. (2016) present various configurations between cognitive and affective consumer perceptions, showing the conditions under which the degree of personalization, benefits, message quality, and emotions lead to increased intention to purchase personalized services.

Recent studies link emotions, credibility, and helpfulness. Yin et al. (2014) highlight the influence of negative emotions elicited by online reviews in determining the perceived helpfulness of the review. Empathy may interact with perceived helpfulness; the more intense the emotion perceived by the reader, the greater is the perceived cognitive effort made by the reviewer, and therefore, the higher is the perceived helpfulness of the online reviews. Empathy can also be linked with credibility and argument quality. The rationale is that if a reader senses resonance with (similarity to) the reviewer when reading an online review, he or she may perceive the review as more credible and trustworthy (Bickart & Schindler, 2001) and, thus, more persuasive.

Previous research also supports the interaction between credibility and argument quality. On the one hand, a large number of studies find that more credible sources result in stronger persuasion than less credible ones (e.g., Bickart & Schindler; Wathen & Burkell, 2002). Wathen and Burkell (2002) argue that a key early stage in the information persuasion process is the receiver's judgment of the information credibility, which determines how much weight he or she gives the information contained in a specific review. On the other hand, according to the ELM (Petty & Cacioppo, 1986), central cues, informativeness, and persuasiveness determine one's attitude toward a message. Therefore, readers judge the credibility of online

recommendations according to the strength of the argument in the online review message (Cheung, Luo, Sia, & Chen, 2009; Wathen & Burkell, 2002).

The information adoption model, which stems from the ELM, can also theoretically explain information helpfulness, online review credibility, and online review adoption (Cheung & Thadani, 2012; Sussman & Siegal, 2003). The processing of received advice (online review) leads to the judgment of the usefulness of this advice (helpfulness) and affects the degree to which the information is adopted (Sussman & Siegal, 2003). Following previous research (Cheung & Thadani, 2012; Maslowska, Malthouse, & Bernritter, 2017), we posit that if readers perceive an online comment as helpful and credible, they will have greater confidence in using online review comments for making decisions (e.g., whether to visit the restaurant or not).

The theoretical reasoning and empirical findings outlined suggest an interaction between consumer emotions and information cues. Therefore, we posit that the interaction between the systematic and heuristic information cues influences consumers' decision making.

3. Research propositions

In Fig. 1, we summarize the study's main research propositions. Under the rationale of dual-processing theories (Chaiken, 1980; Petty & Cacioppo, 1986), the model does not treat information processes (systematic and heuristic) simply as tradeoffs, but rather suggests that they can occur concurrently and affect each other in complex ways. Emotions are integrated as both systematic and heuristic cues (Bigné et al., 2008; Lazarus, 1991).

Insert figure 1

Fig. 1 shows the interrelationships among the study's main conditions, as well as the configural nature within the routes. Building on the previous discussion, we advance the following propositions with regard to online reviews of a restaurant:

P1. Sufficient configurations of the elements constituting the systematic processing route lead to high scores for consumers' intention to visit the restaurant.

P2. Sufficient configurations of the elements constituting the heuristic processing route lead to high scores for consumers' intention to visit the restaurant.

P3. Sufficient configurations of the elements constituting both systematic and heuristic routes lead to high scores for consumers' intention to visit the restaurant.

The conceptual framework also integrates the interactions of the sequence of reviews with consumers' systematic and heuristic processing routes. Previous research demonstrates the influence of reviews on product sales (Fang et al., 2016) and consumer decision making (Huang & Korfiatis, 2015); however, this impact differs depending on the review valence and sequence (Kim & Lee, 2015).

Two-sided reviews can increase the probability of purchase (Huang & Korfiatis, 2015), but previous research reports inconclusive results with regard to the specific effects of two-sided reviews on product choice. Chevalier and Mayzlin (2006) find evidence of confirmatory bias that drives consumers to seek affirmative evidence that supports a product choice they already made. Conversely, Cui, Lui, and Guo (2012) suggest that when consumers are neutral, negative reviews tend to be more salient than positive reviews (negative bias).

According to two-sided literature, the sequence of online consumer reviews (heuristic cue) affects how consumers process online review information (Huang & Korfiatis, 2015). Justice literature suggests that evaluations are influenced more by what comes first than by what comes second (Van den Bos, Lind, Vermunt, & Wilke, 1997). Sparks and Browning (2011) demonstrate that the information (hotel online reviews) received early, especially if it is negatively worded, is likely to be more influential on consumer evaluations. We posit that when positive reviews are presented proximally, consumers may interpret that the company is

making improvements and receiving favorable evaluations, and thus positive reviews can be more salient than negative ones. Conversely, more proximate negative reviews may imply that the company's recent performance is poor. Thus, we put forth the following:

P4. The online review sequence modifies how different configurations of systematic and heuristic processing route elements contribute to producing high scores for consumers' intention to visit the restaurant.

4. Methodology

4.1. Data collection

We collected data in January 2016 by means of an online survey. The respondents were Spanish users of the TripAdvisor website, were 18 years of age or older, and had used TripAdvisor to choose a restaurant at least once in the previous year. The 680 people who took part in the study were geographically dispersed throughout Spain. The study focused on heavy users, considering those who had looked up information about restaurants at least five times in the previous month. Heavy users are the most attractive segment for review website platforms. Therefore, understanding how they perceive online reviews and encouraging them to provide active recommendations to other members is important, from both a retention and an acquisition standpoint. Respondents were instructed to imagine a situation in which they were going out for dinner to an Italian restaurant with friends; they were told to read a total of 10 reviews about an Italian restaurant in the same order in which they were displayed and to answer the questions that followed. Both positive and negative reviews were included. Each review consisted of a satisfaction rating (ranging from 1 to 5 stars) and a comment corresponding to the rating. The reviews displayed were modifications of the real reviews posted on TripAdvisor and were validated in our pretests in terms of their realism of content, appropriateness of length, and readability (control variables). None of the reviews included pictorial content or any information about the reviewer. We also omitted the name of the

restaurant to avoid bias due to familiarity. The total sample comprised 58% women and 42% men, aged 35–54 years. All respondents had looked up information about restaurants on TripAdvisor at least five times in the previous month, and 28.4% of the sample did so more than six times. To measure the variables, we used 7-point Likert scales (see Table 1), as they are most appropriate for distributing questionnaires online (Finstad, 2010).

Insert Table 1

4.2. *FsQCA*

The use of fsQCA addresses the inadequacy of regression-based techniques for dealing with the complex causality surrounding consumers' online behavior (Pappas et al., 2016), and thus it is most appropriate for analyzing the study's research propositions (Ragin, 2008). As a set-theoretic method, fsQCA allows the representation of each antecedent condition and the outcome of interest in the form of sets. It represents each of the cases as a complex entity based on the degree of membership of each case of the relevant sets. The conversion of the study's raw variable scores into set membership scores indicates the "data calibration" phase. Following the most widely used method of calibration—the direct method proposed by Ragin (2008)—we use three qualitative anchors (1.0 = full membership; 0 = full non-membership; and 0.5 = point of indifference) to assess the varying degrees of the variables' membership. For example, and as Table 2 shows, to locate the qualitative anchors and calibrate consumers' intention to visit a restaurant, we allocate cases in the highest quintile (517) to the 0.95 membership, cases in the middle quintile (357) to 0.50, and the calibrated scores for cases in the lowest quintile (181) to 0.05. The same procedure governs the calibration of all the concepts in the study.

Insert Table 2

Following this holistic approach in terms of case representation, fsQCA detects not only

the qualitative composition of the cases but also common causal patterns in a systematic cross-case analysis (Rihoux & Marx 2013). The latter revolves around the identification of necessary and sufficient conditions. Necessary conditions are conditions that are required for an outcome to occur and thus constitute a super set of the given outcome. The conditions or configurations of conditions that always produce the outcome are called sufficient conditions/configurations, indicating their role as a subset of the outcome (for detailed discussions, see Ragin, 2008).

We use two set-theoretic indices—consistency and coverage—to estimate and interpret the results (Ragin, 2008; Wagemann & Schneider, 2010). Consistency expresses the degree of the subset relationship between the antecedent conditions (or a combination of them) and the outcome of interest and signals the significance of each of the derived configurations and that of the entire solution. The coverage gauges the empirical relevance by showing the degree to which an antecedent condition or configuration of antecedent conditions can explain instances of the outcome of interest (Ragin, 2008). The study sets 0.80 as the minimum threshold for the examination of the derived solutions' consistency and two cases as the frequency cutoff point of observation (Fiss, 2011). The study also incorporates sensitivity checks based on different levels of frequency (one, three, and six cases) and consistency thresholds that range from 0.81 to 0.90 (Skaaning, 2011). These results do not challenge the robustness of the aforementioned choice (the results are available on request).

Furthermore, the study detects core–periphery models (Fiss, 2011), permitting the identification of the conditions that demonstrate a causally intense connection with the outcome of interest (core causes), as well as the conditions with a weaker or less important relationship to the outcome (periphery causes). These core–periphery distinctions lead to a better interpretation of the derived solutions, even as they further explain the role of each of the antecedent conditions in the outcome of interest.

5. Results

The first stage of data analysis includes the descriptive statistics, the identification of the correlation coefficients among the study's conditions, and a quintile analysis between the causal conditions and the outcome. Table 3 presents these results and confirms that no symmetrical relationships occur; that is, all the coefficients are below the 0.80 threshold (Woodside, 2014).

Insert Table 3

The results of the quintile analysis indicate a positive interaction between the antecedent conditions and the consumers' intention to visit the restaurant (*phi* coefficients between 0.440 and 0.699). However, both positive and negative contrarian cases occur, which further confirms the asymmetric relationship among the study's conditions and the consumers' intention to visit (Woodside, 2014).

The second stage of the data analysis includes the investigation of the research propositions. Table 4 summarizes the results of P1 and P2, which examine the reasoning of systematic and heuristic processing routes and how each route can individually, and sufficiently, explain high scores for consumers' intention to visit. Specifically, Table 4 (panel A) depicts the results of the systematic processing route leading to high scores for consumers' intentions to visit the specific restaurant with high overall consistency ($=0.85$) and coverage ($=0.51$). Two sufficient solutions explain the different pathways that consumers follow to make this decision. Consumers' emotions, in terms of high pleasure and degree of online review stimulation, constitute core causes that, in combination with either online reviews' helpfulness (solution 1) or informativeness (solution 2), lead to high scores for consumers' intentions, providing support for P1.

Insert Table 4

Table 4 (panel B) also summarizes the results with regard to the heuristic processing route (P2). One solution can sufficiently explain consumers' intentions to visit the specific restaurant. The configuration of the consumers' high degree of pleasure, arousal, and empathy with the online reviews leads to high scores for their intention to visit the specific restaurant, providing support for P2. Of note, both systematic and heuristic processing routes incorporate a high degree of emotion, which plays a core role in the functioning of both these routes.

In addition, P3 specifies the interaction of the two processing routes. The results detect two solutions that sufficiently predict high scores for consumers' intentions to visit with high overall consistency (.85) and coverage (.50), providing support for P3.

As Table 5 shows, consumers' emotions in terms of pleasure and arousal constitute core casual conditions in both solutions. Specifically, solution 1 indicates that online reviews that consumers find pleasurable and stimulating, in combination with the online reviews' helpfulness, lead them to choose specific restaurants. Solution 2 further demonstrates that online reviews that consumers find informative (in terms of relevance, completeness, and timeliness), coupled with high scores of consumers' emotions (pleasure and arousal), facilitate their decision to visit the specific restaurant. Solution 2 incorporates the components of the heuristic processing route (empathy and credibility), though in a peripheral role. Note that both solutions highlight the core role of online reviews' informativeness and helpfulness, indicating that consumers mostly follow a systematic processing route, with emotions also playing a core role in interpreting online reviews and deciding positively about a specific restaurant.

Insert Table 5

Table 6 presents the effect of the online review sequence on consumers' intentions to visit the specific restaurant. Specifically, Table 6 shows that the order of online review sequences

(i.e., positive–negative or negative–positive) can modify the way consumers decide to assess the reviews, providing support for P4.

Insert Table 6

As Table 6 (panel A) shows, when the online reviews' contradictory sequences start with positive comments, consumers' emotions of pleasure and arousal can alone predict high scores for their intentions to visit the specific restaurant (solution 1, with high overall consistency.87 and.61). Solution 2 detects that the elicitation of consumers' positive emotions of pleasure, in combination with a high degree of credibility and empathy, can increase their willingness to visit the specific restaurant. In other words, the majority of consumers follow a heuristic processing route, with their emotions constituting the core causal conditions. A minority of consumers follow solution 3, which includes a combination of systematic and heuristic processing components. Solution 3 suggests that when consumers do not find the online reviews stimulating or are not empathetic toward them, they combine both systematic (perceived informativeness, persuasiveness, and helpfulness) and heuristic (perceived credibility) components to make their decisions.

In the case of negative–positive sequences, Table 6 (panel B) summarizes two solutions, both of which indicate that when online reviews start with negative comments, consumers tend to follow a systematic processing route. Specifically, solution 1 indicates that consumers' emotions of pleasure and arousal constitute core causes that, in combination with either online reviews' helpfulness (solution 1) or perceived argumentation quality (solution 2), lead to high scores for consumers' intentions to visit. The heuristic processing route components of credibility (low scores of credibility) and empathy contribute as well, but in a peripheral role.

The results also show that both routes can interact with each other, with the online reviews' contradictory sequence affecting the domination of one route over the other. In the

case of the positive–negative sequence, consumers mainly follow a heuristic processing route, which focuses either on high scores in consumers’ affective states of pleasure and arousal or on consumers’ empathy and the online reviews’ credibility. Therefore, consumers’ positive emotions tend to favor the heuristic processing route, in which they do not actively attend to the online reviews’ argumentation quality; instead, they mainly focus on their feelings and their general perception of the online reviews’ credibility. By contrast, when consumers face the reverse contradictory sequence (negative–positive), they follow a systematic processing route and actively evaluate the argumentation quality presented in the online reviews and their helpfulness.

6. Discussion

6.1. Theoretical implications

The study extends knowledge on the dual-process theories and significantly contributes to the identification of the role of emotions in consumers’ online decision making. Deviating from general correlational associations, the study employs fsQCA to demonstrate the combinatorial nature of the causal relationships between emotions and systematic and heuristic cues. The derived solutions indicate that consumers’ emotions play a potent, influential, and pervasive role in both systematic and heuristic processing routes and are effectively integrated with either systematic or heuristic cues to further inform their decision making.

Regarding the operationalization of HSM, the results reveal that both systematic and heuristic processing routes can have an independent impact on consumers’ intentions to visit a restaurant, lending further support to the *additivity effect* (Zhang et al., 2014). However, examination of the interplay between the two processing routes reveals that the dominant role of the systematic processing route in an online review context—along with the core causal

roles of online review informativeness and helpfulness—attenuates the heuristic route through the peripheral role of online review, perceived credibility, and consumers' empathy.

The contradictory sequence of online reviews further explains consumers' online behavior. Online reviews' incongruence plays an adaptive role and serves as a signal that enables consumers to detect whether a situation needs more cognition or not. When faced with positive–negative sequences, either consumers base their decision making on strong positive emotions or they alter their concerns and base it on the increased online credibility by following a heuristic processing route, which eventually biases systematic processing. With negative–positive sequences, consumers are keen to improve their depth of thought, recognizing that the situation demands more attention. They rely on the systematic processing route and especially on the online reviews' helpfulness or the combination of the online reviews' informativeness and persuasiveness to increase their judgmental confidence. The results reveal the attenuation of heuristic processing. In both these cases, consumers' emotions constitute an integral part of the process by which they assess online reviews and incorporate them in their decisions.

6.2. Managerial implications

The findings provide practical implications for managers and online review platform service providers. Acknowledging the importance of the online review content, they should pay extra attention to encouraging consumers to write realistic, informative, and timely comments, to increase the online reviews' argumentation quality and perceived helpfulness. Managers and online review platform service providers should advise consumers to provide a sufficient, vivid description of all the different components of their experiences, such as atmosphere, location, and customer service, to improve the holistic evaluation of online reviews. To ensure the quality of online review content, they should also encourage users to pinpoint the online reviews that are extremely non-informative or have fake content.

Furthermore, new contextual classifications of online reviews in terms of their completeness, informativeness, credibility, and so on, and based on multiple elements that users can provide (e.g., text, pictures), could lead to more accurate and useful online review classifications for consumers' decision making.

6.3. Limitations and future research directions

This study investigates a specific national context, industry, and period. The replication of the study in different contexts and a longitudinal assessment of the model would be essential future research priorities. In addition, the model could be extended to include the impact of other heuristic cues such as the likability, attractiveness, and expertise of the communicator. Furthermore, an emerging area of interest in the literature is visual online reviews. Investigation of the role of visual content in online review adoption and behavioral intentions would be useful. Consumers may offer different perceptions of argument quality, depending on their experiences. Thus, a comparison between the reviews of experienced and novice users of TripAdvisor would also provide fruitful insights.

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Fig. 1. Conceptual framework: Interrelationships among the study's conditions. Sufficient algorithms predicting high scores in consumers' intentions to visit.

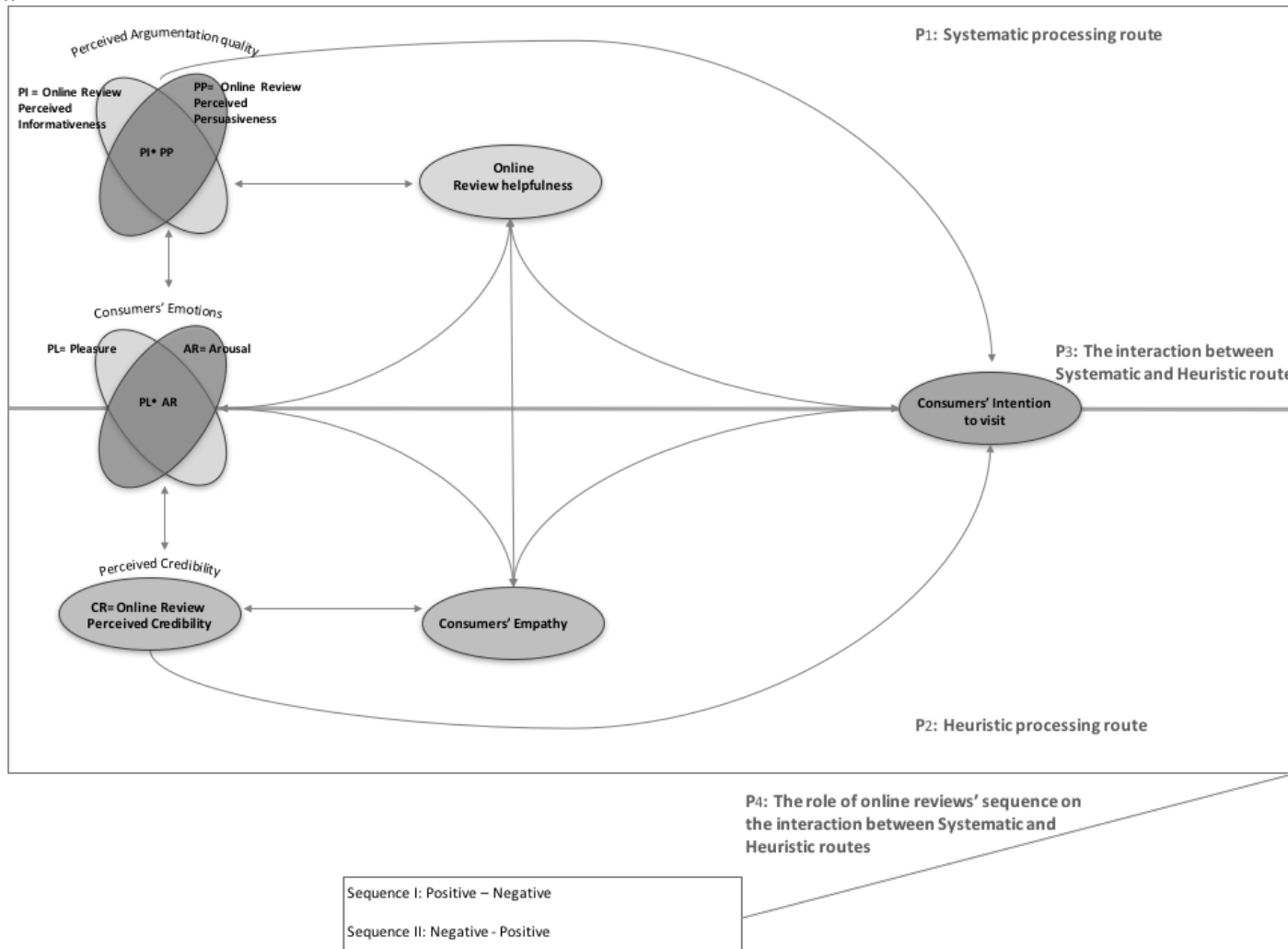


Table 1
Study measures.

Variable	Items	Source
Online review credibility	I think these reviews are factual. I think these reviews are accurate. I think these reviews are credible.	Cheung et al. (2012)
Online review informativeness	These reviews provide relevant information about the restaurant. These reviews provide complete information about the restaurant. These reviews provide timely information about the restaurant.	Zhang et al. (2014)
Online review persuasiveness	The arguments of these reviews are convincing. The arguments of these reviews are persuasive. The arguments of these reviews are good. The arguments of these reviews are strong.	
Online review helpfulness	Using the scales below, how would you describe the above consumer reviews? – not at all helpful/very helpful – not at all useful/very useful – not at all informative/very informative	Yin et al. (2014)
Empathy	-While reading this review, to what extent did you feel like you were experiencing the same emotions as the reviewer? – While reading this review, to what extent did you feel concerned for the reviewer? – While reading this review, to what extent did you feel moved by the review?	McCullough, Worthington & Rachal (1997)
Emotions	PLEA1 Angry/content PLEA2 Unhappy/happy PLEA3 Displeased/pleased PLEA4 Sad/joyful PLEA5 Disappointed/delighted PLEA6 Bored/entertained AROU 1 Depressed/cheerful AROU2 Calm/enthusiastic AROU3 Passive/active AROU4 Indifferent/surprised AROU5 Quiet/anxious AROU6 Relaxed/nervous	Russell (1980)

Table 2

Original and calibrated intention scale and frequency of cases by scores.

Original values after quintile analysis	Using 5 scores calibrated	Using fuzzy scores	Frequency	Percentage (%)	Cumulative percentage (%)
24.000	.05	.00	47	6.9	6.9
50.500	.05	.01	6	.9	7.8
59.500	.05	.01	12	1.8	9.6
69.500	.05	.01	8	1.2	10.7
100.000	.05	.01	53	7.8	18.5
131.000	.05	.02	9	1.3	19.9
140.000	.05	.02	9	1.3	21.2
150.000	.05	.03	11	1.6	22.8
181.000	.05	.05	51	7.5	30.3
213.000	.15	.08	13	1.9	32.2
228.500	.15	.10	18	2.6	34.9
243.500	.15	.13	12	1.8	36.6
281.500	.15	.22	64	9.4	46.0
326.000	.15	.37	25	3.7	49.7
357.000	.50	.50	37	5.4	55.1
370.500	.67	.65	30	4.4	59.6
390.000	.67	.83	69	10.1	69.7
490.500	.67	.92	32	4.7	74.4
517.500	.95	.95	22	3.2	77.6
540.000	.95	.97	23	3.4	81.0
579.000	.95	.98	55	8.1	89.1
614.000	.95	.99	15	2.2	91.3
630.500	.95	.99	18	2.6	94.0
643.500	.95	1.00	8	1.2	95.1
664.000	.95	1.00	33	4.9	100.0
Total			680	100.0	

Mean = 340 (SD = 196.02); Median = 357; Mode = 390

Cut points: 181 = 0.05; 357 = 0.50; 517 = 0.95

Note: Using the cut points, the fsQCA software sets scores for the second and the fourth quintile.

Table 3.

Correlations among the study's concepts.

	Mean	SD	1	2	3	4	5	6	7	8
1. Informativeness	4.96	1.08	1							
2. Persuasiveness	4.78	1.11	.757**	1						
3. Helpfulness	4.98	1.28	.643**	.610**	1					
4. Credibility	5.02	1.15	.737**	.756**	.534**	1				
5. Empathy	4.66	1.33	.638**	.624**	.502**	.567**	1			
6. Pleasure	4.29	1.10	.372**	.371**	.354**	.305**	.360**	1		
7. Arousal	4.12	.87	.316**	.341**	.270**	.237**	.368**	.564**	1	
8. Intention to visit	4.16	1.68	.359**	.292**	.279**	.237**	.263**	.587**	.387**	1

**Correlation is significant at the 0.01 level.

Table 4

Core–periphery models of systematic and heuristic processing routes predicting high scores of consumers’ intention to visit (P1 & P2).

A. Systematic processing route

	Consumers’ Intention to visit	
	(1)	(2)
Perceived informativeness		●
Perceived persuasiveness		•
Perceived helpfulness	●	
Pleasure	●	●
Arousal	●	●
Raw coverage	.48	.41
Unique coverage	.10	.03
Consistency	.86	.87
Overall consistency	.85	
Overall coverage	.51	

B. Heuristic processing route

	Consumers’ Intention to visit
	(1)
Perceived credibility	
Empathy	●
Pleasure	●
Arousal	●
Raw coverage	.43
Unique coverage	.43
Consistency	.87
Overall consistency	.87
Overall coverage	.43

Note: The black circles indicate the presence of a condition, and circles with “x” indicate its absence. The large circles indicate core conditions; the small circles indicate peripheral conditions. Blank spaces in a pathway indicate “don't care.” The analysis of necessary conditions (NC) does not confirm the existence of any NC.

Table 5

Core–periphery models from the interaction between systematic and heuristic processing routes predicting high scores of consumers’ intention to visit (P3).

	Consumers’ intention to visit	
	(1)	(2)
Perceived informativeness		●
Perceived persuasiveness		•
Perceived helpfulness	●	
Perceived credibility		•
Empathy		•
Pleasure	●	●
Arousal	●	●
Raw coverage	.48	.33
Unique coverage	.17	.02
Consistency	.86	.89
Overall consistency	.85	
Overall coverage	.50	

Note: The black circles indicate the presence of a condition, and circles with “x” indicate its absence. The large circles indicate core conditions; the small circles indicate peripheral conditions. Blank spaces in a pathway indicate “don’t care.” The analysis of necessary conditions (NC) does not confirm the existence of any NC.

Table 6

Core-periphery models from the interaction between systematic and heuristic processing routes predicting high scores of consumers' intention to visit for different online reviews' sequence (P4).

A. Sequence I: Positive–Negative online review comments

	Consumers' intention to visit		
	(1)	(2)	(3)
Perceived informativeness			●
Perceived persuasiveness			●
Perceived helpfulness			●
Perceived credibility		●	●
Empathy		●	⊗
Pleasure	●	●	
Arousal	●		⊗
Raw coverage	.61	.45	.11
Unique coverage	.22	.04	.03
Consistency	.87	.91	.84
Overall consistency	.85		
Overall coverage	.72		

B. Sequence II: Negative–Positive online review comments

	Consumers' intention to visit	
	(1)	(2)
Perceived informativeness		●
Perceived persuasiveness		●
Perceived helpfulness	●	
Perceived credibility		⊗
Empathy		•
Pleasure	●	●
Arousal	●	●
Raw coverage	.49	.39
Unique coverage	.12	.02
Consistency	.90	.90
Overall consistency	.89	
Overall coverage	.52	

Note: The analysis of necessary conditions (NC) does not confirm the existence of any NC.