



## Customer reviews are not always informative: The impact of effortful versus heuristic processing



Laura A. Book<sup>a,\*</sup>, Sarah Tanford<sup>a</sup>, Wen Chang<sup>b</sup>

<sup>a</sup> William F. Harrah College of Hospitality, University of Nevada, Las Vegas, 4505S. Maryland Parkway, Box 456017, Las Vegas, NV 89154-6017, USA

<sup>b</sup> Iowa State University, 6W. MacKay Hall, 2302 Osborn Dr., Ames, IA 50011-1078, USA

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### ABSTRACT

Online customer reviews and ratings are powerful sources of information that influence travel purchase decisions. The complexity of the online environment lends itself to heuristic processing, which aids in decision-making yet may bias perceptions. However, enlisting systematic processing reduces dependence on heuristics. Research suggests that base rate information is often neglected in favor of information that is more salient but less diagnostic. In the online review environment, base rate information takes the form of recommendation percentages, and review content varies in usefulness. This research examines the effect of base rate information, review content, and processing effort in a  $2 \times 2 \times 2$  experimental design. The results indicate that ambiguous base rate information and high processing effort cause consumers to pay greater attention to review content. In turn, this influences consumers' perceptions, decisions, and recall. The findings deepen our understanding of dual processing systems and how they influence consumer choice.

### 1. Introduction

Today's highly connected consumers have access to information like never before. Research suggests that 81% of consumers seek out online reviews and ratings when making purchase decisions (Deloitte, 2014). Online reviews serve an important role in influencing decisions by informing the reader and/or recommending the product or service (Cantalops and Salvi, 2014; Park and Lee, 2009). Review content is an important part of what makes online reviews influential. Research demonstrates that consumers read review content instead of simply following aggregate ratings (Chevalier and Mayzlin, 2006), particularly when the products are experiential (Liu and Park, 2015). Moreover, review content affects quality and value judgments more than aggregate customer ratings (Noone and McGuire, 2014). Ideally, review content should be helpful and persuasive to have optimal influence on the reader's purchase intentions (Baek et al., 2012). However, in many situations, decision processes are made mindlessly, and the presence of information can influence decisions even if it is not informative (Langer, 2000; Nisbett and Ross, 1980). Therefore, the mere presence of reviews can affect evaluations of a consumer product, despite the fact that the reviews do not contain diagnostic content.

To understand why reviews are influential, it is critical to examine how this information is processed. Principles of heuristics (Tversky and Kahneman, 1974) suggest that people may be prone to decision biases

when processing information. Today's online purchasing environment is filled with different types of information, both quantitative and descriptive, that affect consumers' perceptions and decisions. Therefore, people may be prone to decision biases when processing online reviews. System 1 (heuristic) processing is mindless and automatic, whereas System 2 (systematic) processing is mindful and deliberate (Kahneman, 2011). If individuals exert limited cognitive effort, they may be persuaded by reviews that do not provide useful information. When information is processed with effort, consumers are likely to scrutinize the information, and be better able to distinguish informative from uninformative content (Kahneman, 2011). The presence of base rate cues (prior probabilities) influences which type of processing will occur. Heuristics are more likely to operate under conditions of uncertainty, which occurs when base rate cues are ambiguous (Tversky and Kahneman, 1974). In the online review context, base rate cues take the form of aggregate ratings showing the percentage of positive reviews or percentage of reviewers who recommend the product.

Online purchasing is ubiquitous in travel, with research suggesting that 68% of global consumers book their travel exclusively online (Vermees, 2016). Travel purchases are experiential and therefore difficult to assess prior to purchase (Liu and Park, 2015). Thus, consumers may rely on multiple cues when making travel purchases. Given the widespread use of travel purchases online and cues present in the online purchasing environment, it is essential to assess the effect of different

\* Corresponding author.

E-mail addresses: [Laura.Book@unlv.edu](mailto:Laura.Book@unlv.edu) (L.A. Book), [Sarah.Tanford@unlv.edu](mailto:Sarah.Tanford@unlv.edu) (S. Tanford), [WChang@iastate.edu](mailto:WChang@iastate.edu) (W. Chang).

types of information and how cognitive processes can affect consumer perceptions of travel products. Moreover, these processes extend to other online consumer purchases.

The online purchasing environment consists of both quantitative and descriptive information. Quantitative information includes cues such as recommendation percentages and star ratings. This information can be clear or ambiguous. Descriptive information includes content written by reviewers or by the company selling the product. This content can either be informative, highlighting key product attributes, or uninformative, describing less relevant features. Quantitative and descriptive information are alike in that they both communicate information about a product. For example, a clear recommendation percentage (e.g., “95% positive”) and informative content provide a distinct picture of what consumers can expect, whereas an ambiguous recommendation percentage (e.g., “50% positive”) and uninformative information can create uncertainty. By stimulating processing effort, these two types of information are connected and their effects can be investigated under different mental conditions. Thus, this research investigates the effects of review content that is informative or not, recommendation percentages that are clear or ambiguous, and information processing that is effortful or automatic.

The results of this research indicate that consumers engage in heuristic processing when utilizing online reviews. The findings demonstrate that recommendation percentages are powerful enough to influence perceptions and decisions, even if review content is uninformative. However, review content alone does not influence consumers’ decisions, as processing effort is necessary to discern uninformative versus informative content. Furthermore, the influence of processing effort, heuristic cues, and review content on booking intention is mediated by consumers’ product evaluations. This research is important to businesses because reviews may be unduly influential, and consumers may fail to consider objective product information that is available through other channels. The research extends theories of decision-making by evaluating how principles of heuristics and dual processing systems operate in the ubiquitous online purchasing environment.

## 2. Literature review

### 2.1. Online reviews and the travel industry

Reviews are heavily used in the travel industry, with approximately 95% of travelers reading reviews before booking their hotel (Ady, 2015). Online travel reviews can influence perceptions, consumer decisions, RevPAR, and demand (Anderson, 2012). While these reviews provide travelers with information, they also create a reputation management situation for hoteliers (Wan and Law, 2017). This phenomenon has led researchers and practitioners to investigate the true impact of reviews. Most relevant to this research are studies regarding peripheral cues (Sparks et al., 2013) and content characteristics (Fang et al., 2016). This research focuses on the way in which consumers’ information processing influences consumer response to peripheral cues in the form of rating percentages and to the type of content present in online travel reviews. Consumers’ reliance on judgmental heuristics may determine what information is most salient when making online travel purchases.

### 2.2. Heuristics

Judgmental heuristics are mental shortcuts that reduce complex decision tasks (Tversky and Kahneman, 1974). Two types of information processing are proposed, heuristic and systematic, which are also termed System 1 and System 2 (Kahneman, 2011). Systematic processing (System 2) refers to exerting cognitive effort when confronted with information (Chaiken, 1980; Tversky and Kahneman, 1974). Individuals engaging in heuristic processing (System 1) exert low effort in

evaluating information. Instead, they rely on readily available cues to simplify the decision (Chaiken, 1980; Chaiken et al., 1989). A commonly used heuristic is representativeness, which indicates that people predict outcomes that appear most representative of the evidence (Kahneman and Tversky, 1973). Representativeness is based on the subjective probability that the event “reflects the salient features of the process by which it is generated” (Kahneman and Tversky, 1972, p. 431). Representativeness can produce errors in judgment that are difficult to overcome because they stem from intuitive predictions or preconceived notions (Barbey and Sloman, 2007; Kahneman and Tversky, 1973; Kahneman, 2011).

Prior research suggests that consumers use heuristic cues in the online purchasing environment to aid in their decision-making (Zhang et al., 2014). In the hospitality and tourism domain, research has investigated the effects of anchoring (Book et al., 2016), aggregate ratings versus descriptive content (Noone and McGuire, 2014), and peripheral cues that influence booking intentions (Sparks and Browning, 2011). Research suggests that consumers are willing to pay more for a hotel that has unanimously positive reviews and starts at a higher price point, indicating that anchoring operates in online travel purchases (Book et al., 2016). Consumers seek out descriptive content when making travel purchase decisions, indicating that they want detailed information to aid in their decision-making (Noone and McGuire, 2014). Peripheral cues that signify corporate social responsibility of a resort can influence travel purchase decisions (Sparks et al., 2013). Hotels with a large volume of reviews tend to have higher ratings and bookings (Xie et al., 2014), suggesting that consumers use volume as a peripheral cue that enlists heuristic processing. The amount of information load placed on individuals can increase reliance on peripheral cues (Zhang et al., 2016). The current research utilizes base rate information as a peripheral cue to examine the effects of aggregate recommendation percentages on decisions.

### 2.3. Base rate information

Base rate information is general, background content that provides information about how things typically are in a situation (Bar-Hillel, 1982; Kahneman and Tversky, 1973). It often takes the form of prior probabilities that an event will occur. Base rate information is often neglected in favor of information that is representative and easy to process (Barbey and Sloman, 2007; Kahneman, 2011). Base rates lend themselves to heuristic processing in a manner similar to the way in which stereotypes are processed. In other words, an event is considered more likely to the extent that it resembles a stereotype (Kahneman, 2011). Thus, base rates can be processed using either System 1 or System 2 (Pennycook et al., 2014). Extreme base rate probabilities lead to different types of cognitive processing depending on whether participants are instructed to respond according to statistical probabilities or prior beliefs (Pennycook et al., 2014). In the current research, effortful processing is enlisted by instructing participants to evaluate how informative each review is immediately after reading it. Conscious mental effort is associated with System 2 processing and is expected to reduce reliance on heuristic cues (Kahneman, 2011).

In the online review environment, recommendation percentage can be considered a form of base rate information, as it aggregates the percentage of previous guests that recommend a product. Such numerical ratings (i.e., 9 out of 10 reviewers recommend or 90% recommend) serve as prior probabilities of the likelihood of a positive outcome. Clear base rates can cause an individual to disregard other information and rely solely on the base rate information (Kahneman and Tversky, 1973). Conversely, ambiguous base rates can increase cognitive load, thus causing people to neglect the base rate information in favor of other easy-to-process information. Prior research found that when there was a discrepancy between the aggregate rating and the review content, individuals rated the credibility of the reviews as lower (Qiu et al., 2012). In this study, it is postulated that a clearly favorable

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