The role of electronic word of mouth in reducing information asymmetry: An empirical investigation of online hotel booking

Eran Manes[a,b], Anat Tchetchik[a,*,1]

[a] Guilford Glazer Faculty of Business and Management, Ben-Gurion University of the Negev, P.O. Box: 653, Beer-Sheva 84105, Israel
[b] School of Management, the Jerusalem College of Technology, Jerusalem 91160, Israel

ARTICLE INFO

ABSTRACT

The hotel industry is plagued with asymmetric information, which may distort prices and reduce incentives to provide quality service. However, both branding and hotel star ratings play an important role in reducing information asymmetry. The question addressed here is whether electronic word-of-mouth (eWOM) - an increasingly popular form of online feedback -contributes to any further reduction in information asymmetry; and, if so, in what manner. Using a dataset of listed prices and guests' ratings extracted from Booking.com, including several covariates, we show that the price–reputation gradient is much steeper in lower star-rated hotels than in higher star-rated hotels. The gradient is also steeper in unbranded hotels than in branded hotels. As lower star-rated and unbranded hotels are laden with greater quality uncertainty, this finding lends support to the hypothesis that the greater the information asymmetry, the greater the role of eWOM in reducing that uncertainty. Managerial implications are discussed.

1. Introduction

Since the 1995 launch of Amazon, which first allowed online shoppers to post product feedback, online consumer reviews have become increasingly popular and widespread. Although electronic word of mouth (eWOM) is perceived as being less reliable than off-line world-of-mouth (Chatterjee, 2001), it is considered more credible than information created by the sellers themselves (Chen & Xie, 2008). Furthermore, eWOM has several advantages, including the ability to disseminate information more quickly and spontaneously than traditional world-of-mouth. Attesting to the popularity of eWOM, 90% of customers in the United States reported that their buying decisions are influenced by online reviews (Gesenhues, 2013) and 80% of British consumers were found to be influenced in the same way (Casaló, Flavián, Guinalíu, & Ekinci, 2015). In the hotel industry, Gretzel and Yoo (2008) estimated that 75% of travelers worldwide consider eWOM as an information source when planning their trips. Given the frequency with which eWOM is used, it is not surprising that the emerging literature has established a significant link between eWOM and the performance of companies.

The findings outlined above have been demonstrated in various industries which sell goods online, including books, movies, music and the hotel industry (Anderson, 2012; Litvin, Goldsmith, & Pan, 2008;

Phillips, Zigan, Silva, & Schegg, 2015; Vermeulen & Seegers, 2009; Yacouel & Fleischer, 2012; Ye, Law, & Gu, 2009; Ye, Law, Gu, & Chen, 2011). This study focuses specifically on the hotel sector.

Most of the literature on eWOM is concerned with the effect of *volume* (i.e., the total number of online customer reviews posted) and *valence* (the average rating or the percentage of positive and negative opinions) on the performance of the firm. Numerous estimates of 'eWOM elasticity' have been suggested, a metric that quantifies the relationship between the volume/valence of eWOM and the firm's performance (e.g. its sales). You, Vadakkepatt, and Joshi (2015) performed a meta-analysis of 51 studies which estimated such elasticities. They found high levels of variance in the 610 reported eWOM elasticities even among studies that focused on the same product category. Moreover, they reported conflicting findings regarding the volume/valence metrics; for example, while Duan, Gu, and Whinston (2008) found that movie revenues are associated with the volume of eWOM and not with its valence, Chintagunta, Gopinath, and Venkataraman (2010) reported the opposite result. These conflicting, and sometimes puzzling results, suggest that the joint effect of the volume and valence of eWOM on firm performance is more complex than it might initially appear. Indeed, in their recommendations for future research, You et al. (2015) highlight the need to better understand how the volume and valence of eWOM interact with each other in affecting a firm's

---

* Corresponding author.
E-mail address: anat.tchetchik@biu.ac.il (A. Tchetchik).
[1] Present address: Bar-Ilan University, 5,290,002, Ramat-Gan, Israel.

performance. Similarly, Moe and Schweidel (2012) note that the interpretation of volume and valence can be misleading when each metric is considered separately. As we discuss below, valence may be an important mediator of the relationship between volume and firm performance. Furthermore, the effect of both volume and valence on performance may vary substantially across the quality space, potentially playing a bigger role when quality uncertainty is greater.

A more discerning approach would be to acknowledge that the effect of eWOM is not monolithic - rather, it varies according to several factors such as:

(1) Product characteristics, e.g. new vs. mature goods (Cui, Lui, & Guo, 2012), experience- vs. search-goods (Cui et al., 2012; Park & Lee, 2009), high- vs. low-involvement goods (Gu, Park, & Konana, 2012), affiliation to strong vs. weak brand (Ho-Dac, Carson, & Moore, 2013), popular vs. non popular products (Zhu & Zhang, 2010), the presence/absence of sub-products within the same product type - in particular, graded vs. non-graded products (Dewally & Ederington, 2006) and product's durability, trialability and observability (You et al., 2015);
(2) Consumer characteristics, e.g., gender and income (Gopinath, Chintagunta, & Venkataraman, 2013), level of risk-aversion (Casaló et al., 2015), and susceptibility to reviewers' ratings (Bao & Chang, 2014).
(3) Platform characteristics, including the level of anonymity provided to online posters (Forman, Ghose, & Wiesenfeld, 2008) the reputation of the website (Park & Lee, 2009; Shamdasani, Stanaland, & Tan, 2001) and the trustworthiness of eWOM (You et al., 2015); and
(4) eWOM message configuration and distributional patterns, e.g., negative vs. positive eWOM (Park & Lee, 2009), extreme vs. moderate ratings (Park & Nicolau, 2015) and uneven vs. even prevalence of ratings (Chevalier & Mayzlin, 2006).
(5) Industry characteristics such as the state of growth and the intensity of competition (You et al., 2015).

Despite the significant volume of research into the effects of eWOM, we identify two gaps in the literature that this study aims to address. First, as noted above, the interaction between eWOM volume and valence may not be straightforward. Therefore, we examine the joint effect of the volume and valance of eWOM on firm performance. Second, as observed by Cui et al. (2012), existing research does not examine whether and how the effect of eWOM varies across product categories/sub-products. In the current study, we focus specifically on sub-categories of products that are defined by their degree of quality variation. In the industry under study here, quality variation is determined by an independent regulatory body that has divided the product into sub-categories that are characterized by different amounts of quality variation, and hence different amounts of information asymmetry. This allows us to address two questions: (1) whether and to what extent eWOM reduces information asymmetry. We look specifically at online market offering experience goods, namely online hotel bookings, and we examine whether eWOM removes asymmetry over and above that which is removed by star rating and branding; and (2) whether the joint effect of volume and valence of eWOM is influenced by information asymmetry.

As noted by Park and Lee (2009), one of the most important potential roles of eWOM is the reduction of the information asymmetry common in online markets for experience goods (e.g., hotel and hospitality services). As hotel bookings are generally made in advance and at a distance, problems of asymmetric information may arise due to the inability of customers to ascertain the true quality of the services they are about to purchase (Lewis & Chambers, 1999). Clearly, the hotel industry has taken considerable steps to mitigate asymmetric information by means of branding and the star rating scheme. The former is a form of reputation-based commitment, and the latter assures customers that a given hotel has met the multiple criteria associated with a particular star rating.

Given the important role already played by branding and star-rating in mitigating quality uncertainty, the question arises as to whether, and to what extent eWOM can contribute further to reducing the level of quality uncertainty. This is by no means a trivial question: while eWOM may accurately represent the preferences of consumers, it is potentially exposed to manipulation by sellers motivated to maximize profits at the expense of indulging in unethical behavior (Li & Hitt, 2008). In addition, as online reviewers are not a randomly drawn sample of the user population, eWOM is subject to 'noise' created by unsatisfied and vengeful customers.[2] Whether eWOM has informational content that can reduce information asymmetry in online markets for the hospitality and hotel industry is therefore an important empirical question, the relevance of which carries over to other business domains.

There are two papers directly related to the current study: Yacouel and Fleischer (2012) and Dewally and Ederington (2006). Yacouel and Fleischer (2012) studied the *qualitative* effect of hotels' online review scores on listed room prices and found that on average –and while controlling for a host of relevant covariates – the effect is positive, i.e. better review scores translate into higher prices, ceteris paribus. However, their paper did not study the *volume/valence* effect, which is at the heart of our analysis. Moreover, our paper examines not only the quantitative relationship between review scores and prices, but also explores how this relationship varies with quality uncertainty.

Dewally and Ederington (2006) studied the effect of different strategies to reduce information asymmetry in the online market for collectible items where professional grading of products is an option. They found that the prices of ungraded comics were more sensitive to eBay's feedback statistics, including eBay reputation, than were the prices of graded comics. Although there are some similarities, their paper differs substantially from ours in both scope and methodology. While Dewally and Ederington (2006) examined the differential effect of online reputation on the prices of certified and uncertified items, they did not explore (as we do) the joint effect of volume and valence, nor did they examine how this effect varies across the quality space. From a methodological perspective, several attributes of their data limit the extent to which the effect of eWOM on information asymmetry can be explored: (i) The authors only record whether the comics have a certification or not, while ignoring the actual certified grade (this is probably because only 27.9% of the items are certified). This prevents the quantification of the effect of review scores on prices. (ii) At the time of their study, eBay's reputation system allowed only three scoring options: negative, neutral and positive. This limits the sensitivity of the reputation measure and consequently the capacity to assess the reputation-price relationship. (iii) Unlike the Booking.com reputation mechanism, which assures reviewers' full anonymity and thereby enhances the perceived reliability of the reviews, eBay's feedback tends to be overwhelmingly positive, probably owing to the fact that buyers are reluctant to give sellers a negative rating for fear of retaliation (Resnick & Zeckhauser, 2002). It is for these reasons that we believe our methodology is more suited to the study of the relationship between reputation, quality uncertainty and performance.

The main contribution of this paper to the literature lies in its exploration of the hypothesis that the joint effect on performance of the volume and valence of eWOM is *non-uniform* across the quality space, changing quite substantially with the amount of quality uncertainty. However, testing this hypothesis runs into a natural difficulty, namely that it is hard to find industries in which products can be sub-categorized by levels of quality uncertainty. Fortunately, the hotel industry lends itself to this task; it constitutes an important and almost unique test case for reasons on which we elaborate below.

---

[2] See also the discussion in Chevalier and Mayzlin (2006) on the sample selection bias that is inherent in an amateur, rather than professional, review process.