The long tail or the short tail: The category-specific impact of eWOM on sales distribution

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ARTICLE INFO

ABSTRACT

This paper investigates the impact of electronic word of mouth (eWOM) on sales distribution and challenges the conventional wisdom of the long tail theory. As customers refer to eWOM to evaluate products, and each product type entails a different scheme of evaluation standards, the impact of eWOM may differ by product type. Thus, we propose a new type of product categorization based on evaluation standard objectivity and hypothesize that this categorization gradually differentiates sales distribution patterns, some of which refute the long tail phenomenon. To validate the hypothesis, we collect data from Amazon.com, compare the distribution of eWOM among various product types, and conduct the Wilcoxon signed rank test for statistical significance. All the test results show adequate levels of significance; thus, the three hypotheses are supported. This study sheds new light on eWOM research by developing a new approach to product categorization and by proposing a different use of eWOM in searching for products to explain the different effects of eWOM on sales distribution.

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1. Introduction

In online shopping malls, provision of product information is undoubtedly important because customers purchase products without actual examination [33]. To avoid the risk of buying undesirable products, customers always seek for product information on the Web [2,25,56]. For online customers, electronic word of mouth (eWOM) is a primary source of product information because it delivers recent, abundant, and objective product information [7,14,34,66]. Moreover, eWOM collects and displays ratings and reviews from various customers, thus assuring a customer that the reviews are true and objective collectively [31]. It is not surprising that eWOM is an essential element of online businesses [16] and exerts a strong influence on consumer behavior [30,39,67]. Nowadays, customers heavily refer to eWOM [9,36,68]. According to a recent survey, 84% of Americans reported that online reviews affected their decision to purchase a product or service [49].

In addition to influencing an individual customer's purchasing decision, eWOM also changes the shape of sales distribution [1]. Sales distribution reflects the collective behavior of customers; thus, a change in the sales distribution is anticipated depending on how eWOM changes individual customers' purchasing decisions. In business, prediction of sales distribution is important because it helps firms properly market their goods or services to target customers [53]. Along with the domination of the Pareto principle as a base rule for determining sales distribution in the last decade, there have been attempts to describe the shapes of sales distribution for online businesses and their changes [5,17].

However, the specific impact of eWOM on sales distribution is still inconclusive and even contradictory in the literature. For example, the long tail theory suggests that eWOM would thicken the tail part of the sales distribution, thus facilitating the long tail phenomenon [1]. eWOM introduces unpopular but attractive products to customers and provides detailed information of the products so that it informs customers, who would not have bought the products without eWOM, about the goods and to persuade them to make a purchase. eWOM mechanisms increase the sales of the less popular products and facilitate the long tail phenomenon.

In contrast, eWOM may inhibit the long tail phenomenon by promoting the sales of popular products with high ratings [56]. Positive reviews persuade customers to buy the product. Customers' high ratings verify the quality of a product, and their reviews describe how the product is superior over others. Customers who look for a product that is proven reliable by other customers often find the one by sorting through popular products. As a result, sales of popular products would rise further than those of less popular products. In addition, many prior studies affirm that a positive rating encourages a customer to make a purchase [9,14]. In this context, eWOM may promote the sales of the popular products, and thus the head part of the sales distribution becomes thicker, generating "the short tail."

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What distinguishes these two seemingly contradictory effects of the eWOM? Under what circumstances, does eWOM sharpen or flatten sales distribution? Ironically, the roles of eWOM in both cases are the same; it helps customers find the product that they are searching for. If customers look for an attractive but possibly less popular product, eWOM helps them find the product and causes the long tail to appear. On the contrary, if customers look for a best-selling product, eWOM also helps find it. In this case, the tail of the sales distribution would be shortened.

Predicting the patterns of sales distribution is important because the alternative sales distributions may lead to different strategies for future online businesses [21]. Under the long tail theory, Anderson emphasizes the business potential of the unpopular products by suggesting the "selling less of more" strategy. However, if the tail can be shortened by eWOM, the "selling less of more" strategy would not be effective any more, and sellers would be better off focusing more on the business potential of a small number of popular products. For businesses, understanding the role of eWOM and predicting sales distribution will make a significant contribution to their sales.

Therefore, to explain the different effects of eWOM on sales distribution, the present study investigates customer behavior regarding eWOM, and the characteristics of the products (i.e. product type) they purchase. Considering product type is important because it determines customers' product-search patterns. For example, if customers buy books, they may look for the ones that are conforming to their personal taste but are not necessarily popular products. In contrast, if customers buy television sets, they may look for best-selling products whose quality is verified by other customers. Therefore, we expect that with different product types, online consumers have different product-search patterns, and the use of eWOM in searching for products will result subsequently in different sales distributions.

Acknowledging the possibility of mixed effects of eWOM on customer behaviors, current study seeks to answer the following questions: *(1) How do customers react to product information gathered from eWOM?*; *(2) How does product type differentiate customer behaviors when customers process eWOM?*; and *(3) How do different customer behaviors result in different patterns of sales distribution?* To answer these questions, the study proceeds as follows. First, we explain how customers process eWOM for their online purchase decision making. We then propose a new categorization of product types as a key concept, which may differentiate the impact of eWOM on customer behaviors. Next, we develop three hypotheses on the different impacts of eWOM to each product type. The proposed hypotheses are validated with data gathered from Amazon.com. We then discuss the results of the accompanying analyses. Finally, we conclude with the business and academic implications, limitations, and future research directions.

2. eWOM and product types

2.1. eWOM processing of customers

eWOM is the collection of online feedback gathered from various customers on a specific product or service. It is created by a group of customers who previously purchased the product. Customers rate the product and voluntarily post their product reviews without explicit incentives [26]. Most of the reviewers seem to share their opinions and experiences with good intentions [48]. Such voluntary review systems help potential customers trust the contents of the reviews [31,36].

The main information in eWOM about product is quality, that is, whether this product is good or bad [20,38]. Such product information is provided with ratings and reviews [36]. Usually, a rating is a single-digit number that quantifies the total impression on the product, and a review is the detailed description that rationalizes why the product

is rated as such. With private knowledge and personal experiences, reviewers generate qualified product information [45]. Information stored in eWOM can be sometimes outdated, inaccurate, and irrelevant because it is generated by a variety of non-specified customers. Nevertheless, customers generally find valuable and useful product information in eWOM to pre-assess the quality of a product [14].

Sellers also play an important role in managing eWOM because they can adopt alternative methods of displaying prior reviews and opinions [22] to help customers obtain the necessary information easily [3]. For example, to ensure the quality of the contents, Amazon.com notifies customers about the use of real names when reviewers post using their real names. Amazon.com also provides various search options that can distinguish critical reviews from favorable reviews, or display all reviews in a chronological order. This system is especially effective as the rating system matures, the reviews are accumulated, and the customers become selective in exploring the reviews. With these systems, customers are able to find the information instantly.

With this information in eWOM, customers can make a purchase decision. They purchase products only when the value of the product exceeds its price [41]. Accordingly, product evaluation is the most fundamental and important step in customers' purchase decision-making process [61]. Generally, customers evaluate products in an integrated manner using available product information, such as pictures, online advertisements, and customer reviews [54]. In online business, eWOM is considered an effective and important source of product information, which is a foundation for product evaluation.

When customers refer to eWOM to evaluate a product, customers respond to the information in eWOM in various ways. In most cases, customers prefer products with positive reviews. Thus, the products with higher ratings and favorable reviews generally sell better [9]. However, because customer responses are not so simple for easy comprehension, researchers deepen the research and argue, for example, that negative reviews are more influential than positive reviews [56], or extreme reviews on both ends play an important role in customer decision making [10], and so on. Some differentiate customer responses by product types [24,46]. All these different perspectives reflect various responses of customers regarding eWOM.

As stated above, most of the previous studies focus on the empirical aspect of eWOM (e.g., the correlation between rating and sales). However, if we turn our attention to customers' behavior and purchase decision in response to eWOM, a fundamental question may be posed on whether to follow the assessment in eWOM or not. In other words, although customers search for products with positive assessments, it is another issue whether or not they would believe the words and actually purchase the products. Indeed, customers do not always follow other customers' opinions. If customers decide to believe prior assessments, they would buy a product rated and ranked highly by other customers. On the contrary, if they decide not to believe, they would not buy the product with highest rank. In reality, it is not always true that customers buy the product with the highest rank.

Such different responses (i.e. follow or not to follow the assessment of others) differentiate eWOM impacts and, eventually, generate different sales distributions. If customers follow others' opinions, products with higher ratings would attract more customers, whereas products with lower ratings would lose more customers. In this case, sales distribution would form the shape of a "thick-head and short-tail." In contrast, if customers do not follow others' opinions, no product would attract more customers. Thus, sales distribution would reflect the various opinions of various customers. In this case, the impact of eWOM would not be strong, and the shape of the sales distribution would form a "thin-head and long-tail." Figs. 1 and 2 describe these cases in brief.

Such two types of customer responses are, fundamentally, distinguished by the characteristics of the products that customers