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Understanding the product information inference process in electronic word-of-mouth: An objectivity–subjectivity dichotomy perspective

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ABSTRACT

We examined the actions of a customer when inferring product information from electronic word-of-mouth (eWOM) material at a website. We developed a customer purchase intention model and simulated various eWOM levels within this, adopting an objectivity–subjectivity dichotomy, and considering quality and preference as the major antecedents of customer purchase intention. We inferred the information that the customers had obtained from the eWOM by categorizing the customers' responses. The eWOM was parameterized using mean and variance; products that were categorized into quality and preference goods. We considered four cases in which customers infer different product information and exhibit different reactions. Items for quality and preference goods were developed by using a card-sorting method. An experimental survey was conducted on 121 Korean Internet shopping mall users. The hypotheses were partially supported using a Partial Least Squares path comparison method. Overall, our study should provide guidance to firms in their managing eWOM systems by identifying how customers react to them at various levels.

1. Introduction

Over the past decade, online shopping has been shown to provide customers with a convenient and efficient purchasing opportunity. However, online shopping has also resulted in some disadvantages, such as product uncertainty and transaction risk [5]. Since customers cannot always experience the true features of a product purchased via the Internet, there are difficulties in making the correct purchasing decision. Online customers need accurate product information when they are not familiar with a product, and thus must assess it.

For this reason, eWOM or online rating systems are an important product information source: they provide potential customers with an extensive source of customer opinions about the product. Such a process supports impartiality. In addition, since opinions are gathered from many customers, the process supports truthfulness and information richness [8].

Not surprisingly, a number of studies of eWOM-related effectiveness have been conducted [18]. These may be classified into two research types: *market-* and *individual-level*. The difference between these two lies in how the information is viewed. If it was seen as a market-level parameter, eWOM was considered to be related to other market parameters, such as price and sales and generally analyzed using an econometric approach and the eWOM was measured as a *number*, such as the average rating and dispersion of ratings [7]. On the other hand, if eWOM was viewed as an individual-level parameter, it assumed to be related to other individual-level parameters, such as trust and purchase intent, researchers would measure eWOM as *notions* and adopt a survey approach to finding its impact and location in the behavioral model [1]. Thus, the customer's perception of the product is more important than the actual rating levels in the eWOM systems.

EWOM research stems from complicated customer activities in the eWOM systems. As illustrated in Fig. 1, there are three major parts needed in explaining eWOM activities. Firstly, a group of post-purchase customers must rate the target product information as integers representing their quality. As eWOM systems mature and more customers participate, ratings are accumulated. Second, from these, the pre-purchase customer infers product quality as "this product is good" or "this product is not reliable." Third, with this information, the customer estimates the value of the product and makes a purchase decision.

From this model, it is easy to see why prior eWOM research efforts fell into either:

- Market-level, identifying the product information process by viewing eWOM as accumulated customer opinion, and its relationship with other market-level signals, or,
- individual-level, identifying the customer's decision-making process by viewing the eWOM as informational, focusing on how the information affects a customer's decision-making process.

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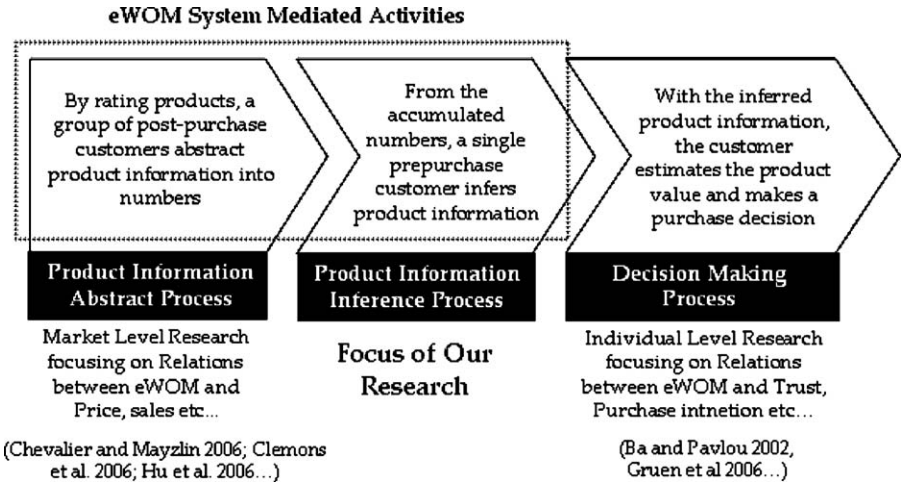

Fig. 1. eWOM activities.

While many studies focused on one of these two, a few focused on the product information inference process; understanding this is essential in explaining how rating levels change customers' decisions. In these studies, the process was regarded as motivational [12], while the inferred information was seen to be an exogenously given factor. Customers are strongly affected by the online customer ratings of their purchase decisions; yet, we have no knowledge of how this changes a customer's purchase intentions.

To overcome this drawback, we tried to determine the product information inference process when a customer uses eWOM systems. However, since this process is purely mental, it cannot be validated directly. Therefore, we developed a general customer purchase intentions model that simulated eWOM changes within it. By considering the customer responses to this eWOM simulation, we could determine the information inferred by the customer, and thus, confirm the process.

2. Theoretical foundation

2.1. Quality and preference based on objectivity–subjectivity dichotomy

A customer's purchase intention is determined by his or her estimated value of the product. In estimating product value, a customer must carefully examine the specific attributes of importance; some customers have *general standards* for their evaluation, while others do not. For example, when a customer evaluates an MP3 player, he or she may examine its weight, capacity, design, and warranty. If the prices were equal, an MP3 player with a 2G capacity would rate higher than one with only 1G. However, in terms of color and texture, some customers may evaluate a red MP3 player higher than a yellow one.

The basic difference between these two types of attributes lies in whether there is an accepted, ranking-based standard for evaluation. If the attributes are all objectively measurable, there is a low possibility of misunderstanding, or bias, in the evaluation process. In contrast, when a customer examines the style, color, and shape of the product, he or she may elicit different preferences and a high level of subjectivity is assumed [19]. These two types of product attributes produce an objectivity–subjectivity dichotomy, as illustrated in Table 1.

From this we can derive two types of product evaluation criteria, *quality* and *preference*. In the dichotomy, we have two domains: subjective and objective. When these domains are considered at the variable level, quality is derived from the objective domain, while preference is derived from subjective domain. Thus, our study defined 'quality' as *the product evaluation based on the product attributes which are objectively measurable* and 'preference' as a *subjective judgment of the product quality and other attributes that depend on the customer's taste*.

2.2. Customer purchase intention model

Since a customer's purchase intention depends on the estimated value of the product, the two product evaluation criteria, quality and preference, need to be considered as major antecedents to the purchase intention.

In practice, however, preference is formulated in two ways:

- By evaluation of the product or service attributes that can only be examined subjectively, such as color, style, and shape.
- By the perceived quality of the product or service, which changes over time [11] and is continuously affected by outside stimuli such as satisfaction and cost [9]. It also can result from an exogenous factor given to the customer and affecting his or her individual preference. Therefore, we propose that a customer's perception of quality also influences his or her perception of preference.

Building upon these ideas, the product evaluation process in the customer purchase intention model, developed with the subjectivity–objectivity dichotomy, is shown in Fig. 2.

3. Hypotheses development

In hypothesizing the eWOM impact on the customer's purchase intention, we had to transform eWOM into a measurable form, and categorize the products that differentiate the impacts of eWOM on purchase intention.

Table 1
Objectivity–subjectivity dichotomy.

Definition and condition	Is there any accepted ranking-based standard for evaluation?	
	Yes	No
Attribute example	Length, weight, class, etc.	Color, shape, style, etc.
Description	People have the same opinions No individual bias occurs	People have different opinions Individual biases occur
Assumption	Objectivity is assumed	Subjectivity is assumed