

What motivates consumers to review a product online?

A study of the product-specific antecedents of online movie reviews

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1. Introduction

In recent years online product review forums have been exerting an increasingly powerful influence on consumer choice. Not surprisingly, several firms are becoming interested in leveraging this phenomenon, proactively trying to induce consumers to “spread the word” about their products online (Godes et al. 2005). Interestingly, however, even after one controls for the variance in sales volumes, there appears to be substantial variance in consumers’ propensity to discuss different products online. A deeper understanding of the forces that motivate consumers to write online reviews is, therefore, emerging as a question of both theoretical and practical significance.

Most recent research on online reviews has focused on assessing the relationship between such user-generated content and product sales (Chevalier and Mayzlin 2006; Senecal and Nantel 2004; Liu 2006; Dellarocas et al. 2005; Godes and Mayzlin 2004). Little attention has, so far, been devoted to the antecedents of online product reviews. The only relevant study that we are aware of (Hennig-Thurau et al. 2004) uses a traditional survey methodology in which respondents were explicitly asked to report the motives behind their online communication habits.

Our work adds to this emerging body of knowledge by looking at the product-specific antecedents of online product reviews. While Hennig-Thurau et al. look at what motivates consumers to post online reviews in general, our study focuses on understanding what product-specific attributes explain the variance in a purchasing population’s average propensity to post online reviews about individual products of a given category (motion pictures). Furthermore, while most prior literature on this topic is based on surveys, our work uses secondary data collected from the Internet and draws inferences from observations of actual behavior. Finally, our study pays special attention to how some unique properties of the online medium, such as the visibility and persistence of previously posted comments, affect subsequent visitors’ willingness to review a product online.

2. Theoretical Framework

Our study draws upon prior research on the motives of word-of-mouth (WOM) communication and upon behavioral economics theories of public goods contribution.

Theories of word-of-mouth (WOM) communication

Prior literature on the motivations and antecedents of WOM communication consists of, predominantly survey-based, research on the antecedents of offline WOM (Dichter 1966, Sundaram et al. 1998), as well as a small number of recent studies on drivers of contribution to online review forums (Hennig-Thurau et al. 2004).

Dichter’s (1966) seminal article on WOM communication motives suggests the presence of four main motivational categories: *product involvement*, *self involvement*, *other involvement*, and *message involvement* (Table 1). While later studies (Engel et al. 1993, Sundaram et al. 1998) identify finer-grained motives of WOM, most of these correspond to categories originally suggested by Dichter. We present a summary below (Table 1).

<i>Dichter (1966)</i>	<i>Engel et al. (1993)</i>	<i>Sundaram et al. (1998)</i>	<i>Hennig-Thurau et al. (2004)</i>	<i>Description</i>
Product involvement	Involvement	Product involvement; vengeance; anxiety reduction	Venting negative feelings	Consumer feels so strongly (positively or negatively) about product that a pressure builds up wanting to talk about it
Self involvement	Self enhancement	Self enhancement	Positive self-enhancement	WOM allows person to gain attention, show connoisseurship
Other involvement	Concern for others	Altruism; helping the company	Concern for other consumers; helping the company	Consumer feels a genuine need to help others make a better decision (or warn them against making a bad decision) or to reward a company for a good product
Message involvement	Message intrigue			Discussion stimulated by advertisements or other marketing messages
			Social benefits	Enjoyment from engaging in the social experience of online WOM
			Economic incentives	Response to direct economic incentives offered by website for posting online reviews (e.g. “WebMiles”)

Table 1. Motives of word-of-mouth communication identified in the literature

Theories of public goods contribution

Online product reviews represent an instance of what economists call a *public good*: they cost time and effort to their individual contributors but, once available, their benefit extends to the entire society. Economic theory predicts that when many people share the use of public goods, there is an incentive to overuse (“tragedy of the commons”), whereas when people share the obligation to provide them, they tend to undersupply. A sizeable literature in behavioral economics attempts to explain the drivers of public good contribution (see, for example, Becker 1974; Bernheim 1986; Andreoni 1989). This literature provides several insights that also apply to the context of online product reviews.

An important contribution of the behavioral economics literature is a method for distinguishing between pure and impure altruistic motives. This method is based on the presence or absence of a “crowding-out effect” in the contribution of charitable goods (Abrams and Schmitz 1978; Andreoni 1989). The crowding-out effect describes situations where altruistic contributions from private individuals tend to diminish if a third-party increases its contributions; it follows directly from the definition of pure

altruism: if a third party (say, the government) steps in and makes large donations to a charity organization, donations from private individuals will make less of a difference to that organization's causes.

In the context of our setting, the crowding-out effect would translate to a decreased propensity to post online reviews for movies for which other moviegoers have already posted large numbers of online reviews. Testing for the presence of such an effect allows us to distinguish between the likely motives of patterns of behavior that would otherwise be attributable to multiple motivational categories.

3. Hypotheses

We develop our hypotheses by drawing upon the theoretical frameworks on the motives of WOM we discuss above. We list the motivational categories that are consistent with each hypothesis in brackets. If our submission is accepted we will provide a detailed discussion of each hypothesis at the workshop.

H1: *The propensity to post online reviews is higher for movies that are perceived by consumers to be exceptionally good or exceptionally bad.* (Product involvement and concern for others)

H2: *The propensity to review a movie online is positively related to that movie's marketing effort.* (Message involvement)

H3: *The propensity to review a movie online is positively related to the amount of public disagreement about that movie's quality.* (Self involvement and concern for others)

H4: *The propensity to review a movie online is negatively related to that movie's perceived availability.* (Self involvement and concern for others)

H5a: *The propensity to post online reviews about a movie is negatively related to the number of previously posted reviews about the same movie.* (Concern for others)

H5b: *The propensity to post online reviews about a movie is positively related to the number of previously posted reviews about the same movie.* (Self involvement and social benefits)

Note that H1-H4 are consistent with both pure altruism and at least one other theory of WOM motives. Therefore, empirical support for these hypotheses does not allow us to draw sharp conclusions regarding the motivations behind online product review contributions. Hypotheses 5a/5b can help resolve this potential ambiguity.

4. Dataset

Our data set consists of consumer and professional critic reviews posted on Yahoo! Movies for 104 movies that were released in the U.S. during 2002, together with detailed production and weekly box office data for the same movies. It consists of 104 movies, 1,392 critic reviews (an average of 13 reviews per movie), and 63,889 user reviews from 46,294 individual users (an average of 614 reviews per movie and 1.4 reviews per user). Even after we adjust for differences in box office volumes, the data set exhibits substantial variance with respect to the volume of consumer reviews that have been contributed for different movies. This implies variability in the purchasing population's average propensity to review different movies online.

5. Empirical Analysis

Independent Variables: A partial summary of our key independent variables is presented below. We use movie genre, MPAA ratings, weeks from release and other movie specific variables as controls in our model but do not list them here due to the page limit.

<i>Independent Variables (Related Hypothesis)</i>	
AVG_{jt}	Arithmetic mean of numerical ratings associated with user reviews posted for movie j during week t (<i>Hypothesis 1</i>)
MKT_j	Cumulative marketing budget of movie j (<i>Hypothesis 2</i>)
$CRSTD_j$	Standard deviation of numerical ratings associated with professional critic reviews of movie j (<i>Hypothesis 3</i>)
SCR_{jt}	Number of screens (theaters) where movie j is exhibited during week t (<i>Hypothesis 4</i>)
$RANK_{jt}$	Box-office rank of movie j during week t (<i>Hypothesis 4</i>)
$TSOFAR_{jt}$	Total volume of user reviews posted for movie j during weeks $1, \dots, t-1$ (<i>Hypothesis 5a & 5b</i>)

Table 2. Partial summary of independent variables

Dependent Variable: Under our assumptions¹ the volume VOL_{jt} of online reviews posted for movie j during week t is equal to the number of people who watched movie j during week t times the moviegoer population's average propensity to rate movie j . Since our goal is to discover what factors affect a *purchasing* population's propensity to contribute online reviews we control for a movie's weekly box office revenues (BOX_{jt}). Since the number of people who watched movie j during week t is equal to the box office revenues BOX_{jt} divided by the average ticket price, we can, equivalently write:

$$VOL_{jt} = BOX_{jt} \exp(X_{jt} \mathbf{b}) + e_{jt} \quad (1)$$

where X_{jt} denotes our vector of covariates and where the term $\exp(X_{jt} \mathbf{b})$ is *proportional* to the population's average propensity to rate movie j during week t .

Model: Our dependent variable (VOL_{jt}) is a count of events. Poisson regression and negative binomial regression (Cameron 1998) are commonly used to model count data. In contrast to Poisson regression models (which assume that count variance = count mean), negative binomial models make the more flexible assumption that the variance of the count is equal to $\mu + \mu^2$, where μ is the count mean and \mathbf{f} is an *overdispersion parameter*, to be estimated together with all other model parameters. A simple chi-square test shows that our data set exhibits substantial overdispersion. For this reason, we opted to perform our analysis using negative binomial regression. Our final specification is the following model:

¹ We assume that: (i) only people who watch movies review them online, (ii) most moviegoers watch a given movie at most once during the first five weeks of its release, (iii) each moviegoer contributes at most one review per movie and (iv) most people who post online reviews do so within a week of watching a movie.

$$VOL_{jt} \sim negbin(\mathbf{m}_{jt}, \mathbf{f}) \quad (2)$$

6. Conclusions

We find that a purchasing population's average propensity to review a movie online has:

- a U-shaped relationship with the average valence of that movie's reviews
- a positive relationship with that movie's marketing budget
- a positive relationship with the level of disagreement among professional reviews for that movie
- a negative relationship with the number of screens where the movie is exhibited
- a positive relationship with the volume of previously posted reviews for the same movie

We thus find support for Hypothesis 1, 2, 3, 4 and 5b. Our findings reject the hypothesis of altruism/concern for others as the primary motivation for posting online product reviews. A collective reading of our empirical findings points, instead, to self expression/self confirmation motives as being the dominant force behind online review contribution: consumers are more likely to review very good and very bad movies (because these movies trigger strong feelings that consumers feel the urge to express), controversial movies (because then their review will be read with more attention by other consumers who seek to reduce their uncertainty about these movies), lesser known movies (because this allows consumers to showcase their eclecticism and sophistication), and movies around which they perceive that there is a lot of online buzz (because this implies that other people are more likely to read their review, or simply because it's fun to do what everybody else is doing).

Interestingly, we find that moviegoers appear to be more eager to review movies that are less widely released and that are lower-ranked in the box office. This result remains robust² even after we control for differences in the intrinsic communication habits of populations attracted by different movies. The result has implications for marketing campaigns that are interested in generating "online buzz" about a product. Another intriguing finding is that large numbers of previously posted reviews increase subsequent viewers' propensity to post more reviews for the same movie even though, past a certain volume, additional reviews are unlikely to add little to what has already been said. This result has potential implications for the design of online product discussion communities as it suggests that, from society's perspective, there might be inefficiencies in the way consumers allocate their online reviews (too many reviews for some products, too few for others).

² Details of the robustness analysis for our results are not included here due to the page limit.

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