

Advertising and Word-of-Mouth Effects on Pre-launch Consumer Interest and Initial Sales of Experience Products



Ho Kim ^{a,*} & Dominique M. Hanssens ^b

^a University of Missouri-St. Louis, College of Business Administration, 1 University Blvd, St. Louis, MO 63121, USA

^b UCLA Anderson School of Management, 110 Westwood Plaza, Los Angeles, CA 90095-1481, USA

Abstract

This study examines how consumers' interest in a new experience product develops as a result of advertising and word-of-mouth activities during the pre-launch period. The empirical settings are the U.S. motion picture and video game industries. The focal variables include weekly ad spend, blog volume, online search volume during pre-launch periods, opening-week sales, and product characteristics. We treat pre-launch search volume of keywords as a measure of pre-launch consumer interest in the related product. To identify probable persistent effects among the pre-launch time-series variables, we apply a vector autoregressive modeling approach. We find that blog postings have permanent, trend-setting effects on pre-launch consumer interest in a new product, while advertising has only temporary effects. In the U.S. motion picture industry, the four-week cumulative elasticity of pre-launch consumer interest is 0.187 to advertising and 0.635 to blog postings. In the U.S. video game industry, the elasticities are 0.093 and 1.306, respectively. We also find long-run co-evolution between blog and search volume, which suggests that consumers' interest in the upcoming product cannot grow without bounds for a given level of blog volume.

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Keywords: Pre-launch marketing; Pre-launch consumer interest; Advertising; Blogging; Online search; New experience products; Persistence modeling; Long-term effects

Introduction

The Internet has made available a plethora of new media and tools for consumers to use in their purchase processes. Consumers routinely consult experts' blogs, online user reviews, and critic reviews. Search engines help consumers find relevant blog postings and online reviews for decision making. Online review sites provide consumers a venue to share their consumption experiences with other consumers, thereby influencing their future purchase decisions. These online tools seem especially influential for experience products such as motion pictures, music, video games, books, and television shows (Chevalier and Mayzlin 2006; Dellarocas, Zhang, and Awad 2007; Dhar and Chang 2009; Duan, Bin, and Whinston 2008a, 2008b; Godes

and Mayzlin 2004; Liu 2006; Xiong and Bharadwaj 2014; Zhu and Zhang 2010).

For experience products, pre-launch marketing is crucial for financial success. First, the life cycle of experience products is relatively short because repeat purchase is rare. For example, according to The Numbers (www.the-numbers.com), even the most successful movies exit first-run theaters after three months. Second, because of the short life cycle, initial sales during the first few weeks are the most critical. One statistic shows that 41% of a movie's revenue is generated during the opening week (Liu 2006). These facts suggest the importance of maximizing pre-launch consumer interest and, thus, the importance of pre-launch marketing (Elberse and Anand 2007).

Motivated by the importance of online tools and pre-launch marketing in experience product industries, this article aims to understand how firms' marketing activities and consumers' online activities – such as blogging and online search – interact in pre-launch periods to influence the initial sales of a new experience product. We ask the following questions. First, how do advertising and blog postings affect consumers' interest in an

* Corresponding author.

E-mail addresses: kimho@umsl.edu (H. Kim), dominique.hanssens@anderson.ucla.edu (D.M. Hanssens).

upcoming film or video game? Is advertising more effective than blog postings, or vice versa, in generating pre-launch consumer interest? Is there any persistent effect of advertising and blog postings on pre-launch consumer interest in a new experience product? Second, pre-launch search and word-of-mouth (WOM) activities help predict the initial sales of films and video games (Kulkarni, Kannan, and Moe 2012; Xiong and Bharadwaj 2014). Thus, which of the two consumer activities (i.e., search or WOM) better predicts opening-week sales?

We answer these questions by analyzing the U.S. motion picture and video game industries—two of the largest and fastest-growing experience product sectors in the U.S. economy (Motion Picture Association of America [MPAA] 2014; Siwek 2014). Our data set includes pre-launch weekly ad spend, blog volume, online search volume, opening-week sales, and product characteristics. We treat pre-launch online search volume as a measure of pre-launch consumer interest in the upcoming new product, as implied in previous studies (e.g., Du and Kamakura 2012; Du, Hu, and Damangir 2015; Hu, Du, and Damangir 2014; Kulkarni, Kannan, and Moe 2012). For the first research question, we examine the long-term effects of advertising and blog postings on search volume during the pre-launch phase of a new product. To understand the dynamic relationships among the pre-launch time-series variables and to identify possible persistent effects, we apply a vector autoregressive (VAR) modeling approach (Hanssens, Parsons, and Schultz 2008; Lütkepohl 2005). We summarize the estimation results using generalized impulse response functions (GIRFs) to show how a random shock to one of the focal variables influences the other variables over the course of pre-launch periods. For the second question, we develop a set of predictive models – a base model and three test models – in which the dependent variable is the opening-week revenue of movies.¹ We focus on the opening-week revenue because viewership in the first week is critical for the financial success of a movie but the most difficult to predict. The predictors of the base model are the opening-week advertising, number of screens, and various movie characteristics. The predictors of the test models include pre-launch blog and/or search volume, in addition to those in the base model. To test predictive performance, we compare the mean absolute percentage errors (MAPEs) of the four models in holdout samples.

Several important findings emerge. First, blog postings² are more effective than advertising in generating consumers' interest

in new motion pictures and video games during the pre-launch phase. More important, blog postings have permanent, trend-setting effects on consumers' search activities, while advertising has only temporary effects. In other words, advertising can temporarily boost pre-launch consumer interest, but it cannot start or enhance a trend in consumer interest in an upcoming motion picture or video game. By contrast, blog postings can start a trend in consumers' interest for an upcoming motion picture or video game. In terms of elasticity, the four-week cumulative elasticity of online search is 0.187 to advertising and 0.635 to blog postings in the U.S. motion picture industry. In the U.S. video game industry, the numbers are 0.093 (the four-week cumulative elasticity of online search to advertising) and 1.306 (the four-week cumulative elasticity of online search to blog postings), respectively.

Second, online search is more effective than advertising in generating bloggers' WOM activities. This suggests that consumers' interest in an upcoming new product greatly influences bloggers' WOM activity around the product and more so than advertising. In summary, we find that blog postings and online search are very responsive to each other during the pre-launch periods of a new experience product. This finding suggests that strong viral effects exist between online search and blog postings in pre-launch periods of motion pictures and video games.

Third, online search and blogging activities in pre-launch periods are individually evolving, but they are also in a dynamic equilibrium. This means that pre-launch search volume (or consumers' interest in the upcoming product) cannot grow without bounds for a given level of blog volume; that is, sustaining pre-launch consumer interest requires continued blogging activities throughout the pre-launch period. Finally, pre-launch search and blog volume improve the prediction of opening-week box office revenues of movies. Search volume is superior to blog volume in predictive performance, suggesting the importance of monitoring consumers' online search activity during pre-launch periods.

The remainder of the article proceeds as follows. We first review extant literature and summarize the contributions of the current study. Then, we introduce our data sets, discuss the modeling procedure, and present the empirical results. We conclude with a discussion of the main findings, their managerial implications, and proposed future extensions of this work.

Literature Review

The past several years have witnessed increasing interest in the effects of advertising and WOM on the sales of *existing* products and services. Villanueva, Yoo, and Hanssens (2008) examine the long-term value of customers acquired through WOM versus firm-initiated marketing and find that customers acquired through WOM have more long-term value than customers acquired through marketing for a web hosting company. Trusov, Bucklin, and Pauwels (2009) compare the effect of WOM referrals with that of traditional marketing actions and find that WOM referrals are substantially more effective in driving member growth at a social network site.

¹ We do not examine predictive performance for the video game industry because no reliable video game sales data are available. Although VGChartz (www.vgchartz.com) publishes video game sales data used by some previous studies, its method of sales estimation raises concerns about data accuracy (e.g., https://en.wikipedia.org/wiki/VG_Chartz).

² We relied on two sources to collect blog postings. For the motion picture data set, we used the Google blog search engine (see Appendix A for an example); for the video game data set, we acquired blog postings data from Meltwater, a media intelligence company. Our empirical findings are consistent across the two data sources. For a more detailed description, refer to the Data section.

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