

How TV Advertising Influences Word of Mouth: Evidence from Twitter

Lachlan Deer¹

Department of Economics, University of Zurich
and

Pradeep K. Chintagunta
Chicago Booth School of Business

Extended Abstract:

The emergence of second screen phenomenon is one of the most fundamental changes in TV viewing behaviour to emerge in the last decade. Nielsen (2014) reports that 84% of U.S. consumers use a smartphone, tablet or laptop while watching TV. The rise in second screen viewing means that TV ads can cause immediate, large post-ad spikes in various online activities. One of the main second screen activities consumers engage in while viewing TV is engaging in so called “social TV” - browsing and expressing their opinion about programs and ads aired during commercial breaks on social media websites such as Twitter. Despite the growth of social TV, advertisers and TV networks are yet to fully assess the value and extent of this behavior and there is a lack of quantitative research establishing a causal link between television ads and online word of mouth (WoM).

The goal of this paper is to measure the effect of television advertising on online WoM. Specifically, this paper measures the impact of national television advertising by movie studios on Twitter conversations focussed on wide release movies in the minutes directly after an ad airs. The focus on the movie industry, and wide release movies in particular stems from the industry’s emphasis on (national) television as its main advertising platform and the importance of Twitter based online WoM in generating buzz and awareness for new release movies. Our empirical approach exploits detailed information on the timing, viewership, dayparts, pod positions, broadcast and cable networks, and program genres for approximately 1 million movie advertisements aired over 2014 and 2015 extracted from the Nielsen AdIntel database. The advertising data is combined with the universe of over 100 million movie relevant tweets posted over the two year period obtained from Twitter’s Firehose. The Twitter data allows us to measure the total volume of tweets about each of the 300 wide release movies at the minute level and construct topics of conversation via text-analytic machine learning tools.

There are two components to our empirical analysis. The first step constructs a Dynamic Hierarchical Linear Model (DHLM) that comprises an observation equation, a pooling equation, and an evolution equation. The observation equation models the volume of tweets about a given movie as a function of the explanatory variables, comprising movie and advertising spot characteristics, and time-varying parameters. The pooling equation specifies the relationship among the time-varying movie-ad level parameters and a new set of parameters that vary across time. The evolution equation specifies the time evolution of the parameters, allowing the effects of movie characteristics and ad spot features to vary over the movie’s release cycle. The second component seeks to understand whether television advertising shifts the composition in the topics of conversation. We develop a LSTM Recurrent Neural Network to classify tweets into distinct, industry relevant conversation topics. These topic-volume specific measures are then fed into a multivariate extension of the DHLM described above.

¹ Corresponding / presenting author. Email: lachlan.deer@gmail.com. Lachlan is a PhD candidate in Economics at the University of Zurich.

The empirical results have direct managerial implications to advertisers and television networks. Our parameter estimates reveal the order of magnitude of the rate of immediate tweet response to TV ads and show how the response evolves in the minutes after release. The results also demonstrate how movie characteristics, such as genre, and whether the movie is a sequel, and media placement factors, such as program-movie synergies, time of day and broadcast network, impact an ads influence on WoM. In addition, the estimation approach also allows for both movie-specific and aggregate-level dynamic parameter estimates. This is relevant for both movie studios and other firms who manage a manage a portfolio of at different phases of their product lifecycle who are looking to understand WoM dynamics. These findings are can improve the media buying strategies of firms whilst networks could adjust their advertising rates to incorporate the flow on effects to online WoM due to social TV.

Keywords: *Television Advertising, Online Word of Mouth, Social Media, Social TV, Movies*