From A Social Influence Perspective: The Impact Of Social Media On Movie Sales

Jianxiong Huang  
Nanyang Technological University, huan0209@ntu.edu.sg

Wai Fong Boh  
Nanyang Technological University, awfbboh@ntu.edu.sg

Kim Huat Goh  
Nanyang Technological University, akhghoh@ntu.edu.sg

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FROM A SOCIAL INFLUENCE PERSPECTIVE: THE IMPACT OF SOCIAL MEDIA ON MOVIE SALES

Huang Jianxiong, Nanyang Business School, Nanyang Technological University, Singapore, huan0209@ntu.edu.sg
Boh Wai Fong, Nanyang Business School, Nanyang Technological University, Singapore, awfboh@ntu.edu.sg
Goh Kim Huat, Nanyang Business School, Nanyang Technological University, Singapore, akhgoh@ntu.edu.sg

Abstract

In this study, we draw upon literature on social influence to investigate the relationships between comments generated from online social media and product sales. Using a natural language processor, we measure the favourability (comments sentiments) as well as the visibility (volume of comments) of social media comments on the list of cinematic movie released for a year beginning in late 2010. Specifically, we study how favourability and visibility of these comments have an impact on daily product sales. We also explore if different types of social media platforms have differing impacts on product sales. The types of social media studied include expert reviews, blogs, forums, microblogs (e.g. Twitter) and network-based blogs (e.g. Facebook).

Keywords: Social media, Cinematic movies, Online reviews, Regression analysis, Social influence
1 INTRODUCTION

In recent years, there is a burgeoning interest in social media, which is defined as “the broad and evolving set of online technologies and related practices for social engagement and interaction” (Du and Wagner 2007). Consumers can conveniently post their comments via different outlets (e.g. blogs, online discussion forums, online communities, etc.), read comments from unknown peers, friends or experts, or even exchange opinions with other potential consumers. With improved information dissemination in terms of propagation speed, breadth, and volume, there is an increasing number of channels through which comments and views of others can influence the purchasing intentions and decisions of individuals.

In this paper, we go beyond a single type of social media to examine how product reviews from different types of social media affect product sales. We examine two key research questions: What aspects of product reviews in social media sites affect product sales? In what ways do product reviews from different types of social media sites affect product sales differently?

According to Nelson, products can be categorized into search and experience goods (Klein 1998). For search goods, consumers can acquire all product attribute information before purchase, based on which their purchase decision can be made. Suitcases and microwave ovens are two examples of search goods. When the cost of information search is more expensive, and/or consumers cannot know the attributes of an experience good unless they buy or try it, the products are classified as experience goods; examples include wine and cooked food. Compared to those buying search goods, consumers who buy experience goods value the evaluations and descriptions of past experiences of others who have used these goods, as such information reduces information uncertainty for decision making (Bansal and Voyer 2000; Klein 1998). In this vein, online comments about experience goods are more valued than those of search goods. Hence, we focus the examination of the effects of social media on the sales of experience goods.

This research will broaden our knowledge on social media in several ways. First, we identify that product reviews from social media can be characterized by two dimensions: the favourability of the reviews and the visibility of the product provided by the reviews. We provide the theoretical arguments and empirical evidence regarding how these two aspects of product reviews from social media affect the sales of the product. Second, we differentiate between different types of social media based on the information sources they represent. Previous investigations often overlook that different information sources such as experts or friends, may vary in persuasiveness. They seldom make a comparison between the sources of information (e.g. BasuRoy et al. 2003; Chevalier and Mayzlin 2006). We propose that people will weight comments differently based on the information sources of the social media messages. This study thus contributes to the literature by taking into account the impact of message source identity on purchase decision.

2 LITERATURE REVIEW

Much research interest has been devoted to explore the effects of social media. For example, Chevalier and his colleague report that the rating and number of voluntarily-supplied customer reviews are related to book sales at two sites, i.e. Amazon.com and Barnesandnoble.com (Chevalier and Mayzlin 2006). Zhu and Zhang (2010) substantiate that the number of online consumer reviews predict online video game sales. Empirical support is found to corroborate the role of social media as an effective tool that affects consumer purchasing decision and sales. In other words, there is little debate as to whether social media matters in influencing product sales.

Synthesizing across the studies examining the effects of social media on product sales, we identify two dimensions used by prior research to characterize the comments generated in the social media on a product. These two dimensions correspond to two of the dimensions representing an organization’s media
reputation highlighted in the organizational literature (Rindova, et al. 2007): the favourability and the visibility of the product based on the comments in the social media.

Favorability refers to the degree of goodness in the eyes of media, namely, “is it good or bad?” (Rindova et al. 2007). Due to problems of information asymmetry, the public values the neutrality of the media, which, in many cases, is often perceived to be an independent judge that is not predisposed to favorable or unfavorable comments. Hence if the media recommends a product or asks people to stay away from a product, consumers are likely to think the evaluation is fair (Kirmani and Zhu 2007).

Visibility reflects the level of awareness and exposure of the public towards the product, i.e. how many people know about the product (Rindova et al. 2007). Visibility is associated with the number of times that individuals encounter information about or receive messages about the product. Awareness of a product is one of the preconditions that must exist before people will buy the product.

Dhar and Chang (2007) document a positive correlation between volume of blog posts and future album sales. Duan et al (2008) find online word-of-mouth volume can influence box office sales as well. Empirical evidence is found to attest to the predictive power of favourability and visibility to product sales.

Although prior research informs us the relevance of social media, the influences of different kinds of media have not been compared. Most of them select a certain type of social media (such as blog, MySpace, twitter, etc.) and study how product comments in this media influence sales of the product. A closer look at various types of online media will suggest that different sources are somehow “associated” with different mediums correspondingly. For example, consumers may look for peer reviews at forums, but skim Twitter to update themselves on what product their friends are interested in. Different communication technologies represent different sources of information. Consumers grant different weight to different sources, hence the persuasiveness of the arguments varies accordingly. There is a need to include different types of social media in the study to compare their effects and enrich our knowledge on their effects on product sales.

3 ASPECTS OF PRODUCT REVIEWS

Favourability. Favourability reflects the social media’s attitude towards the subject. When there is insufficient insider knowledge to mitigate the risks and information uncertainty associated with the use of a product, consumers often depend on the comments of others culled from the social media. All else being equal, consumers are more likely to make purchases when the comments from the social media for a product are highly favourable, as favourable comments provide an indicator of good product quality. Prior studies have shown that favourability of the comments about a product is positively related to sales (e.g., Dellarocas et al. 2007; Duan et al. 2008). Hence:

Hypothesis 1: The more favourable the comments about a product in the social media, the greater the product sales.

Visibility. Visibility captures the number of times individuals are exposed to information and messages about a product. The higher the visibility of the product through messages in the social media, the more likely it is available in customers’ memory. With regards to visibility, although less understandable than the effect of favorability at the first glance, empirical evidence attests to the impact of visibility on product purchase (Dellarocas et al. 2007; Duan et al. 2008; Liu 2006). The underlying process is elaborated as follows.

Research on mere exposure effect has explained that frequent exposure to a subject would yield positive affect (Crano and Prislin 2005). People are inclined to develop a preference for subjects or individuals on account of familiarity. Although research on mere exposure effect usually uses identical messages, high visibility can enhance the recollection of the subject even if the descriptions of the subject vary in media.
Accordingly, high visibility leads to an increase in the exposure and familiarity of the subject, causing consumers to form a positive attitude towards subjects (Cacioppo and Petty 1989).

_Hypothesis 2: The more visible a product through comments in the social media, the greater the product sales._

## 4 SOCIAL INFLUENCE AND SOURCE FACTORS

As social beings, we are exposed to other people’s opinions every day. As information recipients, we are likely to be persuaded by some sources more than others. The changes of people’s opinion or behaviour are the result of social influences from a multitude of sources and individuals. Nonetheless, extant inquiries in social media seldom differentiate the sources of message and downplay the differences in persuasiveness of sources. To compare the effects of different types of social media based on the weight that individuals place on different information sources, we make use of social influence theory, which describes how our attitudes and behaviours are affected by other people. According to the social influence perspective (Salancik and Pfeffer 1978), individuals’ perceptions, attitudes and behaviours are shaped by the informational and social environment within which the behaviour occurs. Today, social media-enabled communication has become a projection and extension of one’s real life interpersonal interactions, and makes up a key component of individuals’ social life. In order to lay the theoretical groundwork for discussion about the interaction between source factors and social media, this section reviews literature about social influence and research on source factors to explain the process via which different sources persuade people.

### 4.1 Identification and Source Attractiveness

Social influence theory has its roots in the early studies of group attitude and perceptual convergence (Bamberger and Biron 2007). According to Kelman (1958), one of the key reasons why other people are able to influence one’s perceptions and opinions is because of the identification one feels with others. Identification is said to occur when people consider the relationship with the communicator to be salient (Kelman 1958). If people want to be a member of the group, or identify themselves with the communicator (an individual or the group represented by the individual), they adopt the induced behaviour or attitudes they perceive to represent the communicator.

Conformity takes the form of identification if the persuasive power of the source arises out of attractiveness. Attractiveness concerns either physical attributes of the source (i.e. physical attractiveness), or similarity in values or beliefs (i.e. ideological similarity) (Wilson and Sherrell 1993). On the internet, it is more difficult for consumers to figure out the physical attributes of the message source, hence the study concentrates on source attractiveness originated from ideological similarity.

Attractive communicators are expected to have stronger persuasive influence than unattractive ones. Ideological similarity stems from similar experience or background, such as education, vocation, nationality, and religion, etc., which possibly results in similar ways of thinking, beliefs and preferences. Accordingly, message recipients tend to speculate that they share more in common with ideologically similar people, and probably have similar attitudes and make similar decisions. In the meta-analysis conducted by Wilson and Sherrell, ideological similarity is one of the three most effective manipulations of source factors (Wilson and Sherrell 1993).

### 4.2 Hypotheses Development

We differentiate between three sources of information that capture most of the different types of online social media: Expert reviews, network based peer reviews and non-network based peer reviews.
Expert reviews versus peer reviews. Some researchers have probed into interactions between favorability of social media and source credibility, but the results are not consistent. Arora (2000) found empirical evidence suggesting negatively framed messages from more credible sources are more persuasive in predicting one’s intention to recommend the dental service to friends. However, the interaction between source credibility and message framing is not significant in Buda and Zhang (2000); instead, they found significant three-way interactions between message framing, presentation order, and source credibility.

We suggest that the inconsistency in the empirical findings might be explained by the differences in nature of products, i.e. experience goods versus search goods. Source expertise is expected to be more important for search goods, but less so for experience goods. In the context of product selling, there is an unsettled issue regarding the efficacy of expert versus non-expert (i.e. consumer) reviews in persuasion. It is common that experts and consumers do not agree (Chen and Xie 2008; Wang 2005). Chen and Xie (2008) differentiate these two kinds of comments by comparing the focus of the content. They argue that expert reviews, which are high in source expertise, tend to focus on technical specifications of the product, while consumers are more interested in how well the product live up to their usage situations. In this vein, expert opinions are more effective in shaping consumers’ decision to buy search goods, because they provide professional analysis of the product attributes, based on which consumers make their purchase decisions. However, in the case of experience goods, potential buyers can learn about the direct experience and anecdotal information from consumer reviews, which is more important than an appraisal on the technical features. Social influence theory would also predict that buyers would likely be more influenced by the opinions of others that are viewed to be similar to themselves (Burt 1987). Think of the scenario where you decide whether to buy a novel (an experience good). Experts may comment on the artistic style, writing technique, or thread of thought. In contrary, readers who are low in source expertise, do not even notice these technical features, but they would discuss whether the novel is interesting and worth reading. As a result, consumers would put more weight on non-expert reviews (or peer reviews) when they want to buy experience goods.

**Hypothesis 3:** The relationship between favorability and product sales is moderated by source factors; in the case of experience goods, peer review is a better predictor of product sales compared to expert review.

Network-based peer reviews versus non-network based peer reviews. Among peers, you can further classify them into two groups: one of them consists of people who are perceived to be ideologically similar to you, such as your friends, classmates, colleagues, who are usually from your network. We refer to them as network-based peers. The rest of the peers are those who have less in common with you, or there is little evidence suggesting you and they are alike, who are referred to as non-network based peers.

Compared to non-network based peers, the ideologically similar group is anticipated to exert stronger social influence on your purchase behaviour (Bansal and Voyer 2000). Consumers are predisposed to identify more with those in their network, and are likely to find their opinions to be more persuasive. Consumers value what their network says more than that of other peers (Mohr 2007). Via tapping the sentiments extracted from twitter, Zhang et al. (2010)’s study documents the relationship between sentiment of twitter and stock market.

**Hypothesis 4a:** The relationship between favorability and product sales is moderated by source factors: in the case of experience goods, network based review is a better predictor of product sales compared to non-network based peer review.

Visibility of a product through comments generated from one’s network has better explanatory power on product sales. As communication technology has facilitated the digitization of social network, the circulation of product-relevant information indicates the effectiveness of product promotion activities. The volume of the network buzz can reflect the visibility of the product, because of two reasons: first, people in the network are consumers themselves, which constitute the body of customers; second, consumers know who the people in their network are. In a network, every time a person mentions a
product, it does indicate one consumer knows about it. Accordingly, the visibility of the product in social network can reflect the visibility of the product in the market more precisely. Asur and Huberman (2010) find the volume of twitter is a better predictor for movie revenues compared to the Hollywood Stock Exchange index, which is a market-based predictor. Taken together, the argument suggests the following proposition:

Hypothesis 4b: The relationship between visibility and product sales is moderated by source factors: visibility gained from network-based peer reviews is a better predictor of product sales compared to that from non-network based peer reviews.

5 RESEARCH METHODOLOGY

5.1 The Context of the Study

In this study, cinematic movies are chosen as an example of experience goods to empirically examine the proposed research model. There are various reasons for this choice of context: firstly, movies are common and standardized experience goods. The movie industry is a vital part of the American economy (Mohr 2007). As the most affordable entertainment option, movie theatres continue to draw more consumers than other forms of entertainment like theme parks and major U.S. sports (McDonald 2009).

Secondly, the daily box office sales data can be accessed from the Internet and it is feasible for us to comprehensively retrieve online comments about movies. Prior research has examined the effect of word-of-mouth on book sales, but they did not have access to proprietary sales data of books and substituted the book sales with sales ranking of books calculated from Amazon’s sales data. In contrast, the actual daily box office sales data are available. Moreover, the dispersion of comments on each movie tends to be concentrated in the period around its release. This allows us to quite comprehensively collect most comments about a movie within a relatively short time period.

Thirdly, reviews play a prominent role in affecting purchase choice in the movie industry. More than one-third of Americans consult movie reviews (The Wall Street Journal 2001), on which about one-third of moviegoers base their purchase decision (Basuroy et al. 2003). Movie is a well-understood commodity and attracts comments, which makes it possible for us to gather enough comment to study the impact of comments. In a nutshell, the context of movies provides an appropriate context to conduct the study of social media and the sales of experience products.

5.2 Dependent Variable

Movie sales. The data focuses on major cinematic movies released in the US market. The list of movies is obtained from IMDb (http://www.imdb.com) and Rotten Tomatoes (http://www.rottentomatoes.com); the following types of movies are excluded: documentaries, video releases, Blu-ray releases, DVD releases, and movies released only in a film festival. The daily box office sales information is collected from the Box Office Mojo website (http://www.boxofficemojo.com). The research is now in the middle of data collection, which started from October 2010, and is supposed to last for one year. After data collection, we plan to group the observations by the movie title and choose random effects generalized least squares (GLS) regression to estimate the proposed empirical model.

5.3 Data Collection

In order to compare different social influences embedded in different types of online reviews, the study covers three types of online reviews, namely, expert reviews, network based peer reviews, and non-network based peer reviews,
Expert reviews refer to movie reviews by experts, usually affiliated with a major newspaper or magazine (Entertainment Weekly), radio station (NPR), website (eFilmCritic.com), etc. The list of movie reviews is obtained from several websites that aggregates the movie reviews from different sources: IMDb (http://www.imdb.com), Rotten Tomatoes (http://www.rottentomatoes.com), MRQE (http://www.mrqe.com/movies/), Yahoo (http://movies.yahoo.com/movie/), Rolling Stone (http://www.rollingstone.com/movies/), and PopMatters (http://www.popmatters.com/pm/). Each week, we downloaded the reviewer’s name, review post date, review content, title of the review and also the rating (if any) of the movies for movies released in the preceding week.

Network based peer reviews. New posts in Twitter, Plurk and Facebook constitute the major sources of network-based peer reviews. Both Twitter and Plurk are subscription based – i.e. only those who subscribe to the feeds provided by an individual will receive the information s/he sends. Thus information propagated via Twitter and Plurk is considered to represent information received from others in one’s network. Every week, we generate keywords based on the names of movies in the sample and input them into the tool of social media management company, JamiQ (www.jamiq.com). The tool will monitor all feeds from Twitter, Plurk and Facebook, and capture feeds that include words matching the list of keywords.

Non-network based peer reviews. These refer to information and reviews generated via forums and discussion boards. Such reviews are generated by fellow consumers and movie goers – hence they are considered peer reviews rather than expert reviews. These reviews are also posted on websites for all to read and for search engines to index and search; the propagation of these peer reviews are not solely via subscriptions from one’s network hence they are considered non-network based peer reviews. Each week, we collected the information for this class of reviews via the major movie comments/review aggregator sites: IMDb (http://www.imdb.com/), Rotten Tomatoes (http://www.rottentomatoes.com/), Yahoo (http://movies.yahoo.com/movie/), Rolling Stone (http://www.rollingstone.com/movies/).

For each week, the sample of movies included for data collection would include movies that have been released in the prior two weeks, and we will continue to capture the comments for a movie for as long as the movie is in the cinemas, and for two weeks after the movie has been removed from the cinemas.

5.4 Measures

Favorability. The common practice used to measure favorability of a review is to refer to the reported numerical ratings in a review (e.g. Chevalier and Mayzlin 2006; Dhar and Chang 2007). However, because many reviews do not provide numerical ratings, this practice often results in the loss of data. Moreover, reviews influence readers, often not via the numerical ratings, but via the critique conveyed through the text. To accurately capture the sentiment of a review, we use a script used by the JamiQ tool to calculate the sentiment score of comments based on the number of positive and negative words in the reviews, with reference to the movie.

Visibility. We measure visibility with the number of online reviews concerning a certain movie.

Control variables. Our study controls for the popularity of the director, leading actor and actress, budget, whether the movie is a sequel, and the number of days since release. We refer to STARmeter rankings to measure the popularity of the director, leading actor and actress, which were collected from IMDb Pro website (http://pro.imdb.com/). STARmeter ranks directors, actors and actresses based on the searches of millions of IMDb users.

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Reference

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