Investigating the Effect of eWOM in Movie Box Office Success Through an Aspect-Based Approach

Saurav Mohanty, Department of Decision System Sciences, Saint Joseph’s University, Philadelphia, PA, USA
Nicolle Clements, Department of Decision System Sciences, Saint Joseph’s University, Philadelphia, PA, USA
Vipul Gupta, Department of Decision System Sciences, Saint Joseph’s University, Philadelphia, PA, USA

ABSTRACT

This study examines the influence of Electronic Word of Mouth (eWOM) on the box office revenue generation of movies in the U.S domestic market using the technique of Aspect-Based Sentiment Analysis (ABSA) and aspect identification. The analysis was conducted on the sentiment score and frequency of five movie aspects from the user reviews collected from high grossing 2014 movies. This study revealed a significant dependence on the aspect-based sentiment frequency of the movie’s Story aspect. Surprisingly, the data also showed a strong dependence of movie success on the negative sentiment frequency on the Casting aspect. The findings of the study suggest that the eWOM present in online movie reviews can be used to predict the performance of a movie at the box office by monitoring the aspect’s frequency of sentiment, which can be referred to as a metric of the online “buzz” of the movie.

KEYWORDS

Aspect-Based Sentiment Analysis, Electronic Word of Mouth (eWOM), Movie Reviews, Online Buzz, Regression Analysis, Revenue Prediction, Sentiment Analysis

INTRODUCTION

Hollywood, as an industry, had been growing with leaps and bounds having a huge number of successful movie releases each year and generating billions of dollars in box office revenue (Litman, 1983). Considering the magnitude of the business involved, researchers have endeavored on determining indicators that can accurately predict the financial success of movies. Since the early 1970s, research in this direction has caught momentum despite the apparent difficulties involved. Sochay (1994) examined the performance of motion pictures released in United States and Canada between October 1987 and October 1989 by measuring the parameters of domestic rentals and the length of run of the movie, while also taking into consideration the competition from other films. Moving forward, the development of analysis methodology and easier availability of data paved the way for more comprehensive research regarding the financial performance in the movie industry. The measures of performance and the method of analysis evolved in many ways. Many scholarly articles have emphasized the role of critics as being very prominent in the film industry (Eliashberg & Shugan, 1997; Holbrook, 1999; West & Broniarczyk, 1998). The first decade of the 20th century saw the proliferation of the internet into every domain of society. Movies began to be discussed online through various forums, not only by expert reviewers and critics, but also by the general movie

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audience. Thus, massive volumes of electronic Word of Mouth (eWOM) were generated regarding these films. More recently, the concept of eWOM has become very important in the field of social media mining and is being recognized as a rich source of business intelligence. In fact, Word-of-Mouth (WOM) has been acknowledged as one of the most influential means of conveying information in modern history (Gupta & Gupta, 2016; Godes & Mayzlin, 2004; Maxham & Netemeyer, 2002; Reynolds & Beatty, 1999). The eWOM present in social media has even stronger influence considering the amount of people it reaches in a short amount of time. Research later revealed the importance of eWOM together with expert reviews as indicators to gauge performance of movies at the box office (Basuroy, Chatterjee, & Ravid, 2003; Dellarocas, Zhang, & Awad, 2007; De Vany & Walls, 1996; Duan, Gu, & Whinston, 2008; Elberse & Eliashberg, 2003; Liu, 2006; McKenzie, 2009).

This study analyzes the eWOM of the user reviews online through a new aspect-based sentiment analysis (ABSA) and aspect identification to investigate its effect on the box office revenue collection. Thus, the two methodologies adopted in this research are 1) ABSA and 2) Frequency of Aspect Sentiment (FAS), also called “buzz.” The structure of the paper is as follows. First, background information regarding ABSA and FAS is presented, followed by a literature review of previous work in this area and how this paper contributes to the field. Next, the authors present a methodology section which describes the research framework, data collection, and analysis models employed. Finally, the results are given along with discussions and conclusions.

Aspect-Based Sentiment Analysis (ABSA)
Medhat, Hassan and Korashy (2014) wrote “Sentiment Analysis (SA) or Opinion Mining (OM) refers to the computational study of people’s opinions, attitudes and emotions toward an entity. The entity can represent individuals, events or topics.” According to Blackshaw and Nazzaro (2006), sentiment analysis, which is a sub-branch of the broad disciplines of computational text mining and Natural language processing, refers to a specific type of text analysis which involves examination of a given textual unit with the goal of determining the polarities of the expressed opinions and the types of emotions expressed toward various attributes of a subject. Sentiments, such as opinions, attitudes, thoughts, judgments and emotions, are private states of an individual which cannot be subject to objective observation or verification; rather they are expressed in language using subjective expressions (Ramsey & Bapna, 2016). This study makes use of ABSA which is a special type of SA. According to Bagheri, Saraei, and De Jong (2014), the concept of aspect for a sentiment analysis problem usually refers to the opinion target which is simply the topic or the object features in review documents. They are defined as attributes that describe the object. For example, in the sentences ‘The mileage of this car is amazing’ and ‘The weight of my laptop is quite low, which allows me to carry it wherever I go’, the aspects of the car and laptop are denoted by ‘mileage’ and ‘weight’, respectively. Though many methods for automatic ABSA of movie reviews have been proposed, implemented and evaluated by Thet, Na, and Khoo (2010), these methods have not been able to achieve an accuracy of greater than 90% with the accuracy being mostly in the range of 80% for most of the aspects. Since the purpose of this research is to investigate the relationship between online aspect sentiment and box office revenue, such inaccuracies in the outputs of the algorithms is not suitable for this work. Hence, a process of manual sentiment analysis under a strict acceptable framework has been adopted.

Frequency of Aspect Sentiment (FAS): A Measure of Online Buzz
Asur and Huberman (2010) studied the possibility of predicting future outcomes of movies through the analysis of social media buzz of the movies on Twitter, one of the fastest growing social networks in the Internet. Fisher (2009) studied the effect of online buzz on the benefits that businesses receive. Studies such as these have emphasized that online buzz, which is a measure of how much an entity is being talked about or mentioned online through comments, posts, discussion boards or other forms, is important to predict the success of the entity. This study differs from previous by investigating the effect of aspect-based buzz in movie reviews on the revenue generation in the domestic US market.
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