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Mining association rules between positive word-of-mouth on social network sites and consumer acceptance: A study for derivative product of animations, comics, and games

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ABSTRACT

In recent years, we can easily observe that animations, comics, and games (ACG) have great output value and market influence on the entertainment and digit media market. The ACG industry is not an industry of a single country or region but a global industry. In addition to its own revenue, the derivative products (or licensed merchandise) of ACG can extend the ACG industry to win more business opportunities. The ACG industry is mainly marketed towards younger people, who are the major users of social network sites. Hence, the electronic word-of-mouth (eWOM) on social network sites often becomes a reference basis of the young people's attitudinal acceptance and purchase intention in purchasing ACG-related derivative product.

In this paper, we analyze the influential factors of positive eWOM's communication motivations that affect consumer acceptance on social network sites, and apply the uncomplicated decision tree data mining algorithm to compute the association rules between these influential factors and consumer acceptance, expecting to understand the relationship between eWOM on social network sites and consumer acceptance. The results of this study can help the business decision-making in CRM and marketing of the industry of ACG-related derivative product. This study found that the degree of perception of ACG product and the degree of taking pleasure in sharing ACG-related information with others have a significant correlation with consumer acceptance.

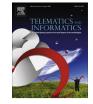© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

The entertainment industry captures a wide variety of media to provide diversions or to amuse consumers, and it has become one of promising markets in the era of thriving development of digital convergence. PricewaterhouseCoopers's annual research on the global entertainment and media market pointed out that the global entertainment and media market would be worth approximately 1.77 trillion USD in 2013 and 2.21 trillion USD in 2017 (PWC, 2013). In recent years, we can easily observe that animations, comics, and games have great output value and market influence on the entertainment and digit media market. Take Hollywood for instance, a lot of blockbuster movies (for example, "Iron Man", "X-Men", "The Avengers", and so on) were adapted from the famous DC or Marvel comics over the past few years. Moreover, most of the yearly top 10 worldwide box office grosses were made by the movies related to animations or comics. For example, more

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than half of top 10 highest-grossing movies of 2013 accounted by Box Office Mojo were animations or adapted from comics: "Frozen", "Iron Man 3", "Despicable Me 2", "Monster University", "Man of Steel", and"Thor: The Dark World", which amounted to more than 5.5 billion USD (Box Office Mojo, 2013).

The animations, comics, games industry is not an industry of a single country or region but a global industry. Animations, comics, and games often have strong correlation with each other. For example, if a comic product is popular on the market, relevant animations and games will be introduced to the market soon, or it will even be adapted into a movie or TV show. Most games on video game consoles (for example, Wii, PlayStation 4, Xbox, and so on) are related to the popular animations. Such correlation makes it hard to separate them in consideration. Instead, animations, comics, games should be regarded as an industry of strong internal cohesiveness. Therefore, the term "ACG" is usually used to represent the industry of animations, comics, and games (Sheu et al., 2016). With digital presentation, the cultural and creative contents of ACG can realize convenient and more diversified dissemination.

The industry of ACG is not a regional industry but a worldwide industry. For example, the currently popular AR (Augmented Reality) mobile game "Pokémon GO", which was released in July 2016, has been creating an enormous success world widely. According to an official announcement by Niantic, Inc. on September 7, 2016, Pokémon GO surprisingly surpassed 500 million downloads around the world during the first eight weeks (http://pokemongolive.com/en/post/headsup/). However, this AR mobile game Pokémon GO was derived from the old game "Pokémon Red and Blue" of handheld game console "Game Boy" of Japan in 1996. Moreover, a series of "Pokémon" animations had created in Japan since 1997, which were extremely popular in North America, Europe, and Asia.

In addition to its own revenue, the derivative products (or licensed merchandise) of ACG can extend the ACG industry to win more business opportunities. For example, the worldwide box office income of Pixar animation movie "Cars" was about $462 million (Box Office Mojo, 2006). However, the licensed merchandise revenue of "Cars" amounted to more than $5 billion, which was ten times box office income. The Disney animation movie "Frozen" (shown in November 2013) made a worldwide box-office record of 1.2765 billion USD, which was the top-grossing movie in 2013. Moreover, "Frozen" also became the highest grossing movie in history of Disney. The author of "The Hollywood Economist: The Hidden Financial Reality Behind the Movies", Edward Jay Epstein, pointed out that derivative products' revenues of the Disney animation movie "Frozen" far exceeded its own box office income. For example, Wal-Mart and Toys "R" Us had 700 and 300 kinds of "Frozen" toys, respectively. More than three million clothes of "Frozen" had been sold out in North America. The hot sale of various licensed products of "Frozen" (such as toys, foods, stationery, dolls, clothes, books, consumer electronics, and so on) brought tremendous commercial value, which caused Disney's share price to rise by 3.5% and market capitalization to exceed 150 billion USD (China Business Network, 2015).

Word-of-mouth provides potential customers with a reference source of experience in use to reduce risk and uncertainty. Hence, the word-of-mouth has become an important source of reference information to consumers (Tanimoto and Fujii, 2003). Therefore, there are two ways of communication in the marketing field that can dominate the purchase intention, namely, advertising and word-of-mouth (WOM) (Money, 2004).

Compared with other forms of mass media, WOM is an important, alternative source of information (Swan and Oliver, 1989). In today's society, life is filled with various types of advertising information. However, interpersonal WOM communication is a source of information of considerable concern and attention. According to the SIMM VII released by BIGresearch in 2005 (BIGresearch, 2005), WOM has the greatest influence among the product-related information collected by the consumer prior to purchase followed by TV advertising.

The ACG industry is mainly marketed towards younger people, who are the major users of social network sites. The continuous development and innovation of Internet technology have significantly accelerated the passing of message among people, expanded social networks between consumers, and provided a new platform for the collection of consumer information. When WOM is disseminated through electronic media, the resulting "electronic WOM" (eWOM) refers to any information consumers share via these media. By the eWOM communication and experience sharing among people on the social network sites, it is more acceptable to the young people as compared with general advertising information, and often becomes a reference basis of the young people's attitudinal acceptance and purchase intention in purchasing ACG-related derivative product. The eWOM can be further divided into two categories (Henning-Thurau et al., 2004): (1) The positive eWOM: this category puts greater emphasis on positive motivation. (2) The negative eWOM: the main emphasis of this category is negative motivation. Considering the enthusiastic and active behavior characteristics of the ACG hobbyists, this study will focus on influence of positive eWOM on the purchasing behavior of ACG-related product consumers.

This research aims to analyze the associate impact of positive eWOM on buying behavior of consumers of ACG-related derivative product. We analyze the influential factors of eWOM's communication motivations that affect consumer acceptance on social network sites, and apply the uncomplicated decision tree data mining algorithm to compute the association rules between these influential factors and consumer acceptance, expecting to understand the relationship between eWOM on social network sites and consumer acceptance, in order to help the business decision-making in CRM and marketing of the industry of ACG-related derivative product. We summarize the major contribution of this research as follows:

(1) We study behavior of consumers of ACG-related derivative product to analyze the attributes in purchasing. Then, we locate and modify the critical attributes of eWOM's communication motivations which can affect consumers' attitudinal acceptance and purchase intention on social network sites. Moreover, we study consumer acceptance for the purchaser of ACG-related derivative product, and develop its influential factors.