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## A social endorsing mechanism for target advertisement diffusion



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#### ABSTRACT

Social media plays an increasingly important role in people's daily lives and attracts companies to conduct marketing activities. Determining how to effectively utilize this new media to distribute promotional advertisements to suitable customers is thus an important issue. In this research, an endorser-based social diffusing mechanism, which considers the factors of users' preferences, influence, and diffusion power, is proposed to enhance the effectiveness of target advertising by discovering the most appropriate endorsers that can propagate the ads to the identified target users. Our experimental results show the proposed model can appropriately enhance satisfaction and target delivery rate.

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#### 1. Introduction

Social media is playing an increasingly important role in people's daily lives. As a functional definition, social media is the interaction of people and the creation, sharing, exchanging, and commenting on of content in virtual communities and networks [63]. Social media (e.g., Twitter, Plurk, Facebook) has become a popular space for marketers to promote products, and customers share their opinions about products or stores.

One business survey noted that the number of social media users increased to 1.43 billion in 2012, an increase of approximately 20% from 2011. It was also forecast that more than 70% of Internet users would visit social media sites at least once a week in the subsequent three years. Furthermore, it was predicted that the user rate of social media would rise from 20% to 25% by 2014 [16]. This growing user population of social media shows its increasing importance and promising business opportunities.

Social media is an important source for people to get information. According to the study of [64], approximately 70% of people use social media to receive updated information on a company, brand, or product. In addition, approximately 45% of people use social media to distribute information. Sensis [55] reports that keeping connections with friends and family, sharing

information, and coordinating social events are the main purposes for which people use social media. Social media has become a major platform in thee exchange and communication of personal information.

In addition to their personal usage, social media have been increasingly used by companies to conduct activities. According to a report by Stelzner [60], the majority (93%) of companies use social media as a marketing tool, and half of marketers have experience applying social media in marketing for at least one year. Furthermore, at least 73% of these marketers plan to increase their use of social media, such as YouTube, Facebook, and Twitter. Meanwhile, half of B2C (business to customer) companies conduct marketing and advertising activities using the Internet and social media (e.g., email marketing, search engine optimization, social marketing).

With this rising trend, determining how to apply social media to create value in business is becoming a significant issue for enterprises. Advertising is one of the most common commercial activities implemented using social media. With social media, the advertiser can exploit the power of social influence to deliver advertising messages via word of mouth. However, as marketers are increasingly launching advertisements on social media, the effectiveness of this new advertising approach is the main concern of advertising sponsors.

Target advertising and social advertising are two important ways to improve the effectiveness of advertisements. Target advertising focuses on identifying the right (targeted) receivers of the advertisement, whereas social advertising emphasizes finding

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the right (influential) endorsers to propagate the advertisement. Both advertising strategies can enhance the effectiveness of the advertisement as people like an advertisement to fit their preferences and enjoy sharing them with friends. Therefore, to improve the effectiveness of social media advertising, advertisers face three main issues.

- (1) The objectives of advertising: There are several main purposes of advertising, including informing, evoking emotions, and triggering actions [46]. The purposes of advertising can also be categorized into informative and persuasive functions in general [5,45,47]. The informative function of advertising focuses on delivering the information of an advertisement. Marketers can carry out informative advertising to deliver product-related and promotional information to consumers. They can inform consumers when and where a sale will be held. Advertising information is generally time critical and/or location sensitive. For example, when jewelry is auctioned for a limited period of time, the auction information should be time critical and more attractive to women than to men. In contrast, persuasive advertising aims to affect the tastes of consumers and offer customers perceived product value and brand loyalty. It offers less (and less direct) information on product promotions than informative advertising. The different objectives and approaches of advertising also affect its effectiveness. A good advertising mechanism should have the adaptive capability to improve advertising performance according to the advertising objective and mission.
- (2) The audience of advertising: The targeted audience is also a critical factor that affects the effectiveness of advertising. Determining how to attract the audience and make them feel entertained with the received advertising messages is an important issue. To meet the advertising objective, the target audience should be correctly identified. Kelly et al. [31] note the important issue of advertising avoidance, suggesting that media users resist accepting unfavorable information delivered by advertisements [59]. They become unfit receivers and might have negative emotions about annoying advertisements. This finding suggests that the audience of advertising should be chosen carefully, or the advertising effectiveness might diminish. The main objective of target advertising is to identify the right audience to receive the advertisement.
- (3) The distribution of advertising: Selecting a proper medium in which to advertise is important for marketers. Traditional advertising mediums, such as print and television, have their limitations. Because of its communicating capability, the Internet has become a popular medium for advertising. However, proper advertising strategies on this medium still vary with the objectives of advertising. Advertising messages can be directly distributed by firms or by the advertising agent to target customers. Although this type of advertising approach is cost saving, most users may feel disturbed and have negative impressions due to unfavorable ads and senders. Social advertising, by utilizing the inherent power of the endorsing and filtering features of social networks, can alleviate this problem and improve the value of the advertising delivered.

In this research, by analyzing preferences, influence, and diffusing power, we combine the advantages of the target and social advertising approaches and develop a novel social endorsing mechanism to enhance the effectiveness and target coverage of advertising, which is an emerging research avenue for using social media in the context of online advertising. The proposed mechanism can feasibly distribute various types of advertisements (such as branding and product promotions) by considering the following three aspects. First, in terms of targeting, suitable

receivers can be found based on the content and characteristics of individual information. Stockman [61] argues that "making sure the right ads reach the right demographic is the first step towards smart marketing". Evaluating the fit between the content of advertisements and receivers should be considered first before advertising activities are launched. Second, in terms of endorsing, endorsement by friends is a powerful advertisement distributing strategy to reduce negative reactions during advertising. In particular, when endorsers are selected from the friends of receivers, the advertisement will be accepted by receivers more easily. This helps overcome the issues related to the advertising audience, fosters information propagation, and reduces advertising avoidance. Third, in terms of synthesizing, the proposed mechanism combines the power of both target and social advertising. When targeted receivers are identified and clustered by preference analysis, the system can further understand the most influential endorsers to deliver advertising messages. Filtering targeted users helps scale down the scope of advertising and discovers endorsers effectively. Marketers can thus meet their expected outcomes based on the objective of advertising by utilizing this synthesized target and a social advertising strategy. The proposed mechanism is validated by experiments conducted in Plurk, one of the most popular micro-blog services. Our experimental results show that the proposed model can effectively enhance advertising campaigns (particularly promotional and time-critical advertisements) in terms of advertisement relevance and target delivery rate (TDR).

The remaining sections are organized as follows. Section 2 discusses the related literature. Section 3 demonstrates the research model. Section 4 presents the experiments. Section 5 discusses the experiment results and evaluation. Finally, Section 6 concludes this study and presents directions for future research.

#### 2. Related works

#### 2.1. Social media and online advertising

The advents of the Internet and communications technology have facilitated the rise in social media. Social media are Internetbased platforms that emphasize human interactions [57]. According to the categorization by Kaplan and Haenlein [28], collaborative projects, blogs, content communities, social networking sites, virtual game worlds, and virtual social worlds are all types of social media. Furthermore, Heinonen [22] notes that social media activities can be categorized by motivation. The features of social media are generally divided into three categories: information processing, entertainment activities, and social connections. These categories of functionality imply that social media provide an open platform for mutual communication, information diffusion, and social interaction. With the emerging trends and the promising popularity, researchers have attempted to analyze the characteristics and enhance the practical applications of social media [29]. Kim et al. [34] investigate the factors that influence the adoption of social media from the viewpoint of information needs to realize each user's behavior regarding information adoption. To better figure out users' behavior, many researchers analyze social interaction, social influence, and information diffusion in social media [12].

With this rising new media, enterprises are exploring business opportunities, and online advertising is one of the most popular commercial ventures. Online advertising has several different implementation forms and strategies. The contextual ads on search engines [41], banner ads [30], affiliated marketing [48], and traditional e-mail marketing are all branches of online advertising. Luo et al. [41] investigate how search advertisement placement affects search users' brand recall and recognition. Kazienko and Adamski [30] propose a system that considers web usage,

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