

## Chapter 55

# Bidirectional Role of Accuracy and Recognition in Internet-Based Targeted Advertising

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### ABSTRACT

*The effective media strategy in advertising is gradually becoming the premise of company that lives in the competition of marketing. Due to the rapid growth of new advertising media and technologies, it is possible for a firm to precisely target advertising to the potential consumer segment within a market. This research explores the extent to which an advertiser should regulate the quality of its targeting and effect on consumers' surplus and social welfare. The authors present a theoretic model measuring the targeting quality of internet-based targeted advertising with two measures termed accuracy and recognition. Accuracy measures the possibility of correct prediction in the target segment, while recognition is defined as the probability that any member of the targeted segment is identified. The authors demonstrate, within a monopolistic framework, the online targeted advertising might lower or increase both consumers' surplus and social welfare compared with mass advertising, which depends on different range of accuracy and recognition in the social media. The recognition of internet-based targeted advertising plays a positive role on equilibrium price, whereas the accuracy plays a negative role in the regulation of advertising intensity and equilibrium price. Therefore, it is believed that the accuracy and recognition of the online targeted advertising can be used as a lever for the strategic segmentation of a market.*

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## 1. INTRODUCTION

Advertising is one of the most critical marketing strategies for a firm, and the largest element of advertising spending is media purchasing (Aaker, 1968). The informative view of advertising claims that in many markets, firms invest in advertising to create awareness for products, prices, attributes and special offers to otherwise uninformed potential consumers. Therefore, it is always a great challenge to buy the media effectively and not direct toward the “wrong people”. As a classic concern goes by John Wanamaker in 19<sup>th</sup> century, “Half the money I spend on advertising is wasted and the trouble is I don’t know which half” (Dellarocas, 2012, p.1178). Traditionally, the objective in media planning is to minimize wasted advertising by reducing the quantity of advertising sent to the consumers who will probably never buy the product. However, throughout a variety of technological advances, the internet provides many firms with an unparalleled ability to precisely target advertising towards the potential consumer segment within a market. In particular, the targeting improves the quality of the match between the consumer and the advertisement message (Bergemann & Bonatti, 2011). Currently, within the internet-based targeting techniques including IP address tracking and the analysis of cookies, the consumers’ preference and potential demands can be easily obtained across many different websites and search engines (Rutt, 2012). That means the firm can send the internet-based targeted advertising via online platforms to the potential consumers with great accuracy. For instance, social network websites, such as Google and Facebook, can roughly reveal an individual’s current interests by tracing his/her recent web-browsing activities, and then directly provide the advertisements of relevant products that might interest him/her.

As reported in a previous study, a potential consumer cannot be an actual buyer unless the firm invests in advertising for the sales (Stahl, 1994). The effective media strategy in advertising is gradually becoming the critical premise of the company that lives in the competition of marketing. However, due to the expensive spending on mass advertising through national TV or newspapers, firms are increasingly active in the use of internet-based targeted advertising while selling products to the loyal consumers (Iyer et al., 2005; Gal-Or et al., 2006). Given that advertisers are motivated to pursue the internet-based targeted advertising, the objective of our study is to understand the following questions: when the firms have the ability to choose different targeting levels to different consumer segments, how they allocate their advertising? Whether the higher of targeting ability is, the better social benefits can be obtained when compared to mass advertising? What is the primary role of targeting quality of internet-based targeted advertising on the products? For these purposes, we first present a model to analyze the role of recognition and accuracy of internet-based targeted advertising on firm’s equilibrium price and profit in monopolistic framework, and then develop the model on the optimization of the investment on the two measures of imperfect targeting. A first output of this paper is to discover the bidirectional role of the two measures of internet-based targeted advertising, and the others, the effect of targeted advertising is not always better than mass advertising, which depends on the optimal choice of targeting qualities.

In fact, even in the monopolistic market, the informative advertising is used for the introduction of products’ characteristics so as to enlarge the potential market and avoid the potential rival’s entry in the market. For instance, Microsoft’s operating system is nearly occupied the total personal computer market in China, still quite a large number of advertisements are sent to the consumers in China every year. The model addressed in this article fits well with previous studies on the impact of informative advertising on product information and pricing. In particular, Butters (1977) first proposes a message-sending model in markets for homogenous goods, where advertising provides information about the existence of products and their characteristics. Later, Grossman and Shapiro (1984) extend the Butters’ model

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