

# Chapter 8.1

## Sponsored Search as a Strategic E-Service<sup>1</sup>

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### ABSTRACT

In addition to helping consumers navigate the web search engines offer a new kind of e-service known as sponsored search. A search engine provides an auction interface to advertisers that allows them to be included in a list of sponsored links. Consumers then search the list to find the best deal. This paper uses a version of traditional consumer price search models from economic theory to evaluate the extent to which consumers and advertisers can rely on sponsored search as an effective strategic intermediary. The article also describes steps that the manager of the search engine can take to improve the sponsored search service. The findings are relevant to web advertising as well as to mobile advertising.

### INTRODUCTION

With about 213 million queries per day web search engines are the most often visited locations in cyberspace (Sullivan, 2006). They are the places where most Internet customers start searching for information available on the web. Many customer searches conclude in a purchase, so in effect, search engines provide an important global e-service by facilitating transmission of commercial information from producers to consumers. While the search engines' service was relatively unbiased but not of high quality at the beginning of the Internet age, its nature has gradually changed over the last decade. Search engines have improved the relevance of their search results and, in addition to their regular search service, they have started offering sponsored search services by allowing

advertisers to directly interface with the search engines' own systems. Google, Yahoo and MSN let advertisers bid in on-line auctions for spots on the search engines' list of sponsored links (Cusumano, 2005) and then collect revenue for each click. The list of sponsored links is shown at the top of the regular search results and/or in a column to the right of the regular search results. In spite of reports (see Jansen & Resnik, 2005) showing that users have strong biases against sponsored links, search engine advertising revenues have been increasing dramatically over the last few years. Google has indicated \$10 billion revenue from advertising for the 2006 fiscal year. Moreover, Google has recently started another similar program, AdSense, which also uses auctions to show business ads to customers who browse anywhere on the web.

Sponsored search is becoming increasingly important in two other recent areas of interest: mobile advertising and location-based services. Once search engines are readily accessible through mobile devices, they will be able to deliver ad messages based on location as well as search terms and other customer preferences. According to recent reports (Kharif, 2008) 58 million US wireless users viewed an ad on their device in February 2008, however, linking the ad to a specific location and persuading the users to act on the ad is still a challenge. Because of its increasing popularity, online and more recently mobile advertising through auctions will have a lasting impact on E-commerce and M-commerce.

Advertising is the main source of revenue for the big search engines. There are many factors that contribute to the success in collecting advertising revenue. One of them is the number of users who click on the sponsored links. In the long run, this number depends on the relevance of the regular search results shown and the relevance of the list of sponsored links. More relevant regular search results will attract more visitors to the search engine's web site and more relevant lists of sponsored

links will encourage a bigger proportion of users to click on them. Less clear is the importance of the auction mechanism used to allocate the spots in the list of sponsored links even though analytical attempts to compare some currently used auction rules and strategic bidder behavior are reported in Edelman and Ostrovsky (2007), and Varian (2006). Since the start of the sponsored search service, search engines have occupied the delicate strategic position of a direct intermediary between advertisers and consumers. This article investigates the link between the search engines' revenue generating process and the usefulness of sponsored search to advertisers and consumers. The paper offers a theoretical model of the search engine's revenue-generating process based on the concept of a pure strategy Nash equilibrium by taking into account the strategic interactions between the main three interested parties: the search engine, the consumers, and the advertising firms. A specific auction algorithm rather than the more abstract oligopoly competition solution concept is used to represent the relationship between the three parties. In the context of the model we investigate several more specific questions and claims that have arisen recently in the scientific and popular press. First, the article estimates the collusive pressure that advertisers face and its relationship to the number of advertisers present in the advertising auction; Second, it investigates the differences between requiring advertisers to pay their bid versus requiring them to pay the bid of the advertiser below them on the list of sponsored links. Third, it examines how participants' profits change when the search engine considers the click-through rate (the number of times that a link has been clicked in the past) when it ranks the advertisers' bids. Using the model the article evaluates the extent to which sponsored search is useful to consumers and advertisers and describes steps that the manager of the search engine can take to improve the sponsored search service.

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