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**Sponsored Search  
Auctions: Research  
Opportunities in  
Marketing**

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# Sponsored Search Auctions: Research Opportunities in Marketing

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Hanover, MA 02339  
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[www.nowpublishers.com](http://www.nowpublishers.com)  
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*Outside North America:*

now Publishers Inc.  
PO Box 179  
2600 AD Delft  
The Netherlands  
Tel. +31-6-51115274

The preferred citation for this publication is S. Yao and C. F. Mela, Sponsored Search Auctions: Research Opportunities in Marketing, Foundations and Trends<sup>®</sup> in Marketing, vol 3, no 2, pp 75–126, 2008

ISBN: 978-1-60198-228-5  
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Foundations and Trends<sup>®</sup> in Marketing, 2008, Volume 3, 4 issues. ISSN paper version 1555-0753. ISSN online version 1555-0761. Also available as a combined paper and online subscription.

Foundations and Trends<sup>®</sup> in  
Marketing  
Vol. 3, No. 2 (2008) 75–126  
© 2009 S. Yao and C. F. Mela  
DOI: 10.1561/17000000013



## Sponsored Search Auctions: Research Opportunities in Marketing\*

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### Abstract

We systematically overview the literature in keyword search and propose several promising research directions. The paper is organized by each agent in the search process; searchers, advertisers and the search engine and reviews the key research issues for each. For each group, we outline the decision process involved in keyword search. For searchers, this involves what to search, where to search, which results to click, and when to exit search. For advertisers, this involves where to bid and which word or words to bid on, and how searchers and auction mechanisms moderate these behaviors. The search engine faces choices on mechanism design, website design and how much information to share with its advertisers and searchers. These choices have implications for customer lifetime value and the nature of competition between advertisers. Overall, we list a number of potential areas of future research arising from the decision processes of these various agents.

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\*The authors would like to thank Han Hong, Sarah Moore, Andrés Musalem and Rick Staelin for their feedback.

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# 1

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## Introduction

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This paper reviews research on sponsored search auctions. The sponsored search auction is a newly developed auction practice where advertisers bid for premium spots on the search results page of an Internet search engine.<sup>1</sup> Winning advertisers' ads are placed in these premium spots — for example, at the top of the search results list. This new form of advertising can create high levels of brand awareness among Internet users. Moreover, its reach has extended dramatically in recent years. By the end of 2006, over 726 M people aged 15 years and over were online; and one quarter of these individuals were in the United States (IRI, 2007). In November 2006 alone, American Internet users conducted 6.7B searches on the 25 leading search engines. By comparison, a top rated TV show such as “Desperate Housewives” only has about 25M viewers (IRI, 2007); and the growing popularity of DVR services offered by TiVo and cable companies has decreased the audience base of

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<sup>1</sup>Other than Internet search engines, any interactive, addressable media formats (e.g., DVR, satellite digital radio) can be utilized to implement similar auctions for advertising. Another application is to allocate limited shelf space to a variety of products in a retailing store. Due to the limited air time or shelf space, auctions can be used to determine prices and allocate the resources. In such a notion, the research literature on sponsored search auctions can be generalized to a much broader context.

## 2 Introduction

traditional TV advertising. Further, sponsored search advertising can boost sales for retailers, especially in online channels. According to a US Census Bureau report in Q1-2007, American e-commerce retail sales achieved a year-over-year increase of 18.4% while retail sales across all channels grew at a much lower rate of 3.2%.<sup>2</sup> A key driver of sales in online retailing is online promotion (Ansari et al., 2008). Qiu et al. (2005) estimate that more than 13.6% of the web traffic is affected by search engines. Hence sponsored search advertising is a powerful tool for generating online traffic. The statistics described above illustrate the importance and efficacy of sponsored search advertising, and are the reason for the staggering growth of sponsored search advertising. Compared to the slow annual growth of 3.8% in total advertising expenditure (TNS Media Intelligence, 2007), Search Engine Marketing Professional Organization (SEMPO) reports that search engine marketing expenditure reached 9.7B in 2006, a 62% year-over-year growth.<sup>3</sup> In addition, over 70% North American advertisers are shifting in whole or in part of their budget from other marketing programs to search engine marketing.

In marketing, auctions have stimulated research interests because of their growing popularity along with the thriving of online marketplace (Chakravarti et al., 2002). While research on sponsored search auctions remains nascent, there are tremendous potential opportunities in this area. Studies of sponsored search auctions can provide insight into this new practice and guidance for marketing managers.

Since Vickrey's (1961) original work, auctions have generated a rich body of literature. A query on the search engine Google Scholar with the keyword "auction" returns over 300,000 results. Given this extensive literature, we only consider studies that are the most relevant to sponsored search auctions.

The paper is organized according to the different agents involved with sponsored search auctions: Internet users, advertisers and search engines. This organization allows us to focus on issues regarding each agent's behavior and strategies separately. First, we detail the practice

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<sup>2</sup>Resource: US Census Bureau (2007, Q1), Quarterly Retail E-Commerce Sales (<http://www.census.gov/mrts/www/ecom.html>).

<sup>3</sup>Sponsored search auctions account for 86% of the total spending, or 8BB.

of sponsored search auctions in Section 2. In Section 3, we consider the decision processes of Internet users such as their search behavior. Section 4 reviews relevant auction research with an emphasis on advertisers. In Section 5, we consider issues from the perspective of search engines with the purpose of maximizing their revenues in the auctions. In each of these sections we also discuss potential research opportunities for the field of marketing. We conclude with Section 6.

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