



## How to select search keywords for online advertising depending on consumer involvement: An empirical investigation

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### ABSTRACT

In paid search advertising on Internet, advertisers bid for specific keywords. Consumer involvement affects a consumer's purchase intention. However, there has been no research on selecting keywords in paid search advertising depending on consumer involvement from the advertisers' perspective. Our paper investigates the effects of several factors including impressions, click-through rate, conversion rate, the number of competitors and the quantity of online customer reviews on the performance of individual keywords. Our analysis shows that regardless of consumer involvement, the conversion rate and the number of reviews significantly affect to the performance of individual keywords but the click-through rate does not. In addition, the effects of impressions and the number of competitors partially exist depending on consumer involvement. This study provides managerial insights into paid search advertising and can give some assumptions in the theoretical modeling literature for allocating advertising budgets.

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### 1. Introduction

Online advertising (ad) is a form of promotion that uses the Internet and World Wide Web for the expressed purpose of delivering marketing messages to attract customers. Online advertising industry is expected to be stable and manifest a continuing upward trend till 2011. The compound annual growth rate is anticipated to increase by 17.4% during this period (2007 through 2011) and touch the \$197.11 billion mark (EconomyWatch, 2007). In coming years online advertising spending is expected to overtake the TV advertising market. The rapid growth of this industry is being driven by increasing Internet users, rising awareness and growing broadband subscription rate and ecommerce, which is playing a key role in this industry.

The keyword advertising market, in particular, has proliferated in the last seven years. According to the annual report of the Interactive Advertising Bureau (IAB), Internet advertising revenue has surged from \$4.6 billion in 1999 to \$23.4 billion in 2008. Moreover, keyword advertising accounted for 45% of Internet ad revenues in 2008, whereas banner advertising accounted for 21%. More specifically, keyword advertising accounts for much of the revenue that search engines such as Yahoo! and Google earn. Google has stated that more than 90% of its earnings comes from its AdWord service. As a whole, keyword advertising took in 35% of the Internet ad revenue generated during the last fiscal year.

The ROI, return on investment for banners are measured in two ways: firstly, by brand awareness – remembrance of the message or brand name is important; secondly, by rate of interaction, or click-through rate (CTR) – the higher the number of people who click on the banner, the higher the value the advertiser has been given (Eriksen & Kuada, 2009). In terms of CTR, one of the Web log statistics, banner advertising is not very effective, in that its average click-through rate is lower than 0.5%, whereas that of keyword ads is about 5%. Another fundamental reason why keyword advertising is more efficient and helpful than banner ads is that customers, after doing a search, are immediately exposed to the paid-search keywords rather than to banners, and almost never click through to the second page of search engine results. Moreover, Cho and Cheon (2004) found that consumers avoided looking at advertising on the Internet because of a perceived goal impediment: Apparently, people who are searching for a site will usually click on any one of the first five links at the top of the search engine results page and then they will stop.

In paid search an advertiser faces four different decisions (or levers): (1) which keyword to select, (2) how much to bid for each keyword, (3) how to design the text ad and (4) how to design the landing page (Rutz & Bucklin, 2007). Plenty of existing research has focused on decision two: bidding. Some researchers proposed bidding strategies in online advertisement auctions in advertiser's stance (Borgs et al., 2007; Freuchter & Dou, 2005; Özlük & Cholette, 2007). Even though no research has specifically investigated the design of the text ad and the landing page, designing ads and landing pages might not differ materially from traditional ad and

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Web design, suggesting that findings from previous studies might apply (Rutz & Bucklin, 2007). Rutz and Bucklin tried to solve the first decision problem by estimating conversion rates for individual keywords based on a hierarchical Bayes model. However, they did not consider consumer involvement across product categories. The level of consumer involvement in a product category is a major variable relevant to advertising strategy. Wu (2001) showed that there was a positive relationship between the degree of consumer involvement and the advertising effect hierarchy. Besides consumer involvement, other statistical information, including impressions, the number of competitors, and the number of consumer reviews, may be crucial to assessing the performance of an individual keyword advertisement based on product sales. There is recent empirical evidence that consumer reviews have become important for product sales (Chevalier & Mayzlin, 2006; Clemons, Gao, & Hitt, 2006). However, there has been no research on measuring the effects of impressions and the number of competitors on sales of keyword advertising. In this paper, we investigate how online search keywords depending on consumer involvement affect product sales in terms of three factors: impressions, the number of competitors, and the number of reviews.

This paper is structured as follows. Section 2 provides an overview of metrics and other related indicators to paid search advertising. Section 3 presents the hypotheses for the effects of metrics on keyword ad efficiency. Section 4 describes the data and procedures for constructing our research design. Empirical results for the hypothesis testing are contained in Section 5. And the final section contains theoretical contributions and some managerial implications.

## 2. Overviews

### 2.1. Metrics for evaluating the effectiveness of online advertising

One of the most important merits that online advertising has, compared to other advertising media, is that it becomes possible to measure its effectiveness in various ways. The impact of online advertising can be measured by the communication effect, which indicates to what extent Internet users show their interest, and by the purchase conversion rate, which is the ratio of visitors who convert casual content views or Web site visits into actual purchases. Lots of indicators to measure online advertising effects have been developed so far. Hoffman and Novak (1996) suggested the following five indicators: (1) Hit, (2) Visitors-User, (3)

Visit-Session, (4) Impression and (5) Click-Through. Also, there are other industry-specific indicators to gauge sales as well as clicks affected by advertising as follows: (1) Hit, (2) Request, (3) Visit as server-side indicators and (1) Impressions and Impressions, (2) Ad Click, Click-Through, (3) Duration Time, (4) PC-Meter as client-side indicators. The list of indicators for measuring the effects of online advertising is represented in Table 1. The indicators described in Table 2 are to measure dissimilar advertising efficiencies. Berthon, Pitt, and Watson (1996) introduced a conceptual framework for measuring the efficiency of a Web site. The corresponding indicators for the contact efficiency and conversion efficiency in Table 2 are, respectively, click-through rate and cost per sale. Since there is no proper indicator of retention efficiency, cost per sale plays an important role in evaluating the performance of an individual keyword ad.

### 2.2. Various methods of calculating the charge for paid search advertising

These days, keyword ads yield a big income for portal and search engine sites. The charging method for paid search advertising used by Naver, the leading search-engine site in South Korea, is different from that of Overture, which is a leading multinational company for keyword advertising. Naver uses cost per time (CPT), while Overture uses cost per click (CPC). Naver argues that CPT is more convenient for Korean advertisers because their budgets are usually fixed. Naver has used bidding for keyword ads beginning this year. The order of prices tendered is the order of the site list provided as a search result.

When a user types a keyword into a search engine, related Web sites appear as a result of the search. Advertisers pay fees in order to let their site appear among the top lines. Today, keyword ads represent big income for portals. There are several pricing mechanisms for Web banner advertising and keyword ads in portals including CPM, CPI, CPA, CPC, CPT, and CPD. In this paper, we will omit descriptions of other types of ad-pricing mechanism, except for CPM, CPC, and CPT, which are defined as follows. Cost per thousand page view, or CPM, is the amount an advertiser will pay to show his/her ad a thousand times. CPM pricing has been actively promoted by major portals such as Yahoo and Google because it is a great revenue generator. The only thing the portals have to do is to display the ad as often as they can until the advertiser's budget is exhausted. Another pricing method is CPC, that is, cost per click, which is how much an advertiser would pay every time

**Table 1**  
Indicators for measuring the effects of online advertising.

Indicator	Definition	Pros/cons
Hit	The number of visits to server	Visits without a special reason can be counted
Request	The number of hits on a Webpage where all of its components are successfully downloaded	The server counts when Website contents are completely downloaded
Ad Request	The opportunity to deliver an advertising object (ex, a banner) to visitors who visits a particular Website	The level of advertising awareness can be measured
Visitors (User)	The number of visitors who visits a Website during a certain period of time	There is no concern about visitors who repeatedly visit the Website
Visit (Session)	The number of continuous visits to Web pages linked to each other in a Website	It can remove the overlapped counts from a same visitor
Duration Time	The mean time to stay at the Webpage linked to a targeted advertising	It can measure how much users give attention to the contents of a landing page after clicking on an advertisement
Impression	The number of exposures of the page linked to an advertisement	Record about awareness efficiency
Ad Click Through/Rate	The number of responses/click rate received for an exposed advertisement	It is a way of measuring the success of an online advertising campaign
Click Per Lead/Sale	The number of actual purchases after being exposed by an advertisement	Analysis on the direct relationship between advertising and sales
PC-Meter	A method of measuring the number of Web users based on household PCs	"Family unit" approach for online advertising

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