



The power of search engine ranking for tourist destinations



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H I G H L I G H T S

- The clickthrough rates on search engine result page follow power law distribution.
- Image search and mobile search follow different clickthrough curves.
- High ranks in web search is a necessary but not a sufficient condition.
- Image and mobile searches provide different opportunities for tourist destinations.
- Competing on niche keywords is the key to successful search engine marketing.

A R T I C L E I N F O

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Most online travelers in the United States use search engines to seek out travel information. Thus, Destination Marketing Organizations (DMOs) need to attract clicks through returned results on search engines. We modeled clickthrough rates (CTRs) of several published clickthrough reports and investigate the CTRs of a DMO's webpages on different ranks of different properties (web, image, and mobile searches) on a search engine. The results validated the power-law distribution of CTRs on different ranks: the top results attract high CTRs but the rates decrease precipitously when the ranks go down. However, top ranks are a necessary condition but not a sufficient one: many top ranked results have low CTRs. Image search and mobile search have different CTR curves, providing different opportunities for tourism destinations and businesses.

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1. Introduction

In recent years, around 86% of Americans have used search engines for travel planning purposes (Fesenmaier, Xiang, Pan, & Law, 2011). As a result, search engines have become one of the most important ways that travelers search for and filter information, as well as a vital channel through which hospitality and tourism businesses can reach their potential guests (Xiang, Wöber, & R Fesenmaier, 2008). Marketing on search engines has become an emerging industry in the developed world (Pan, Xiang, Law, & Fesenmaier, 2011), and was estimated to reach \$23 billion in North America in 2012 (SEMPO, 2012).

Although there is no official report on destinations' spending on Search Engine Marketing (SEM), informal communications in 2008 showed that at least 10–20% of marketing budgets were spent on SEM through some states' Destination Marketing Organizations (DMOs) in the United States (U.S.) (State Provincial Research

Network LISTSERV, 2008). A similar communication in 2014 resulted in an estimate of 10–25% just for paid search advertising for one state DMO (State Provincial Research Network LISTSERV, 2014). In 2013, a commercial report on 200,000 websites revealed that more than 40% of online traffic came from organic searches. However, the percentage had dropped slightly from December 2012 (Wong, 2013). Nonetheless, these data show the importance of SEM to the web traffics and revenue of DMOs and tourism businesses.

Increasing pressure on accountability for marketing campaigns requires marketers to justify their spending on SEM by the calculation of Return-on-Investment (ROI). For example, how much should one spend on SEM for a DMO website? If a \$10,000 USD investment on Search Engine Optimization (SEO) can help one website increase its rank on Google from number five to number two for the destination name as the query, is it worthwhile?

SEM can be roughly categorized into two parts: SEO, which improves a website's ranking in the organic results section on a Search Engine Result Page (SERP), and paid search, which involves bidding on certain queries in the advertisement section. The ROI for the latter is much easier to measure: most of the time, an advertiser

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only pays when web visitors click on their advertisement. Marketers can also track visitors' follow-up behavior on the websites through web log tools such as Google Analytics. Thus, it is possible to calculate the conversion rates from searches and further the ROI of those paid clicks. For SEO, making the connection is much more complicated: marketers need to connect their SEO spending with increased web traffic and converted visitors, which may result from increased ranking on search engines. Previous studies have found that users will pay more attention to the top results on search engines, and recent studies validated this through experiments (Pan et al., 2007), but a remaining question that still needs to be addressed is, by what degree does one website's ranking influence its web traffic and future revenue? In addition, today's fast developing technology has created widespread information overloading problems (Simon, 1996). A ranking system, as an implicit filtering and recommender mechanism, has become increasingly prevalent everywhere, from general searches, most eCommerce websites, to Online Travel Agencies (OTAs) (Resnick & Varian, 1997). Thus, an understanding of how different ranks perform will be beneficial in understanding the power of ranking in the online marketplace.

In this research, we investigated different CTRs on different search engine ranks based on web log data. CTRs are defined as the percentage of search engine users who clicked on a specific result on a SERP, among all the users who searched that query and were possibly exposed to the result. For a business or DMO, this is the first step in converting information searchers to website visitors, and ultimately to their paying customers. The CTRs for different ranks could provide important information and help businesses calculate the ROI of their SEO effort. In addition, every search engine provides results in different formats through different properties, such as web (in the format of text), image, and mobile searches. This has given us another question on which to focus our research, namely, do users' clicks follow the same clickthrough rate distributions, or they behave differently on different properties? A meta-analysis on published log reports, as well as a case study on three websites of a DMO, was used to explore the conversion rates on different ranks and different properties of search engines. The findings provide an understanding of the conversion rate distributions of rankings on different properties of search engines, and offer a starting point for measuring ROI for SEM efforts.

2. Literature review

Researchers in various fields have studied search engines and search engine marketing through many approaches, from design, evaluation, user behavior, marketing, to their social and political implications. This section reviews relevant studies on search engine ranking and reveals the gap in our understanding of this dynamic field.

The studies within the area of computer science focus specifically on the algorithms for ranking returned web documents when users type in a query. The quality of the ranking algorithm is always the most important criteria in judging the quality of search engines. The underlying assumption is that users will most likely view and click on the results at the top of the SERP. Thus, providing most relevant results at the top helps users save cognitive effort, provides a smoother search experience, and increases search engine brand loyalty. The ranking algorithm relies on keyword density and frequency, hyperlink structure, and clickthrough rate data as implicit feedback for better ranking algorithms (Brin & Page, 1998; Gandal, 2001; Joachims, 2002). Recently, search engines have started to incorporate social media content into search engine ranking and returned results (Ghose, Ipeirotis, & Li, 2012). Search engines have also continuously updated their ranking algorithms based on

current research in order to wrestle with rogue websites which try to take over the top positions with illegitimate strategies (McCullagh, 2011). In general, computer scientists focus on tweaking the ranking algorithms and improving system performance in order to provide better results. The maximum match between the most relevant results and users' information needs is the goal for designing better search systems.

On the other hand, information scientists focus mostly on user behavior on search engines and, as a result, hopefully understand user intentions and increase the quality of ranking algorithms. This includes studies on user intent through web log analysis, users' decisions on clicks, and the comparison of user behavior on different search engines (Jansen, 2007; Jansen, Booth, & Spink, 2008; Jansen, Brown, & Resnick, 2007; Jansen & Pooch, 2001; Jansen & Spink, 2005, 2006, 2009). These studies highlight the differences and changes in user behavior due to culture, demographics, and the sophistication of users. The dependent variables include search query types, query length, lengths of search time, depth and breadth of searches, the use of Boolean operators, etc. Specifically, researchers studied the characteristics of search engine queries and information needs (Jansen & Spink, 2009). The ranking effect, e.g. how clickthrough rates vary in different ranks, was seldom investigated, but its importance was stated in that search engine users only view and click the first one or two SERPs and are more likely to click on the top ranked results.

In the field of marketing and management information systems (MIS), a few researchers have investigated sponsored search results and related users' click and conversions, and the best ways to achieve maximum revenue for search engines (Agarwal, Hosanagar, & Smith, 2011; Feng, Bhargava, & Pennock, 2007; Ghose, Ipeirotis, & Li, 2014). Feng et al. (2007) tested different mechanisms for ranking sponsored results and their impact on search engine revenue. They found that rank-revision strategy, which gives more weight to clicks on lower ranked advertisements, resulted in better performance for search engine revenues. Agarwal et al. (2011) used hierarchical Bayesian modeling to test the effect of sponsored ad ranks on the clickthrough and conversion rates for an online retailer. Their results showed that the top positions usually had higher clickthrough rates, but not necessarily higher conversion rates. Ghose et al. (2014) studied the interaction effect between search engine ranking and product ratings for hotels. Their results demonstrated that hotel rankings based on users' personal characteristics, when compared to non-personalized rankings, were not beneficial to the hotel businesses since fewer tourists made a purchase. Specifically, they found that the top ranked hotels attracted more clicks than the lower ranked ones.

In the tourism and hospitality field, several researchers have investigated search engine use from a variety of perspectives, mainly from search engine query analysis and SERP analysis (Pan, Litvin, & Goldman, 2006). For example, accommodation searches are always the first ones in the users' search sequence when planning a trip. Search queries are always associated with cities, and secondly attractions, transportation options, etc. Researchers have also studied the content and categories of search queries and the tourists' information needs as reflected from those queries (Pan et al., 2006). In addition, social media content is always embedded in search engine results (Xiang & Gretzel, 2010). Studies in this area have not focused on the ranking effect of search results.

Researchers have also studied the changing nature of search engine marketing and the changing behavior of travelers when searching information. Search engine marketing is an evolving field. A dynamic relationship exists between search engines, users, and business websites. The three parties have different goals and

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