

# Examining Searcher Perceptions of and Interactions with Sponsored Results

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## ABSTRACT

In this paper, we report results of an investigation into the effect of sponsored links on ecommerce information seeking on the Web. In this research, 56 participants each engaged in 6 ecommerce Web searching tasks using 60 organic and 30 sponsored Web links for each task. We extracted these tasks from the transaction log of an actual Web search engine, so these queries represent actual ecommerce searching information needs. In the study, we controlled for quality of the Web search engine results by switching organic and sponsored links on three of the six searching tasks for each participant. We counterbalanced the order of presentation among participants. We investigated the perceptions of sponsored links and the factors that influence this bias. Data included 2,453 interactions with links from result pages and 961 utterances evaluating these links. Findings include that there is a strong preference for organic links, a bias against sponsored results, and that more than 56% of the time, the title of the sponsored link was the determining factor in searcher perceived relevance. We discuss implications for sponsored links and paid search as a long-term business model.

## Categories and Subject Descriptors

H.3.3 [Information Storage and Retrieval] Information Search and Retrieval – *Search process*.

## General Terms

Design, Experimentation, Human Factors.

## Keywords

Sponsored results, Web searching, Paid search, sponsored links.

## 1. INTRODUCTION

Searching and retrieving information on the Web using Web search engines many times involves at least two categories of search results on the search engine results page (SERP). One set is composed of *organic* links that the search engine determines using its native matching algorithm. The other set is composed of *sponsored* links that appear because a company, organization, or individual purchased the keyword(s) that the searcher used in the search query.

Paid search is the prevalent business model for searching on the Web. Most major Web search engines, such as Google and Yahoo!, have adopted paid search almost universally, and some site-specific searches (c.f., CNN.com) have begun using the paid search model. For example, Google received 99% of its \$3.1 billion revenue from paid search in of 2004; Yahoo! received 84% of its \$3 billion, and AOL received 12% of its \$1 billion [12].

The key to whether paid search is a viable business model comes down to relevance. If users consider the sponsored content relevant to their task, they might consider selecting the sponsored links. If not, searchers will ignore these links. Across the search industry, there are billions of dollars riding on the answer to this question. Certainly for the near future, paid search appears to be the predominant revenue source for Web search engines, although some have questioned sponsored links as a long-term revenue stream [14].

This paper reports the results of a research study investigating the interaction between searcher and sponsored links during Web searching. We investigate searcher factors, attitudes, and behaviors toward both organic and sponsored Web search engine results. We first present a review of applicable literature in the field, which helps to motivate our research questions and hypotheses. We introduce our research design and data analysis. We then discuss our research results and implications. We conclude with directions for future research.

## 2. LITERATURE REVIEW

Some prior research has established a potential disconnect between the perception of sponsored listings by businesses and by users. Users appear to be suspicious of them, maybe seeing them as less relevant, and perhaps are less likely to select them compared to organic links. On the other hand, businesses see them as the future of Web marketing. Businesses spent \$8.5 billion on paid search in 2004, and this amount is expected to grow to \$16 billion by 2009 [9]. However, it is important to remember that sponsored links are primarily transactional. Sponsors are only interested in obtaining qualified customers that are interested in a transaction, either now or sometime in the future.

However, the poor performance of sponsored listings in some survey field studies where one does not know the users' objectives may not be relevant. The objective of the research study reported here was to investigate user interactions with and perceptions of sponsored links using a set of naturalistic, transactional tasks. Because search is a very task-oriented behavior, it is essential to understand how sponsored listings fit into the tasks that searchers typically execute when using Web search engines.

Empirical studies have shown that the "typical" Web searcher has little understanding of how search engines retrieve, rank or prioritize links on the results page [11]. Using results from a user study, Marable [11] reports searchers trust search engines to present only unbiased results on the first page, not realizing that 41% of selections were sponsored search listings. When informed of the nature of the sponsored listings, participants reported

negative emotional reactions. Search engines that were less transparent about paid search results lost credibility with this sample of users. Other studies have focused on searcher biases toward or against sponsored links, which will affect their effectiveness for businesses or organizations in attracting potential customers. Langford [10] conducted an investigation of various online advertising mediums (i.e., Web search engines, Web directories, newsgroups, listservs, bulletin boards, and chatrooms) reporting that online-only-promotions are of little value in attracting new customers.

Hotchkiss, Garrison, and Jensen [6] conducted a survey study with 425 respondents. The researchers report there is confusion concerning sponsored links, with more than 30% of the participants unable to identify properly the sponsored links on a SERP. Participants overwhelmingly choose links offering sources of perceived trusted, unbiased information. Participants also favored organic links relative to sponsored links (more than 77%). Even in an ecommerce like scenario, survey respondents still choose organic over sponsored links. In a follow-on study, Hotchkiss [5] found that novice users have particular trouble determining sponsored links, and the researcher reports that half of participants were suspicious that payments influence even the organic links. In general, the study participants rated the sponsored listings as lower quality. Study results also indicate that many searchers visually ignored or did not see the sponsored listings, partly due to their screen location on the right side of the page.

Greenspan [4] also found that users prefer organic listings relative to sponsored links. The study also raised ethical issues regarding how search engines present sponsored listings. Greenspan [4] reports that users are more likely to select sponsored listings with search engines do not clearly identify them as such. Brooks [2] found that the likelihood of a searcher selecting a sponsored listing is a curvilinear function of its placement on the page (i.e., based on rank). The higher the link's placement in the results listing, the more likely a searcher is to select it. The study found similar results with organic listings. Generally, the difference between the first position and the tenth position is a 20% - 30% drop in click through (i.e., customer that actually visits a Web site by clicking on a link from a SERP) for the listing. In a related study, Brooks [1] reports that the conversion rate (i.e. customers that actually buy something) drops nearly 90% between the first and tenth position. Obviously, there appears to be an intrinsic trust value associated with the rating of a listing.

The Pew Internet and American Life Project [3] reports results of a survey on how users interact with Web search engines. The results reported indicate that searchers trust search engines (or at least the one or two they use), but they do not understand how these search engines rank and present links. Only 38 percent of searchers reported awareness of the distinction between sponsored results and organic links. Less than 17 percent report that they can always tell which results are sponsored and which are organic.

Hotchkiss [5] states that many searchers look for a number of specific items prior to clicking on the uniform resource locator (URL), including the key phrase in the title or description, product information and trusted brand names and vendors. In a study of general Web searching and evaluation of Web results, Tombros, Ruthven, and Jose [17] studied 24 participants, each of whom searched on three information-seeking tasks. The researches report that there were 5 categories (text, structure, quality, non-

textual items, and physical properties) used by the searchers to determine the utility of Web documents. Jansen, Jansen, and Spink [7] studied online job seeking reporting that job location was the number criteria that online job seekers sought in a job posting.

From our review of the prior work presented, it appears that searchers have a bias against the sponsored links. However, this result has mostly been from survey data and not user studies. Therefore, these results may not be valid when searchers actually implement an ecommerce searching task. Searchers make judgments about the particular Web site based on characteristics of the link in the results listing, but researchers have not investigated the relationship between these characteristics and the bias against sponsored results.

This synthesis of prior work helps define and motivate our research questions, which we address in the following section. Given the importance of paid search results as the predominant business model for Web search engines, the results of this research could have substantial impact on the future development of and use of the sponsored links.

### 3. RESEARCH QUESTIONS

We designed a user study to address the following research questions. We refer to a "link" as a listing in the SERP. We refer to a result as the actual Web document referenced by a link.

*Research Question 01: When using a Web search engine, do searchers have a bias against sponsored results?*

*Hypothesis 01a: When using a Web search engine, searchers will examine organic links before examining sponsored links.*

*Hypothesis 01b: When using a Web search engine, searchers will examine organic links and not examine sponsored links.*

*Hypothesis 01c: When using a Web search engine, searchers will evaluate organic links as more relevant than sponsored links.*

It appears that there is a general bias against sponsored links, so we desired to investigate this further to see its effect on actual Web searching behavior. In hypothesis 01a, we want to see if searchers will look at organic links first rather than sponsored. If searchers satisfy their information need with organic links, they will be less likely to view sponsored links. In hypothesis 01b, we want to see what percentage of searchers examines organic links exclusively. In hypothesis 01c, we evaluate if searchers judge organic links as more relevant than sponsored links, solely because of their classification.

*Research Question 02: What factors influence searchers' bias against sponsored links?*

For research question 02, we investigate what specific factors on the SERP sponsored links are the basis for the searchers' view of those links. If there is a bias against sponsored links, as prior work suggests, we desire to know what factors influence this bias.

*Research Question 03: What factors influence searchers' bias for organic links?*

Similarly, we would like to know what factor favorably bias searchers toward organic links. For research question 03, we investigate what specific factors on the SERP organic links are the bases for the searchers perception of those links.

In the following section, we outline the design of our research study.

## 4. RESEARCH STUDY

### 4.1 Data Preparation

In order to investigate our research questions, we first extracted a set of ecommerce queries from an approximately 1 million query Excite transaction log [15, 16] using a modified snowball technique [13]. From these queries, the researchers selected 6 queries representing 3 categories of e-commerce query types: general (i.e., queries representing a desire for information about a class of products), specific (i.e., queries representing a desire for information about a specific product item), and location specific (i.e., queries representing a desire for information about a product in a specific geographical location). See Appendix A for the searching scenarios that we used.

We then submitted these 6 queries to a major U.S. search engine (i.e., Google) using a software application that not only submitted the queries but also retrieved the first SERP for each query exactly as it would be presented to a human user. We submitted the queries and retrieved the results on 2 November 2004. The total time from submission to completion of results retrieval took approximately 30 seconds.

We then removed all identifying logos, text, uniform resource locators (URL), and HTML code from the Google result pages,

replacing them with a fictitious search engine identifier (i.e., *Really Cool Search Engine*). We disabled all hyperlinks to other result pages and the form submit button. We removed the redirects in the organic and sponsored listing, so the URLs pointed directly to the targeted Web site. If there were more than 5 sponsored links on the page, we removed links 6 and greater. This provided us with 6 SERP (one for each of the 6 queries) with 10 organic links and 5 sponsored links. We refer to each SERP in this set as an Original page.

We then used each Original page to create a second page, referred to as the Switched page. For the Switched page, we switched the five sponsored links and the top five organic links. We did this to control for the quality of the content contained within the sponsored listings. We manipulated only the top five organic links because most users do not scroll down past the top results on the page (see for example [6, 8]). Because of the differences in the way Google presents organic and sponsored listings, we edited the descriptions in the switched condition so that the format for each listing type was consistent throughout the study.

This step of the process provided us with six SERPs with what looked like ten organic links (however, the first five were really sponsored links) and what looked like five sponsored results (however, they were really five organic results). Figure 1 shows the transformation from an Original to a Switched page. In total, we had 12 SERPs total, 6 Original and 6 Switched.

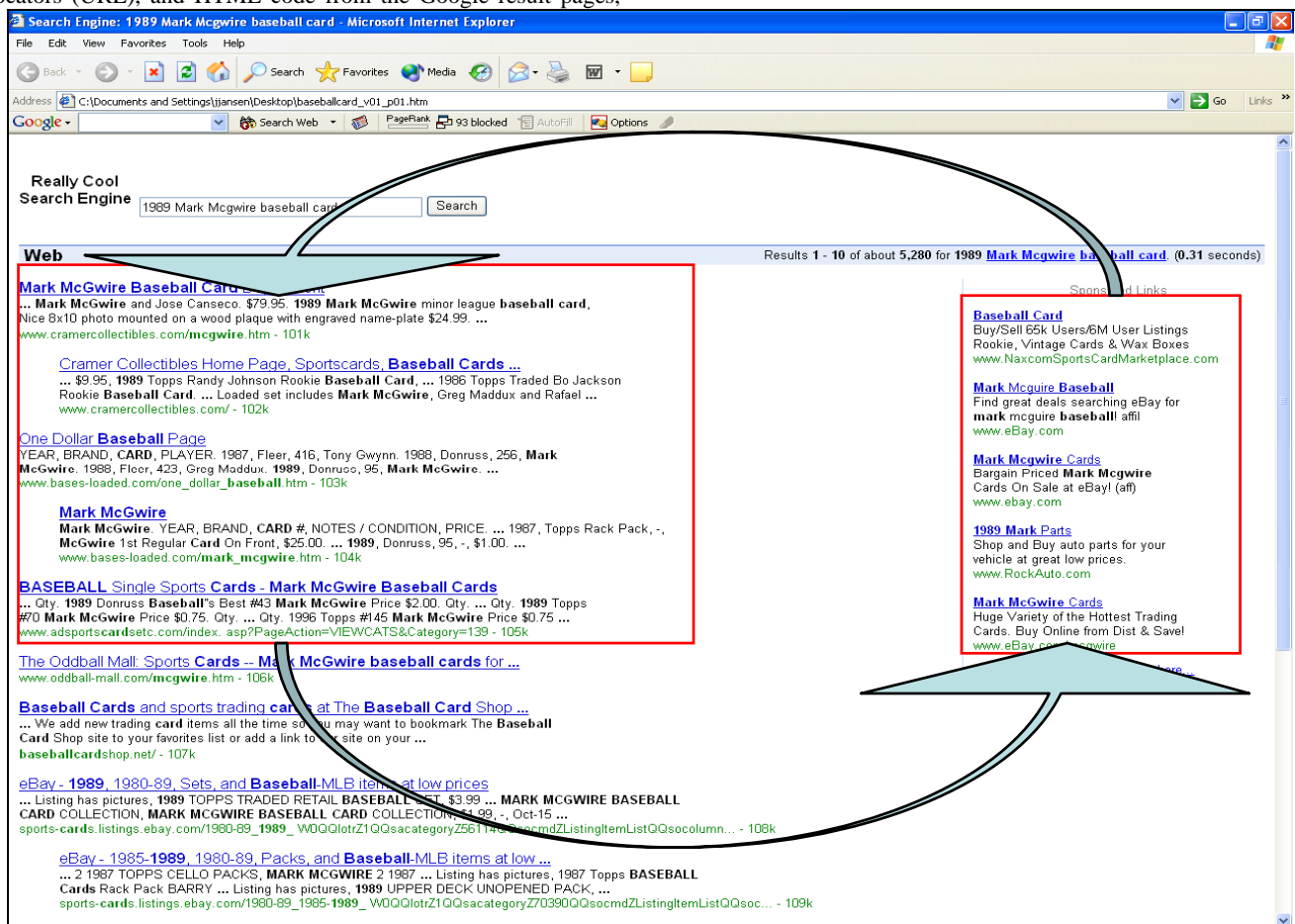


Figure 1. Switched Results Page Created.

## 4.2 Study Procedure

We conducted the study simultaneously at two locations, each a major US university. Both locations followed the same procedure and used the same instruments. We recruited fifty-six participants between both campuses. The age range was restricted to 18-29 to focus the study on the demographic most valued by marketers. We explained the purpose of the study as an investigation into searching methods to each participant and obtained informed consent.

For each participant, a moderator read the participant a short introduction (see Appendix B). For each experimental task, we explained the task to the participant and reminded the participant to think aloud. We used an unrelated practice task to explain the use of the verbal protocol method.

We then read the participant one of the six ecommerce searching scenarios, informed them that they had just entered the query into the search engine, opened the appropriate Web page, and asked them to continue the search. The participants would then continue the search as if they had submitted the query. We instructed the participants to describe the screen content they were viewing, evaluate its relevance to the task, and explain why they moved to the next item. The session for that query would end when the participant took some action that would remove them from the presented results page.

We presented each participant all 6 queries, one at a time. Each participant completed one query before moving to the next. The moderator would read the applicable scenario (see Appendix A) before moving on to the next query. For each participant, three of the result pages were original and three were switched. We counterbalanced the order of original and switched result pages within each participant's sessions and between each participant.

The moderators did not assist the participants during the searching sessions; however, the moderator would answer procedural questions. While the participant was searching, the moderator annotated utterances and user actions using an application that the researchers designed for quantitative and qualitative data capture for Web searching studies, such as this one.

After the participant had completed all 6 query sessions, the moderator returned the participant to the first query, and the participant visited all Web pages for each query that the participant had not visited during the session. The participant evaluated the Web document and presented a basis for the evaluation. The moderator collected these Web document evaluations also with the data collection application.

After all six tasks were accomplished, the participant completed a demographic questionnaire and answered questions about his/her opinions concerning paid listings in general. Approximately one hour was required to complete the sequence for each participant.

We next present our results.

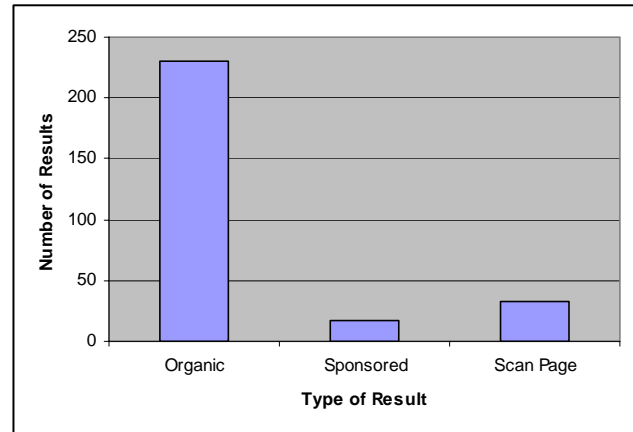
## 5. RESULTS

The objective of the study was to evaluate the differences in participant attitudes of and behavior with organic and sponsored listings. We expected that participants to be biased against sponsored listings and thus would be more likely to view and select the organic listings and rate them as being more relevant. The results were mixed in this regard based on analysis of research question 01.

*Research Question 01: When using a Web search engine, do searchers have a bias against sponsored results?*

*Hypothesis 01a: When using a Web search engine, searchers will examine organic results before examining sponsored results.*

Using a binomial test, participants were more likely to view the organic links first ( $p < 0.01$ ) (see Figure 2). Participants viewed the organic listings first for 82% of the tasks, compared to 6% for the sponsored listings and 12% where both were viewed (i.e., by scanning the entire SERP). So, we accept hypothesis 01a; when using a Web search engine for ecommerce searching, searchers will examine organic results before examining sponsored results.



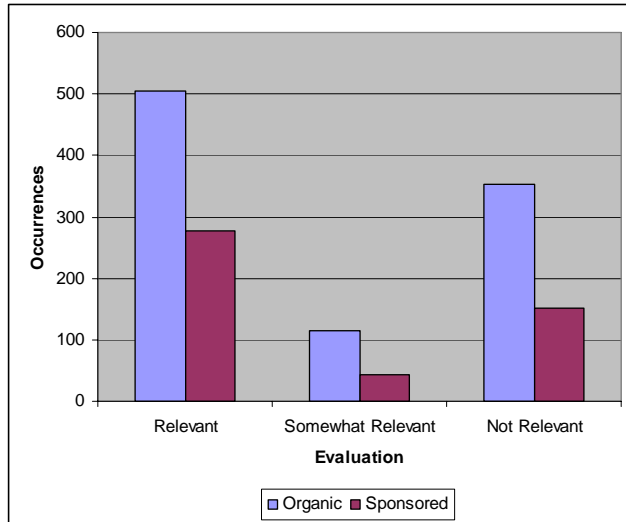
**Figure 2. Number of Web Results Examined by Type.**

*Hypothesis 01b: When using a Web search engine, searchers will examine organic links and not examine sponsored links.*

Using a binomial test, participants were more likely to view both the organic and sponsored links ( $p < 0.001$ ). Only 27% (15) of the participants viewed the only the organic listings while 73% (41) viewed both the organic and sponsored results. No searcher viewed only the sponsored links. So, we reject hypothesis 01b. When using a Web search engine for ecommerce searching, searchers will examine both the organic and sponsored links. We also examined, using a binomial test, whether participants would actually click on a sponsored link or not. The binomial test was not significant. Fifty-five percent (31) of the participants viewed a sponsored Web page and 45% (25) did not.

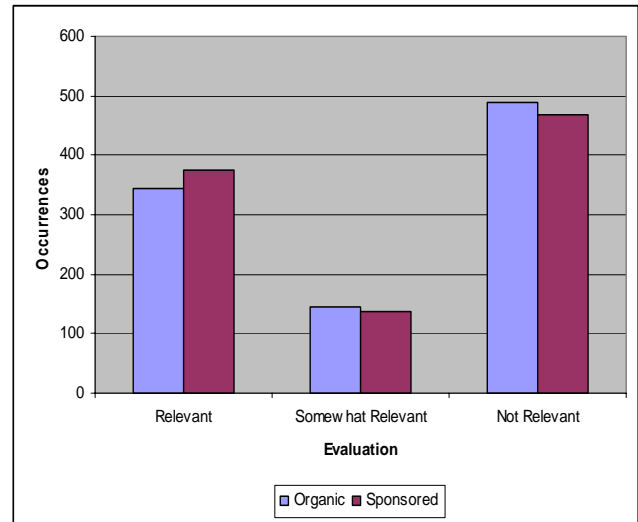
*Hypothesis 01c: When using a Web search engine, searchers will evaluate organic links as more relevant than sponsored links.*

A chi-square goodness of fit test was used to determine if there was a differential bias for or against the sponsored listings (note that this was for the links on the SERP, not the actual Web documents). There was a significant difference in the measured bias between the organic and sponsored links ( $p < 0.001$ ) (see Figure 3). Despite the fact that the content of the actual listing descriptions were controlled for relevance by rotating them between the organic and sponsored listings, participants rated 52% of the organic listings as relevant compared to only 42% of the sponsored listings. Another interesting finding is that few listings were rated neutrally (12% for the organic and 13% for the sponsored listings respectively). Therefore, we accept hypothesis 01c. When using a Web search engine for ecommerce searching, searchers will evaluate organic links as more relevant than sponsored links.



**Figure 3. Relevance Evaluation of Organic and Sponsored Links.**

This bias against sponsored results was not found when participants looked at the content pages that were linked to the listings. A chi-squared goodness of fit test found that there was no difference in relevance ratings of the content pages.



**Figure 4. Relevance Evaluation of Organic and Sponsored Results.**

Figure 4 clearly illustrates this finding. When viewing the content pages, participants knew that the content was accessed via the sponsored link, but the bias apparently inherent with this knowledge was overcome by the actual content.

**Table 1. Reasons for Viewing Sponsored Links**

	Relevant		Somewhat Relevant		Not Relevant	
Summary	<b>102</b>	<b>67.1%</b>	<b>49</b>	<b>54.4%</b>	88	30.3%
Title	21	13.8%	29	32.2%	<b>163</b>	<b>56.2%</b>
URL	21	13.8%	8	8.9%	7	2.4%
Sponsored	6	3.9%	4	4.4%	26	9.0%
Rank	2	1.3%	0	0.0%	0	0.0%
Location on SERP	0	0.0%	0	0.0%	6	2.1%
	152	100.0%	90	100.0%	290	100.0%

**Bolded indicates highest percentage in each category.**

**Table 2. Influence of Bias**

	Positive		Negative		Neutral	
Relevant for Purchasing	<b>5</b>	<b>50.0%</b>	0	0.0%	0	0.0%
Relevant to Query	<b>5</b>	<b>50.0%</b>	0	0.0%	1	33.3%
Advertising	0	0.0%	1	8.3%	0	0.0%
Last Resort	0	0.0%	0	0.0%	<b>2</b>	<b>66.7%</b>
Personalization (lack of)	0	0.0%	1	8.3%	0	0.0%
Not Relevant	0	0.0%	4	33.3%	0	0.0%
Lack of Trust	0	0.0%	<b>6</b>	<b>50.0%</b>	0	0.0%
	10	100.0%	12	100.0%	3	100.0%

**Bolded indicates highest percentage in each category.**

**Table 3: Reasons for Viewing Organic Links**

	Relevant		Somewhat Relevant		Not Relevant	
Summary	<b>328</b>	<b>42.4%</b>	<b>127</b>	<b>55.2%</b>	212	31.6%
Title	<b>320</b>	<b>41.3%</b>	84	36.5%	<b>400</b>	<b>59.6%</b>
URL	65	8.4%	13	5.7%	34	5.1%
Rank	27	3.5%	0	0.0%	1	0.1%
Organic	24	3.1%	3	1.3%	6	0.9%
Location	9	1.2%	3	1.3%	18	2.7%
Ran out of options	1	0.1%	0	0.0%	0	0.0%
	774	100.0%	230	100.0%	671	100.0%

**Bolded indicates highest percentage in each category.**

*Research Question 02: What factors influence searchers' bias against sponsored links?*

For research question 02, we recorded the utterances of the searchers during each search session, annotating each sponsored links the searchers viewed, their evaluation of those links, and the basis for that evaluation. There were 290 utterances pertaining to the evaluation of sponsored results. We content analyzed the responses assigning the utterances into six categories develop post-priori. The researchers content analyzed the responses and met to resolve discrepancies. Table 1 provides the aggregate statistics from the content analysis.

From Table 1, we see that Summary (67%) is the primary basis that searchers use to determine if a sponsored link is relevant. Title (56%) is the primary basis for determining that a sponsored result is not relevant.

To examine research question further, in a post study survey, we received 32 responses to the question "Some search engines return Featured Sites or Sponsored Sites. Do you usually look at these types of results?" The response range was: "yes, sometimes, no", followed by a "Why/why?" open ended question. There were 8 (25.0%) subjects who responded "yes", 4 (12.5%) responded "sometimes" and 20 (62.5%) who responded "no". Twenty-five participants responded with a basis for their evaluation. Of the 7 participants who did not respond, all answered "no" to whether or not they examined sponsored links. Table 2 provides the aggregate results. Some participants responded with multiple reasons for either examining or not examining sponsored links.

The two major reasons for examining sponsored links were related to relevance of the links for purchasing a product or perceived relevance to the query. The major reason for not examining sponsored links was lack of trust.

*Research Question 03: What factors influence searchers' bias fort organic links?*

For research question 03, we repeated the process described for the previous research question for organic links. There were 671 utterances pertaining to the evaluation of organic links. We content analyzed the responses assigning the utterances into 7 categories develop post priori. After content analysis, the researchers met to resolve discrepancies. Table 3 provides the aggregate statistics from the content analysis.

From Table 3, we see that Summary (42%) and Title (41%) are the primary basis that searchers use to determine if an organic link is relevant. Title (60%) is the primary basis for determining that

an organic result is not relevant. This was the same finding as for sponsored links. It appears that the Summary can have a positive impact on judging a link as relevant, but the Title is the decisive factor in searchers determining a link as not relevant.

## 6. DISCUSSION

For sponsored links to yield the financial results that the business community anticipates, it is critical that consumers perceive sponsored links and their descriptions as relevant to their transactional tasks. The results of this study support some previous findings that this may not be the case, but the results also provide guidance for the development of sponsored links presentation and paid search marketing campaigns.

Participants in the study showed a bias against sponsored links in several ways. They reported an explicit suspicion about sponsored in their verbal protocols. They rated the relevance of the sponsored links as lower than the organic links despite the content of the descriptions being controlled across listing type. Certainly, if sponsored links are to be a long-term business model for Web searching, the lack of trust and bias against these paid links must be overcome.

However, when viewing the content pages that are linked to the results listings, there was no difference in relevance ratings. Thus, the mechanism through which sponsored links are selected for a search query is as effective at selecting sponsored Web sites as it is with selecting organic Web sites. This effectiveness needs to be leveraged in order to ensure that sponsored links achieve the marketing lead and attraction that are expected if the paid search market is to continue to expand.

## 7. CONCLUSION AND FUTURE RESEARCH

In this paper, we report the results of an empirical study examining the perceptions of Web searchers with sponsored results. We control for the quality of the results by rotating sponsored and organic results. Our results indicate that Web searchers have a bias for organic results and against sponsored results. Obviously, this hampers paid searching as a long-term business model.

In terms of future research, we also investigated the effect of searching self-efficacy, searching experience, types of ecommerce information needs, and ranking of links on the viewing of sponsored links.



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## APPENDIX A: QUERIES FOR SPONSORED LINKS STUDY

### A. Specific

1. You want to give your son a 1989 Mark McGwire baseball card for his birthday. Find one for sale.
2. You are setting up a home entertainment center and you need a Sony 23" LCD HDTV monitor. Find one for sale.

### B. General

1. You are looking for a tennis racquet to bring on vacation. Since you do not plan to bring it home, you want to find something low-priced. Find a low-priced tennis racquet for sale.
2. You need a disposable camera that can be used outdoors. Find a camera that meets your needs.

### C. Geographic

1. You are looking for a dirt bike to give to your nephew in Pittsburgh. You want to use a local store. Find one for sale in Pittsburgh.
2. You finished your Epil Stop & Spray hair remover and need a replacement right away. Find a 4oz container for sale in Los Angeles.

## APPENDIX B: PARTICIPANT INTRODUCTION AND STUDY PROCESS

**Greeting:** Welcome. Today we are studying the usability of search engines. What we are interested in is how the search engine works. It is not your skill that is important. You will get credit for your participation as long as you complete all of the tasks.

**Practice Task:** The first thing I am going to ask you to do is to practice the "think aloud" method. What I need you to do is to complete a task that I am going to assign you, and tell me everything that you are thinking as you go through. You should tell me:

- What you are looking at
- What you think about it

Let me demonstrate as I get you started. The task you will do is to find a file on Windows Explorer. Therefore, for that I need to open up Windows Explorer and get to the right folder. “I am looking at the toolbar in the lower right to find the Windows Explorer icon. I recognize the icon that looks like a yellow folder, so I am going to click on it. The Windows Explorer application opens just as I expect it to. I need to open the C: drive folder, which I remember is in either the ‘my computer’ folder or the ‘my documents’ folder. I will try “my documents” first because that is on top. So I click on the plus sign in front of “my documents” to see. It isn’t there, so I close that and try ‘my computer’. There it is. So I click on the c: drive label to open that.

Now I will assign you a task to practice using this “think aloud” method. In the C: drive folder, find a file called “think aloud.doc”. As you go through it, think aloud just as I did in the example. Tell me what you are looking at and what kinds of decisions you are making as you go.

<<As the participant does the practice trial, probe them to verbalize more of what they are thinking. Ask question like: What are you looking at? Why did you click on that? What do you think of the results?

When they find the file, congratulate them and give them feedback on whether they verbalized enough. In general, ask them to verbalize as much as they can, even when it seems minimal or redundant.>>

### First search query

1. <<Move to the appropriate access sheet for data collection. Fill out the information for the **query type**>>

2. Your first task is to <<read task one>>.

Don’t forget to **think aloud** as you go through it.

3. <<Open the html file for the first task>> We selected the initial keywords and here is the results page that came up. What would you do to complete the task? Do not forget to “**think aloud**.”

<<Record their verbalizations in the **utterances** textbox>>

<<based on where they start looking, select from the **viewed first** menu>>

<<if they say anything about sponsored or organic results, record the bias in the **bias rating** menus>>

4. <<if they are not verbalizing completely, **use probes** to encourage them>>

5. <<As they look at each result, record their **evaluation** and the **basis of evaluation** for each one>>

<<If they click on a result, check the **view results** checkbox and select a **relevance rating** based on what they say, and put a few keywords in the **basis for evaluation** based on what they say.>>

6. <<if they are not verbalizing completely, **use probes** to encourage them>>

7. <<When they are done, record the result in the **Next Action** menu. Being ‘done’ is defined as when they have enough information to stop, or when they do something else such as reformulate the query. Also, record whether they **scrolled down** the page. >>

8. That was the first task. Each of the remaining tasks will be exactly like that, but with a new task to search for. Are you ready for the next one?

### Repeat 1-8 for all six queries.

9. Now we are going to go through all of the results from each of the queries and rate them based on how relevant they are to the query. For each one, is it: Relevant, Somewhat relevant, Not relevant, and Unsure.

10. After you rate one, tell me why you think so.

11. <<after they have gone through all 15 results>>. Now we are going to rate the content pages for each result. For each page, is it: Relevant, Somewhat relevant, Not relevant, and Unsure.

12. after you rate each one, tell me why you think so.

### Repeat 9-12 for all six queries.

### Post-test questionnaire

13. <<Hand the participant the post-test questionnaire>>

Please fill this out and return it when you are done

14. Thank you for participating in the study. Based on the results, we hope to improve the design of search engine user interface so that in the future you can find what you are looking for easier, faster, and more reliably.