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The Research on the Advertisement Managerial Mechanisms of Search Ads Platform: Comparison between Business Search and Community Search Ads

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Abstract: The pervasiveness innovation of search advertisement calls for more researches on the managerial strategies of search advertisements. These platforms which emphasize pay for clicks, has to balance the different needs of ads quantity and ads quality to attract more clicks. Based on two-sided market theory and social judgment theory, our research collected data from two kinds of search ads (business search and community search ads) in the same platform, the analysis results showed us that, the advertisement quality improvement for users are much more prominent than the advertisement quantity. Furthermore, the ads quantity increment will moderate the effect of ads quality with inverse U relationship if the search ads is less nuisance, and the ads quantity increment will hinder the effect of ads quality if the search ads is high nuisance.

Keywords: search advertisement platform; nuisance; ads quantity; ads quality; assimilation; Contrast

1. INTRODUCTION

Search advertising is an essential innovation in internet economy. Google and Yahoo! are undoubtedly the pioneer of this new type of ads, which had successfully led the internet economy to burst the bubble crisis after 2000. Nowadays, search advertisement is still explored or adopted by many internet companies. It is not surprised to find the fact that not only big transactional internet companies (such as Taobao, Alibaba, and Tencent Paipai) eagerly developed the search advertising business, but many small dotcoms (like a grivada online community called Seedit and an information-based website called Emkt) also chose to display several sponsored searching in their websites.

Traditional media are valued by impression pushing, while search advertising is characteristic of paying for performance (Ghose and Yang, 2009)^[1]. It's obviously that total clicks could comprehensively reflect the value of this new media platform. Therefore, the search advertising platform should pay more attention to managerial means which can facilitate netusers to click searching ads. But previous researches mainly focused on how should the traditional advertising media set the ads number and their price (Liu, Putler and Weinberg, 2004; Anderson and Coate, 2005; Gabszewicz and Wauthy, 2004)^{[2][3][4]}, while few studies explored ads managerial strategy for the search advertising platform. Therefore, this article tries to discuss the managerial problem of search advertising platform and hope to bring forward some profitable strategic suggestions.

In order to maximum the total clicks of displayed searching ads, search advertising platform need to balance the ads quality (to what extent the ads could satisfy netusers' search willing) and ads quantity (the ads number search engine platform provided). Despite the fact that separately increasing quality or quantity of search ads both can bring more users' click, more ads need to eliminate limits of the matching algorithm, which would lead to lower the ads quality, while raising the ads quality would certainly cut down their displayed number. Beyond that, sponsored search ads are along with regular search results. Redundant searching ads will somewhat be a nuisance to interfere with the netusers (Ghose and Yang, 2009)^[1], and this interference will affect the users' attitude

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towards searching ads, thus moderate the effect of ads quality towards total clicks. So, this study wants to explore the following questions: whether there are different effects of ads quality and quantity on total clicks when the search ads is low nuisance or high nuisance? How to reach the balanced state of the influence by ads quality and quantity under certain condition?

Based on two-sided market theory and social judgment theory, our research collected data from two kinds of search ads (Business search ads and community search ads) in a same website. Established a nonlinear regression model, we analyze the effect of ads quality and ads quantity on the total clicks, and we hope to provide some managerial advices for different search advertising platform. The results showed us that, the advertisement quality improvement for users are much more prominent than the advertisement quantity. Furthermore, the ads quantity increment will moderate the effect of ads quality with inverse U relationship if the search ads is low nuisance, and the ads quantity increment will hinder the effect of ads quality if the search ads is high nuisance. We organize the rest of the article as follows: we introduce the theoretical framework and hypothesis firstly, thereafter explore the methodology and analysis the results; finally we make a conclusion for the theoretical and practical meaning of this study and discuss the area for future research.

2. THEORETICAL BACKGROUND

2.1 The difference between search advertising and other advertising

Search ads, also called sponsored ads, attract users to click them by placing themselves along with regular search results. As a result of the limited ads positions about certain key words, many advertisers bid for these positions. The ads match with users' information needs (Hosanagar and Cherapanov, 2008)^[5], which make it one advantage for search ads to be able to precisely target users who are potential buyers. Thanks to this advantage, advertisers spend most of their advertising budget on search advertising and bid a high price to get the top position (Agarwal et al, 2008)^[6].

This advantage distinguishes search ads from traditional ads, as search ads is highly matched with users query, while traditional ads not (Ghose, and Yang, 2009)^[1]. Traditional ads adopt a pay-per-exposure (also known as pay-per-impression) pricing model (Dellarocas, 2009)^[7] and "push" the advertisement to the audience, while search advertising adopt a pay-per-click pricing model (Dellarocas, 2009)^[7] and "pull" the audience to pay attention to the advertisement. According to social judgment theory, human's attitude to certain objects is affected by related objects or contracted objects (Eagly and Chaiken, 1993; Sherif and Hovland, 1961; Yi, 1993)^{[17][18][19]}. Therefore, despite of the fact that search ads can highly match with user's demand, to some degree, they are somewhat nuisance to users when they are searching for information, which minors advertising effect. For Business searching, the closer the regular search information result is to search ads information, the less likely it is for users to notice the difference between ads information and search information, and thus, ads in business searching are considered as a low nuisance. However, for community searching like blog that provide non-commercial information, users suffer more distraction when commercial ads information are placed in regular search result and the ads are considered as a high nuisance. In terms of different types of ads, search advertising platform's effort to improving marching quality would pay off in different degree.

2.2 Two-sided customer of search advertising platform

Two-sided markets refer to the markets in which one or several platforms enable interactions between the two-sided end-users, and try to get the two sides "on board" by effectively marketing and management strategies^[24]. Thus, the three main components in two-sided markets can be easily concluded as one platform and two user bases (sides). In a two-sided market, the financial success of advertising search platform critically depends on its ability to actively attract the two kinds of participants: advertisers and users, and to meet their separate needs. On the one hand, the platform helps advertisers attract their target search users. On the other hand, it is a kind of

product designed for users to search information. However, sometimes their needs are even conflicting. For example, the advertisers want the platform to display their ads as much as possible to attract more visiting trace, while the search users want the platform provide precisely matched search results, allowing few ads.

Previous researches on search advertising address issues mainly about advertisers' and the platform's ads management. From the perspective of advertiser, researches mainly focus on how to attract user's attention to click search ads, such as the effectiveness of the ads position (Ghose and Yang, 2009; Agarwal et al, 2008; Jerath et al, 2010)^{[1][6][8]}, the optimal bidding strategy for advertiser (Katona and Sarvary, 2010; Varian, 2007)^{[9][10]}, behavioral characteristics of search users (Moe and Fader, 2004; Häubl and Trifts, 2000; Diehl et al, 2003)^{[11][12][13]}. From the perspective of advertising platform, previous research mainly focus on how to make campaign rules for advertiser, such as the rules and balance of key word bidding (Feng, Bhargava and Pennock, 2007; Liu, Chen and Whinston, 2010),^{[14][15]} regardless of the conflicting ads needs between its two-sided customer. In other words, previous research based on advertising platform only focus on its rule making function, neglecting the ad control function: selecting advertising to display in users' search results. This function must tradeoff the demand between its two-sided customers. Search advertising platform is the intermediary connecting the advertiser and search user. On the one hand, the platform must provide ad positions for advertiser, and thus, the advertising quantity affects the opportunities for advertiser to display their ads. On the other hand, the platform must highly match the ad with the needs of search users, i.e. high matching quality. The displaying quantities and the matching qualities have different effects, which are judged by user's click.

3. RESEARCH HYPOTHESIS

3.1 The effect of ads displaying quantity and matching quality

Searching advertising platform can improve its value by two means: by focusing on the demands of advertiser – increasing the ads quantity, which means more opportunities to display the paid ads and increasing the clicks volume, and by focusing on the demands of user – increasing the ads quality by improve algorithm and matching rules, which make the displayed ads could highly match users' demand, thus increasing the clicks volume. However, the effect of ads quantity differs from that of ads quality. According to two-sided markets theory, the performance of two-sided markets critically depends on how much the service or products are accepted by the one side of customers who have higher membership externalities (Rochet and Tirole, 2006)^[16]. For any types of search ads, the effect that users have on advertisers is much larger than that advertisers have on users. Therefore, searching advertising platforms' effort to increase ads quality could effectively increasing the total clicks of ads. Formally, we posit the following:

H1: for both (a) search ads in low nuisance and (b) in high nuisance, the number of users' total clicks on ads increases with ads quality.

According to social judgment theory and contrast effect framework, human's attitude to certain objects is affected by related objects or contracted objects (Eagly and Chaiken, 1993; Sherif and Hovland, 1961; Yi, 1993)^{[17][18][19]}. Therefore, when search ads are along with regular search results, users attention on search ads would be distracted, which further affect users' preference to ads. When search advertising platform increases the displaying quantity of ads in each search result page, users could scan more information and thus more likely to click these ads, which leads to the increase of total clicks. However, this effect depends on the nuisance degree of these ads. For ads with low nuisance, as a result of the similar attributions between regular search results and search ads, the increase of ads displaying quantity is not prone to lead to users' antipathy. However, it is easy for ads with high nuisance to result in users' antipathy when the displaying quantity increases, because of contrast effect. Therefore, for ads with low nuisance, total clicks increase with ads quantity and for ads with high nuisance, total clicks decrease as the increase of displaying quantity. Formally,

H2: (a) for ads with low nuisance, its total clicks increase as the ads quantity increase. (b) For ads with high nuisance, its total clicks decrease as the displaying quantity increase.

3.2 The moderating effects of ads displaying quantity

Human's attitudes to certain object would be amplified or waken when given some stimulation (Ganesan et al, 2010)^[20]. When the ads quantity increases, users' attention on their target information would be decreased or impeded, thus, users' antipathy to these ads would increase in most cases (Anderson and Coate, 2005)^[3]. Users' this attitude would further influences the effectiveness ads quality has on attracting users. When search ads are with low nuisance, to some degree, users accept the ads. If the ads quantity is within the reception threshold, the ads stimulation could be absorbed by certain positive or neutral standards. However, if the ads quantity is out of the reception threshold, users' resentment augments. As a result, users consider the regular search results are not what they wants but ads platform uses to seek commercial profit. Therefore, for search ads with low nuisance, the ads are similar to the regular search results and users accept certain quantities of ads. This absorption effect allows search ads with highly matching quality to gain more attention and clicks. However, when too many ads are displayed, search users resent that the platform is too much commercial regardless of users' needs. This offset effects result in the decrease of attention and clicks on search ads. In terms of search ads with high nuisance, there is a big difference between the ads themselves and the regular search results. The increase of ads displaying quantity brings in users' antipathy on ads. We posit the following:

H3: the ads quantity increment will moderate the effect of ads quality with inverse U relationship if the search ads are low nuisance. In other words, before the ads quantity increase to certain degree, ads quantity increments increase the matching quality's effect on total clicks, but if the ads quantity is over certain degree, the increasing ads quantity would weaken ads quality's effect on total clicks.

H4: the ads quantity increment will hinder the effect of ads quality if the search ads are high nuisance.

4. RESEARCH METHOD

Sample selection and data collecting. Considering that search users' behaviors are affected by brand of search engine, we select two types of search (Business search and community search) in the same online shopping platform as the analytical sample. Business search ads are applied in the Business search page where ads information are similar to regular search results, therefore, Business search is a low nuisance. While, community search ads are applied in community information search page where there is a sharp contrast between ads information and regular search results. To test the effect of ads quality and quantity, this platform adapted its algorithm to improve ads matching quality and adapted the displaying quantity of ads. During the test, the same quantity of ads was displayed in all pages. The test lasted for 194 days and further analysis would be based on data in market level.

Analytical method. based on data collected within 194 days, we construct control variables and estimated regression Equations 1-3 in time series. Ads quality is measured according to the platforms measurement where items including relevancy between product and key words, page views of the advertiser's shop, reputation of the advertiser's shop and so on. Ads quantity is measure by the number of ads that were actually displayed within a day.

The 3 equations are listed as follows:

Equation 1 is to test control variables:

$$Click_{i,t} = C + \beta_5 Click_{i,t-1} + \beta_{61} D1_t + \beta_{62} D2_t + \beta_{63} D3_t + \beta_{64} D4_t + \beta_{65} D6_t + \beta_{66} D7_t + \beta_7 Holiday_t \quad (1)$$

Equation 2 is to test the main effect (H1 (a/b), H2 (a/b)):

$$Click_{i,t} = C + \beta_1 Quality_{i,t} + \beta_2 Quantity_{i,t} + \beta_5 Click_{i,t-1} + \beta_{61} D1_t + \beta_{62} D2_t + \beta_{63} D3_t + \beta_{64} D4_t + \beta_{65} D6_t + \beta_{66} D7_t + \beta_7 Holiday_t \quad (2)$$

Equation 3 is to test the moderating effect (H3, H4)

$$Click_{i,t} = C + \beta_{1i}Quality_{i,t} + \beta_{2i}Quantity_{i,t} + \beta_{3i}Quality_{i,t} \times Quantity_{i,t} + \beta_{4i}Quality_{i,t} \times (Quantity_{i,t})^2 + \beta_{5i}Click_{i,t-1} + \beta_{61i}D1_t + \beta_{62i}D2_t + \beta_{63i}D3_t + \beta_{64i}D4_t + \beta_{65i}D6_t + \beta_{66i}D7_t + \beta_{7i}Holiday_t \quad (3)$$

Which referred to Morhart, Herzog, and Tomczak(2009)'s nonlinear moderated regression equation in their research [21].

Among these equations, $i=1, 2$. The value of 1 indicated a low nuisance in search ads and 2 indicated a high nuisance.

$Click_{i,t}$ indicated the number of total clicks within day t , excluding the number of invalid clicks and malicious clicks.

$Quality_{i,t}$ indicated the ads quality on day t and is measure by the mean quality of ads displayed on day t .

$Quantity_{i,t}$ indicate the quantity of ads that were displayed on day t .

$D1_t \sim D7_t$ are dummy variables based on days of the week, take Monday for example, the value of $D1$ is 1, the value of $D2 \sim D7$ are 0.

$Holiday_t$ is dummy variables based on whether day t is a public holiday. If it was a holiday, the value of it is 1 and if not, it is 0.

$t=1, 2, \dots, 194$, represent the days.

The original data was not stable. Therefore, First-Difference Transformation was applied to adapt the data. According to Aiken and West (1991) [22], we must avoid the collinearity equation by decentration method.

5. RESULTS

Time series data was analyzed in Eviews 5. The analyzing result is as table 1 and table 2 present. No matter search ads with low nuisance or high nuisance, ads quality significantly improves total clicks number (for ads with low nuisance, $\beta_{11}=565763.6, p < .05$; for ads with high nuisance, $\beta_{12}=476893, p < .005$). Therefore, both H1a and H1b are supported. In terms of search ads with low nuisance, ads quantity increment could enhance the total clicks ($\beta_{21}=261435.1, p < .001$), i.e. H2a is supported. However, in terms of search ads with high nuisance, ads quantity increment would not significantly decrease the total clicks ($\beta_{22}=-75.95, p > .05$), i.e. H2b is not supported.

The moderating effect was also tested. For search ads with low nuisance, the coefficient of linear moderating is not significant ($\beta_{31}=207428.7, p > .05$), but the coefficient of non-linear moderating is significant ($\beta_{41}=-1.49E+08, p < .05$), which indicates that ads quantity increment will moderate the effect of ads quality with inverse U relationship. Therefore, H3 is supported. For search ads with high nuisance, the coefficient of linear moderating is significant ($\beta_{32}=-6485301.0, p < .05$), but the coefficient of non-linear moderating is not significant ($\beta_{42}=1.88E+08, p > .05$), which indicates that the ads quantity increment will hinder the effect of ads quality if the search ads is high nuisance. Therefore, H4 is supported.

Table 1. Descriptive statistical analysis results

variables	Mean	S.D.	Ads quantity	Ads quality	Ads clicks
Search ads with low nuisance					
Ads quantity 1	.5052	.08711	1		
Ads quality 1	.0697	.00739	-.384***	1	
Ads clicks 1	147929.3144	41293.40386	.705***	.108	1
Search ads with high nuisance					
Ads quantity 2	.9680	.01090	1		
Ads quality 2	.0029	.00090	.017	1	
Ads clicks 2	1225.4691	605.38914	-.104	.895	1

Table 2. Regression results

	Search ads with low nuisance (Business search) i=1			Hypothesis	Search ads with high nuisance (community search) i=2			hypothesis
	Equation 1	Equation 2	Equation 3		Equation 1	Equation 2	Equation 3	
<i>C</i>	-43376***	-34462.5***	-37211.5***		-375.8***	-264.4***	-272.1***	
Quality _{it} : β _{1i}		565763.6*	656563.1**	√ H1a		476893***	456886***	√ H1b
Quantity _{it} : β _{2i}		261435.1***	165739.7**	√ H2a		759.5	1240.0	H2b
Quality _{it} ×Quantity _{it} : β _{3i}			207428.7				-6505208*	√ H4
Quality _{it} ×(Quantity _{it}) ² :β _{4i}			-1.49E+08*	√ H3			1.92E+08	
Click _{it-1} : β _{5i}	-0.0243	-0.0727	-0.0926		-0.0493	0.0466	0.0507	
Holiday _{it} : β _{7i}	-5059.1	-6417.8	-7135.6		75.9	-13.1	-16.9	
<i>D1_t</i>	49237.5***	42464.6***	46645.3***		405.8***	305.5***	309.3***	
<i>D2_t</i>	40678.9***	31354.4***	34718.5***		326.5***	234.4***	240.8***	
<i>D3_t</i>	44579.1***	33809.4***	35845.4***		350.6***	247.7***	253.0***	
<i>D4_t</i>	37814.9***	29392.3***	32302.0***		319.6***	228.3***	239.7***	
<i>D6_t</i>	25503.3***	17077.6***	18798.2***		287.8***	121.0***	135.0***	
<i>D7_t</i>	109238***	90224.3***	94777.0***		863.9***	720.9***	718.1***	
<i>R</i> ² (%)	86.21	89.43	89.75		47.49	87.81	88.32	

***: p<.005, **:p<.01, *: p<.05

√ represents the hypothesis is supported

The moderating role of ads quantity on ads quality could not be ignored. Table 2 proofs that the impact of ads quality on total clicks is far stronger than that of ads quantity. In terms of business search, the impact of ads quality is twice stronger than that of ads quantity ($\beta_{11}=565763.6^*>\beta_{21}=261435.1^{***}$). In terms of community search which is of high nuisance, the increase of total clicks could only rely on the ads quality. ($\beta_{12}=476893^{***}>\beta_{22}=759.5$). Therefore, with the increase of ads quantity, the impact of ads quality on total clicks decrease, which is true even in business search. This effect of ads quantity on ads quality might be larger than its main effect on total clicks. Figure 1 and figure 2 demonstrate the moderating role of ads quality.

Moderating effect

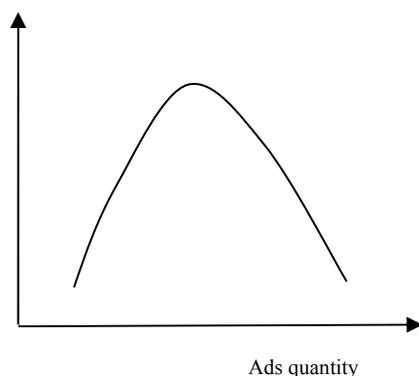


Figure 1. The moderating effect of ads quantity in business search

Moderating effect

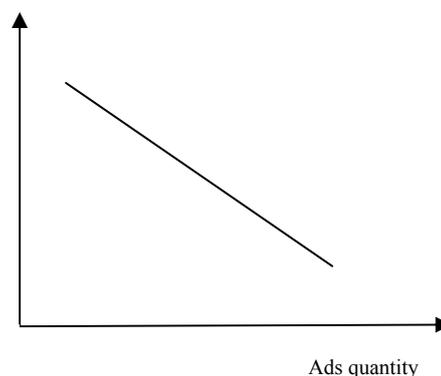


Figure 2. The moderating effect of ads quantity in community search

There is no contradiction between the main effect and moderating effect of ads quantity. As a result of the significant interactive effect, analysis of main effect could only account for equalized effect. According to

Finney et al (1984) and Morhart et al (2009) ^{[21][23]}, main effect means the equalized effect that certain independent variable has on dependent variable. Therefore, for search ads with low nuisance, even though H2a posit that ads quantity could increase total clicks of ads, the moderating effect ads quantity shows a stronger explanation than its main effect in H2a. This is the same to search ads with high nuisance.

6. CONCLUSION

Based on data of two types of search ads, we tested our research hypotheses. It is found that, search ads with either low or high nuisance, their quality has a stronger effect on total clicks than quantity. If the search ads are similar to regular search results, for example, business search, they are a low nuisance to users. In this case, although the increment of ads quantity might reinforce the impact of ads quality on total clicks, if the ads quantity is more than the accepted threshold, they would weaken the effectiveness of ads quality. In other words, the ads quantity increment will moderate the effect of ads quality with inverse U relationship. If the search ads are completely different from the regular search results, for example community search, the ads are a high nuisance for users. The increment of ads quality would only hide the effectiveness of ads quality. As the increasing importance of internet economy, the conclusions of this paper prove its values in both theoretical and practical contribution.

Theoretically, this paper contributes to ads management literature in search ads platform by extending the customer analysis from single market to two-sided market. Previous researches mainly focus on the bidding rules relating to the platform and advertiser, neglecting the users who are cortical subject to click the ads. This paper also contributes to the ads management literature by discovering the nuisance of ads. It is found that, users' attitude to ads is affected by the nuisance and that ads quantity is more effective in ads with low nuisance than high nuisance. Last but not least, we also discover the moderating effect of ads quantity on the effectiveness of ads quality. Increasing the ads quality used to be considered as an effective way to improve total clicks, but the moderating role of ads quantity is neglected. What's more, the moderating role varies from ads with low nuisance to those with high nuisance.

What can managers do to improve users' total clicks on search ads? This paper suggest: (1) Improving ads quality is the most effective means to improve total ads performance. Platforms should improve matching algorithm based on customized strategy, particularly for search ads with high nuisance which could attract users' attention merely by displaying what users want to see. (2) Ads quantity also makes effect, which should not be ignored. For search ads with low nuisance, for example, Business search ads, neither too many nor too few ads could make a good performance, but enough is enough. For search ads with high nuisance, less is better, for fear of naturalized ads quality's positive effect. This has been applied in Google and Alibaba. 0~2 ads are displayed in Google, which is far less than that of Alibaba, where 6 ads are displayed. (3) Our conclusion also proved reference value for other internet business, such as social network service, online news report and BBS that also need to balance between ads quality and quantity. Separate ads quantity should be set for different types of search ads so that more attention and clicks are gained.

Although our study examines an important and novel topic in search advertising platform, it also suffers from limitations. First, to control the effect of brand and user character, we only choose one online shopping platform. Further research should make a comparison among platforms with different brand awareness. Second, the online shopping platform we chose takes up most of the market shares in China, so that external competitive environment is controlled. Future research could explore whether market with different competitive structure could affect the ads control strategy of platform. Third, future research could account the network structure among its customers, for example network structure of users and advertisers. Forth, the specific reception threshold of different types of search ads could be studied so that concrete recommendations about ads quantity are made platforms.

REFERENCE

- [1] Ghose, A., & Yang, S. (2009). An empirical analysis of search engine advertising: Sponsored search in electronic markets. *Management Science*, 55(10): 1605-1622
- [2] Liu, Y., Putler, D. S., & Weinberg, C. B. (2004). Is having more channels really better? A model of competition among commercial television broadcasters. *Marketing Science*, 23(1):120-133.
- [3] Anderson, S. P., & Coate, S. (2005). Market provision of broadcasting: A welfare analysis. *The review of Economic studies*, 72(4): 947-972.
- [4] Gabszewicz, J. J., & Wauthy, X. Y. (2004). *Two-sided markets and price competition with multi-homing*. CORE.
- [5] Hosanagar, K., & Cherepanov, V. (2008, July). Optimal bidding in stochastic budget constrained slot auctions. In *Proceedings of the 9th ACM conference on Electronic commerce* (pp. 20-20). ACM.
- [6] Agarwal, A., Hosanagar, K., & Smith, M. D. (2011). Location, location, location: An analysis of profitability of position in online advertising markets. *Journal of Marketing Research*, 48(6):1057-1073.
- [7] Dellarocas, C. N. (2009). The Impact of Performance-based Advertising on the Prices of Advertised Goods. *Boston U. School of Management Research Paper*, (2009-12).
- [8] Jerath, K. et al (2011). A “position paradox” in sponsored search auctions. *Marketing Science*, 30(4): 612-627.
- [9] Katona, Z., & Sarvary, M. (2010). The race for sponsored links: Bidding patterns for search advertising. *Marketing Science*, 29(2): 199-215.
- [10] Varian, H. R. (2007). Position auctions. *international Journal of industrial Organization*, 25(6): 1163-1178
- [11] Moe, W. W., & Fader, P. S. (2004). Capturing evolving visit behavior in clickstream data. *Journal of Interactive Marketing*, 18(1): 5-19.
- [12] Häubl, G., & Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing science*, 19(1): 4-21.
- [13] Diehl, K., Kornish, L. J., & Lynch Jr, J. G. (2003). Smart agents: When lower search costs for quality information increase price sensitivity. *Journal of Consumer Research*, 30(1): 56-71.
- [14] Feng, J., Bhargava, H. K., & Pennock, D. M. (2007). Implementing sponsored search in web search engines: Computational evaluation of alternative mechanisms. *INFORMS Journal on Computing*, 19(1): 137-148.
- [15] Liu, D., Chen, J., & Whinston, A. B. (2010). Ex ante information and the design of keyword auctions. *Information Systems Research*, 21(1): 133-153.
- [16] Rochet, J. C., & Tirole, J. (2006). Two - sided markets: A progress report. *The RAND Journal of Economics*, 37(3): 645-667.
- [17] Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers
- [18] Sherif, M., & Hovland, C. I. (1961). Social judgment: Assimilation and contrast effects in communication and attitude change.
- [19] Yi, Y. (1993). Contextual priming effects in print advertisements: The moderating role of prior knowledge. *Journal of Advertising*, 22(1): 1-10.
- [20] Ganesan, S., Brown, S. P., Mariadoss, B. J., & Ho, H. (2010). Buffering and amplifying effects of relationship commitment in business-to-business relationships. *Journal of marketing research*, 47(2): 361-373.
- [21] Morhart, F. M., Herzog, W., & Tomczak, T. (2009). Brand-specific leadership: turning employees into brand champions. *Journal of Marketing*, 73(5): 122-142.
- [22] Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.
- [23] Finney, J. W., Mitchell, R. E., Cronkite, R. C., & Moos, R. H. (1984). Methodological issues in estimating main and interactive effects: Examples from coping/social support and stress field. *Journal of Health and Social behavior*, 25 (1): 85-98.
- [24] Rochet, J. C. and J. Tirole (2006). Two - sided Markets: A Progress Report. *The RAND Journal of Economics*, 37(3), 645-667.