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Internet Click-Through and Product Information Searching Behavior

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Abstract

The study aims to explore the factors that may trigger one to click through internet advertisements when one is searching for production information on the web. We begin our exploration with Nelson's ([5]) renowned theory where it asserts that goods with "search" qualities produce more search efforts than goods with "experience" qualities would do. The study shows that this assertion may not be true in the internet due to some specific features of the net.

1. Introduction

Internet advertising in recent years has become an important alternative to traditional advertising media, such as newspapers, magazines, television and so on. As the number of visitors in the internet increases, internet advertising also becomes the major metaphor to reach certain consumers who used to acquire information from magazines and newspaper but switch to internet nowadays. Nevertheless, the lack of effective measure for the performance of internet advertising dims advertisers' confidence for the new advertising medium. To this end, academics ([3]; [7]) have tried to align this new advertising medium along with its traditional rivals. It is enticing of doing the alignment with the traditional media, because if one could position this new media on the landscape composed of those traditional advertising media properly, one could conveniently apply traditional measurements directly or with minor adjustments onto this new medium.

Instead of attacking the measurement problem straightforwardly with the alignment approach above, rather, the present study seeks to explore the determinants affecting consumer's product information search behavior on the webs. Particularly, we would like to examine a specific feature – the click-through – which is a function that is only available in the internet advertising to conduct our observation of consumer's information search behavior. While traditional advertising media are difficult to trace viewers' encountering with the advertisements, the internet's click-through function provides an excellent tracing mechanism that can record web visitors' moves among web pages. This particular mechanism is achieved by monitoring and recording the so called IP (Internet

Protocol) address inherited by each web page. With this mechanism advertisers are able to investigate the advertising banners or icons on certain web pages whether or not they are perceived by web visitors. In other words, the click-through could be more precise tool in discovering whether or not a web visitor does aware of the presence of the advertisements on web pages. For the smart mechanism we are enticed to revisited Nelson's renowned theories about product information search behavior ([5]) as follows.

Nelson([5]) uses dress and canned tuna fish as examples to demonstrate that product quality information may be distinguishable as "search" quality and "experience" quality. A typical consumer who is looking for a dress may seek to try the dress with some fitting efforts whereas one is for a canned tuna fish may just buy the canned tuna fish and experience it at home. The key is whether or not the procurement is led with a prior search effort. The search effort typically comes with searching costs. Hence, Nelson's theory suggests that customers may reduce the sampling size for different brands when searching cost increases. Applying the theory to the internet advertising case, one may expect more click-through for the search goods than for the experience goods. In other words, when consumers are shopping on the web, they may choose to click on advertising banners or icons more often for search goods, e.g., dress, than for experience goods, e.g., canned tuna fish.

2. Research design

To test our hypothesis, we design a laboratory experiment to collect the necessary data for the testing. According to the Theory, experience goods are those products that their utilities to consumers cannot be justified before uses whereas searching goods can be compared solely according to product specifications. In the experiment, we firstly ask 60 experiment participants (call them subjects hereafter) to present they attitudes toward search and experience with respect to twenty-four products that are on the list of the most popular products on the web. The list is published by a government sponsored information provider.

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We pick six products for our next stage experiment. Of the six products, two (computer magazine, Taipei-Kaohsiung fly ticket) are in the search goods domain where they show high scores on the search attitude, two (color in-jet printer, mobile phone) are in the middle where they toward neither the search nor the experience ends, and the other two (notebook computer, computer games) in the experience goods domain with high average experience attitude.

In the second stage, we ask another 33 subjects to participate the shopping experiment. The new subjects are asked pretending that they are perspective consumers for the chosen six products and need to collect product information on the web. Subjects browse through the internet to search for the product information. All of the web pages that subjects have been through are recorded as the log files in dedicated computers. In particular, the IP addresses with respect to each web page that subject visited are recorded. The log files are our raw data for

further analyses. Subjects are asked to finish the search within 90 minutes and are paid with NT\$ 300 dollars. (The regular pay for students in campus is around NT\$ 80 dollars for reader's reference.) After the search for six products' information is finished, subjects are ask to fill a questionnaire (translated from Zaichkowsky's ([4]) scale for Personal Involvement Inventory) about product involvement, subjective conceptions of the adequacy of information on the web, satisfaction regarding the information they gain through their searching, and some demographic questions.

3. Data analysis

Table 1 shows the web sites that are most popular to our subjects. The data is organized and analyzed with software – Webtrends.

Table 1 Most popular websites list (source: webtrends reports)

Most Popular Sites				
	Organization	Hits	% of Total	User Sessions
1	http://tw.yimg.com	3323	3.79%	40
2	http://www.china-airlines.com	3280	3.74%	8
3	http://w3.epson.com.tw	2615	2.98%	8
4	http://www.sogi.com.tw	1951	2.22%	23
5	http://www.enova.com.tw	1558	1.77%	12
6	http://ticket.ezfly.com	1514	1.72%	20
7	http://www.kimo.com.tw	1251	1.42%	39
8	http://shopping.yam.com	1214	1.38%	5
9	http://shopping.pchome.com.tw	1163	1.32%	13
10	http://www.evair.com.tw	1156	1.31%	6
Subtotal for Sites Above		19025	21.7%	174
Total for Log File		87649	100%	42

The experiment is conducted with real web pages, that is, we do not limit subjects within certain web pages. Consequently, the collected raw data, the log files, contains web pages that do not carry any advertisement. Thus, the web pages collected are firstly divided into two categories: with and without advertisements. To our testing we only analyze those web pages with advertisements. We would like to investigate whether or not the subjects choose to click-through or ignore those advertisements.

In addition to the cleanup of web pages without advertisements, we divide the advertisements into two types of either banner or non-banner type advertisements. This a control variable that may help our understanding that is the formats of internet advertisements a factor affect viewer's click-through choice.

Since the click-through data carries a count format, that is, either zero or positive integers, we conduct the analyses with Poisson regressions or Negative Binomial regressions ([1];[2]). To make a proper choice between the two analyses, we could utilize the Likelihood Ratio test (T_{LR}) and the Wald (T_W) test to test whether or not the count data is over-dispersed. Test results show that $T_{LR} = 109.77 > \chi^2_{0.98(1)} = 5.41$ and $T_W = 56.66 > Z_{.99} = 2.33$. This concludes the over-dispersion property for the count data. As a result, we choose the Negative Binomial regressions for data analysis.

4. Results

Negative Binomial regressions on the dependent variable -- the count of click-through numbers of advertisements -- are shown in Table 2. There are two models in Table 2. The difference is in the independent variables that measure search goods attitudes or experience goods attitudes toward each product.

According to Nelson's([5]) theory, we expect to

observe more advertisement click-through for the search goods than for the experience goods. However, to our surprise, the counts of advertisement click-through are not positively correlated with search goods attitudes. The coefficient is -0.06 but not statistically significant. Rather, the counts are positively correlated with the experience goods attitudes. The coefficient is 0.10 and statistically significant at 95% level.

Table 2 Negative binomial regression on click-through count data

	Search goods model			Experience goods model		
	coefficient	Std.	Z	coefficient	Std.	Z
Search goods attitudes	-0.06	0.04	-1.25	-	-	-
Experience goods attitudes	-	-	-	0.10	0.05	2.19 *
Price	0.24	0.09	2.74 *	0.23	0.09	2.69 *
Product involvement	0.04	0.08	0.48	0.04	0.08	0.45
Advertisement format (1: banner)	-0.75	0.17	-4.42 *	-0.76	0.17	-4.46 *
Gender	0.10	0.28	0.35	0.11	0.28	0.4
School years	0.13	0.12	1.11	0.16	0.12	1.41
Internet experience	-0.10	0.17	-0.58	-0.17	0.17	-0.98
Average hours on web per day	-0.03	0.10	-0.35	-0.02	0.10	-0.21
Procurement attitude (1:well planned; 0:emerged)	-0.02	0.45	-0.05	-0.00	0.45	-0.01
Get used to collect product information on web	-0.16	0.08	-1.93	-0.14	0.08	-1.73
Internet ad. as procurement reference	0.26	0.10	2.67 *	0.23	0.10	2.39 *
Click-through for brands	-0.16	0.09	-1.77	-0.17	0.09	-1.89
Preference for TV advertising	0.21	0.08	-2.01 *	0.21	0.08	2.50 *
Preference for radio station ad.	-0.05	0.09	-0.5	0.00	0.09	0.04
Preference for magazine advertising	-0.17	0.08	-2.01 *	-0.15	0.08	-1.77
Preference for outdoor ad. board	0.04	0.07	0.63	0.04	0.07	0.51
Preference for direct mailing	0.12	0.07	1.63	0.12	0.07	1.73
Pay attention to advertisement on web	-0.37	0.10	-3.83 *	-0.35	0.10	-3.65 *
Often get distracted with ad. on web	-0.07	0.08	-0.88	-0.08	0.08	-0.98
Sites of different purposes may affect click-through willingness	-0.04	0.07	-0.53	-0.03	0.07	-0.42
Has habit in clicking-through ad.	0.24	0.13	1.90	0.24	0.13	1.89
Constant	-0.38	1.01	-0.37	-0.60	1.00	-0.60
log likelihood	-529.619			-527.980		

Note. * presents p-value < 0.05

In addition to the contradiction results to our hypothesis, we have the following findings. First, price is a significant factor that would induce more advertisement click-through. The finding might be attributed to consumer's risk-averse attitude toward high value procurement. Second, banner type advertisement is less attractive to other types. This may be due to that viewers are insensate to the often seen advertisement format. Third, one who is used to collect product information on web for procurement references is more likely to click

through internet advertising banners or icons. Fourth, one who prefers internet advertising to TV advertising would incline to click through internet advertisements; nevertheless, this is not true for other media, including radio stations, magazines, outdoor advertising board and direct mailing. Finally, those who pay more attention to internet advertisements, their advertisement click-through counts drop significantly.

5. Conclusions and discussion

The contradiction result regarding the experience

goods attitude surprises us very much. Subjects made more click-through for the experience goods than the searching goods. According to Nelson's theory, consumers shall make more efforts to search for information regarding the searching goods. This is because consumers can fully identified products' utility of searching goods based on their specifications. And make fewer efforts to search for product information of experience goods, because the utility in consuming the kind of goods is difficult to communicate. Further investigation for the contradictive result was then conducted.

We went through those web pages that subjects had click through and found that for most of the searching goods, it is much easier for web-page information providers to construct complete information regarding the goods that the web sites aim to offer. For instance, a site called "EZtravel" is a local travel agent that provides fly tickets information. Web visitors can obtain a complete side-by-side comparison list regarding the flights during a certain period that visitors indicate; the visitors do not need further information search for the good.

However, on the other hand, for experience goods, it is much difficult for web-page information providers to construct a web site contains thorough information regarding the goods that the site is dedicated to. This is due to the difficulty in giving a full description of an experience good. Interestingly, internet is also a wonderful place for the sort of goods. A perspective consumer may seek other users' experience through some discussion forums. For instance, photo.net is a popular web site for people with photography hobby. The forums of the site provides thousands users' experience and comments regarding all sorts photography equipments. Our investigation showed that subjects spent most of their time in surfing around to gather the information they need for experience goods. As a result the number of click-through is less for searching goods compared to experience goods, which looks contradictive to Nelson's Theory.

In addition to the finding contradictive to Nelson's ([5]) theory, our results show a list of factors that may trigger or retard web viewers' interests in clicking through advertisements. We found that the price of goods increase the likelihood of click-through, and person with habit in collecting product information for one's procurement references, and person with preference of internet advertising over TV advertising are prong to click through

advertisements. Banner type advertisements retard viewers' inclination to click through and one who pays more attention to internet advertisements, their advertisement click-through counts drop significantly

Our study may contribute to the understanding of Nelson's Theory by amending a moderation factor to the Theory's projection, that is, the need for experience sharing and the cost to achieve the sharing.

Besides, the result may help to advice practitioners in advertising to aware his/her strategy in conducting advertisement on the web. According to our result, searching goods are much simpler to implement advertisement campaigns. It is less costly for searching goods to be promoted on the web. On the other hand, experience goods would take up more efforts to provide product information. It would be helpful to construct user forums to share their experience to convince perspective customers.

Even today, after the internet has been commercialized for almost a decade, the potentiality of the internet advertising, such as the banners and icons, may not be fully recovered. Internet advertising, for instance, provides an interactive environment where advertisement viewers can be promptly presented with the information they are interested in. Meanwhile, advertisers are obliged to the well built internet barebones system, so that they can deliver their internet advertisements inexpensively. Furthermore, internet advertising is not constrained with space and time horizon. On traditional media, magazines for example, the advertisements fade away with the deterioration of magazines. Also, the space that a magazine can provide is very limited; Advertisers may like to impress their perspective customers with more information. For all these merits that the internet advertising can provide, there is a dearth for our attention in discovering the full potentiality in it.

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