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# Transforming Experience Good into Search Good: How Virtual Experience May Change the Internet Advertising Market

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# TRANSFORMING EXPERIENCE GOOD INTO SEARCH GOOD: HOW VIRTUAL EXPERIENCE MAY CHANGE THE INTERNET ADVERTISING MARKET?

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## Abstract

Prior research indicates that goods contain either search or experience attributes and those that are categorized as search goods may induce more product information search efforts prior to purchase. Considering the low search cost online, search goods could easily prompt even more search efforts. However the experiment results of this study indicate an interesting finding that seem to go against this projection by showing more search efforts (including online advertisements click-throughs and searching time) for experience goods than for search goods. Explanations to the finding which in part echoing Klein's (1998) proposition of virtual experience are provided and implications for online advertising are drawn.

**Keywords:** Online advertising, search goods, experience goods

## Introduction

Since the inception of online advertising in 1994, internet advertisement has become the major growth source in advertising (Robinson, Wysocka, & Hand, 2007). In light of a unique feature – interactivity – with which this new advertising vehicle carries, pay-for-clicks on online advertisements is currently a widely adopted pricing mechanism for internet advertising. Therefore, factors that could trigger click-through on advertisements receive research attention (C. H. Cho, 2003; Robinson, et al., 2007). While research attention is drawn to evaluate and optimize this new advertising vehicle, the declining click-through rate of advertisements (Chatterjee, Hoffman, & Novak, 2003) casts shadows on this new vehicle. Klein (1998) indicates that the online advertising may not be analogous to traditional media, such as, TV, radio, newspapers and magazines. By reviewing prior research, she contends that consumers' prepurchases and ongoing information acquisition processes in this new medium could be vastly different from traditional ones in several dimensions, including the amount of total search, the number and types of sources consulted, and the distribution and weighting of information gathered from these sources.

To explore this new medium, Klein adopts the information economics' approach (Nelson, 1974; Stigler, 1961) -- consumer information search behavior -- and draw an important implication in consumer information search process. Klein contends that the low cost of online information search could transform the experience good into search good with the prevalent virtual experience online; as a result, advertising could play a role which serves better value than simply being a signal (Klein, 1998, p. 201).

Klein's assertion may turn the advertising market into a new feature with regards to consumer information search behavior as follows. First of all, the product information economics theory that is drawn by Nelson and Stigler defines that the search goods are products dominated by product information attributes which can be acquired by perspective consumers prior to purchase whereas the experience goods are products dominated by information attributes that can only be appreciated after purchase and use. Without "virtual experience," it implies: Since the cost of product information browsing on web is low, the value of search goods, such as dresses and magazines, can be estimated by buyers prior to purchase; therefore, buyers may exert more information searching efforts prior to purchase – more click-throughs on web pages – for instance. On the other hand, experience goods that can only be appreciated after purchase and use, such as canned tuna fish and computers, may induce few browsing efforts. Furthermore, if virtual experience is provided, experience goods could be transformed into search goods (as Klein has contended). This transformation may result in a huge advertising market since there will be a huge amount of goods holding "search" attributes that demand advertisements. And the demands are fueled with low search cost in internet.

In sum, if without the sharing of virtual experience online, according to Nelson's theory the internet may induce more online information searching efforts for search goods because of the low cost associating searching efforts. An important implication for advertising is that the search goods may combine the experience goods to generate more advertising demands as well as supplies than in the traditional media.

However, our experiments reveal a surprising result that goods' experience attributes affect click-throughs as well as search time positively at a significant level; whereas goods' search attributes affect negatively at a marginal significant level. After inspecting the web pages browsed by the participants of experiments, this "anomaly" at the first glance can be understood as analogous to Klein's assertion of "virtual experience," in which experience goods are transformed into search goods which call for certain amount of search efforts, particularly on electronic forums and blogs in internet. Nevertheless, the virtual experience transformation cannot account for the reduction of search efforts for search goods observed in this experiment. And this is likely attributed to the information qualities of search goods that their information is easily obtained in a chart of comprehensive side-by-side comparison; buyers rarely need to take further actions to search for information.

In the following, we will go over prior research on internet advertising and consumer's product information search behavior. The research method and data analysis models are laid out in Section 3. Section 4 shows the experiment results, while conclusions and implications are delineated in Section 5.

## Literature review

Internet advertising in recent years has become an important alternative (C.-H. Cho, 1999; C.-H. Cho, Lee, & Tharp, 2001; Hofacker & Murphy, 2000; Leckenby & Jongpil, 1998) to traditional media, such as newspapers, magazines and television. As more visitors viewing the internet, internet advertising becomes the major vehicle to reach consumers who used to acquire product information from conventional media yet switched to the internet nowadays (Hofacker & Murphy, 2000). A subsequent question will be "How is this new advertising medium different from its traditional counterparts?"

For instance, how may the performance of internet advertising be measured (Briggs & Hollis, 1997; Lisa R. Klein, 1998; Leong, Huang, & Stanners, 1998; Shamdasani, Stanaland, & Tan, 2001)? Several studies (Hoffman & Novak, 1996; Leckenby & Jongpil, 1998; Leong, et al., 1998; Novak, Hoffman, & Yung, 2000) are set to align this new advertising medium along with its conventional counterparts. This alignment may endow an important implication where one could, directly or with minor adjustments, apply traditional measurements to this new medium.

### Product information qualities
While attention are drawn to the linkage between the

newbie and the existing ones, Klein (1998) raises a concern of overlooking the potentials of interactive media, such as the internet environment. Klein begins her assertion with Philip Nelson's renowned theory on product information search (Nelson 1970; Nelson 1974).

When Nelson (1970) proposes the product information concept of search versus experience product qualities, the key is whether or not buyers can inspect products and collect information with respect to the resulted consumption utilities prior to purchase. Dress for one is a product that Nelson uses as an example to illustrate the search good since buyers oftentimes can inspect dresses in stores and envisage the utilities of the dresses. Canned tuna fish on the other hand, is used as an example for experience good since buyers oftentimes can only taste it after it has been purchased. Thus, an important distinction between the two is whether or not a product's consumption utilities could be well perceived by objective product statements. If yes, then during purchasing products, buyer may focus solely on the comparison of product statements; as a result, information collecting would be essentially prior to purchase. If product's objective statements explain little about the resulted consumption utilities, such as the canned tuna fish, buyers may just buy the product and experience it by themselves to evaluate product values. And this is where brand building weights in.

The distinction of product information attributes in terms of "search" quality and "experience" quality poses important implications in advertising as Nelson (1974) concludes: Since search efforts come with cost, Nelson contends that in regard to different brands, buyers may reduce the sampling size when search cost rises. Moreover, firms that produce search goods may try to use advertisements to persuade perspective buyers. In sum, search goods oftentimes are the drivers in advertisements.

### Information search effort measurement
An important implication of Nelson's (as well as Stigler's) theory on consumer's information search behavior is: consumer may keep searching product information until the costs accumulated during the search efforts are grater than the benefits acquired by the search efforts (Kulviwat, Guo, & Engchanil, 2004). While this cost-benefit projection is appropriate within traditional media (Guo, 2001), would it be the same situation for the new media – the internet? As stated above, the internet provides a user-friendly environment in exceptionally low cost either posting or searching for product information. Since product information of search goods is beneficial, that is, the more the better, the information search campaign may keep running and this momentum remains high in internet because the

search costs are much lower than those in other media. However, the low search costs in internet may not affect consumer's demand for product information of experience goods which can only be appreciated after being experienced.

### Click-through

To verify the assertion above, it requires effective measures that are associated with information search efforts in internet. For traditional media, Klein and Ford (2003) summarize the measures associated with consumer information search efforts adopted in prior studies. And the time spent in searching is proposed as the measure for total search efforts.

Besides, within the internet environment, another measure – the click-throughs – may well serve as a good measurement. To the internet users, the most convenient and widely used function is the "click"; it acts as a magic wand; by clicking (mostly through the mouse) on certain icons, the intended functions attached to the icons would start performing. Accordingly, advertisers insert enormous amount of advertisements in different features on web pages, trying to catch web visitors' attention. Web visitors can point their mice, click on any of the advertisement icons, and be re-directed to the intended web sites or pages. This process is coined as the "click-through." Technically, the process is achieved with the help of IP (Internet Protocol) address abiding with each web page. By monitoring the click-through behavior, advertisers are able to investigate whether or not web visitors are interested in the advertisements on web pages. In other words, the click-through could be an appropriate tool in determining whether or not a web visitor is aware of and attracted to the presence of the advertisements on web pages (Briggs & Hollis, 1997; Hofacker & Murphy, 2000).

### Hypotheses

Applying Nelson's theory to the internet advertising case, one may expect more click-throughs when searching for the search goods than for the experience goods for two reasons. Firstly, according to the theory, search goods would generate more search efforts before purchase because information regarding product utilities is sufficient for making purchase decisions; As a result, we expect more search efforts, including time-spent and click-throughs, for search-good product information search than for experience-good. Secondly, searching on internet is less costly than traveling to different shops, going over different magazines, or viewing over several TV advertisements, consequently, more online searching efforts could be induced for search goods. In sum, we draw two hypotheses to be tested as follows:

H1: Search goods induce more information searching time than experience goods do.

H2: Search goods induce more click-through on advertising banners than experience goods do.

## Method

To test our hypothesis, we use quasi-laboratory experiments to record experiment participants' online searching paths for further analyses. In the following we will describe the design of the experiments and the modeling for data analyses.

### Experimental design

The data was collected in two stages. Firstly, we asked 60 students (will be referred to as the subjects hereafter) to present their attitudes toward search and experience qualities using a 7-point scale (from -3 to 3) with respect to twenty-four popular products taken from a government sponsored information providing web site. According to Nelson's theory, experience goods are the products with utilities that cannot be justified by customers before purchase and use, whereas search goods can be compared solely based on product specifications. Then we chose six products for the next stage experiments. Of the six products, two (a computer magazine and a Taipei-Kaohsiung fly ticket) are in the search goods domain with the highest average search attitude, another two (a mobile phone and a color ink-jet printer) are in the mid of the two qualities, and the other two (a notebook computer and a computer game) are in the experience goods domain with the highest average experience attitude.

In the second stage, we asked other 33 subjects to participate in a shopping experiment. These subjects were asked to assume that they were perspective buyers of the six chosen products and needed to collect the product information on the web. The subjects browsed through the internet to search for the product information. All of the web pages that subjects went through were recorded in the log files in dedicated computers. In particular, the IP addresses with respect to each web page that the subjects visited were recorded. The log files were our raw data for further analyses. The subjects were requested to finish the search within 90 minutes and were paid 300 NT dollars. For readers' reference, the regular pay for the odd-jobs students do on campus is around NT$ 80 dollars/hour. After the search for the product information was finished, subjects were asked to fill out a questionnaire about product involvement, subjective impressions of the adequacy of information on the web, satisfaction regarding the information they collected through their search and demographic information.

The experiment was conducted with real web pages, that is, we did not set any limitation to the web pages the subjects can access. Consequently, the collected raw data and the log files contained

web pages that did not carry any advertisement. Thus, the collected web pages were firstly divided into two categories depending on the presence of any advertisement. For testing purposes we only analyzed those web pages where advertisement appeared. We investigated whether or not subjects chose to click the advertisements icons/banners.

### Variable measurement

In addition to the dependent variable (searching time-spent and the number of click-throughs), our independent variables included the "search quality" and the "experience quality." The two variables were measured in a 7-point scale. The subjects were asked whether or not that the goods' qualities could be verified with search efforts before procurement.

Eight additional variables were also measured for control purposes. "Price" was measured in a 5-point scale; the subjects were asked to indicate whether or not the goods were expensive given his/her disposable incomes. "Product involvement" was measured with Zaichkowsky's Scale for Personal Involvement Inventory (Zaichkowsky, 1994). This factor is due on Torres and Briggs's (2007) finding where it indicates that advertisements could induce favorable consumer attitudes for low-involvement products without affecting the high-involvement ones. "Advertisement types" were coded "1" for banner-type advertisement and "0" for others. "Experience with the internet" measured the degree to which the subjects were acquainted with the internet in terms of years. "Average hours on the web per day" measured the average time that the subjects spent on the web in terms of hours. "Purchase style" asked the subjects to report their habits of shopping. Finally, gender and students' seniority at the university were also recorded.

### Data analyses

Since one of the dependent variable, the number of clicking through internet advertising, is a countable number, we could either use the Poisson regression or the negative binomial regression to analyze (Cameron & Johansson, 1997; Le, 1998; Long, 1997; Long & Freese, 2006). The two models are briefly described as follows.

Let $Y_i$ be the dependent variable, then the typical Poisson regression is:

$$P(Y_i|\lambda_i) = \frac{(\lambda_i)^{Y_i} \exp(-\lambda_i)}{Y_i!}$$

where $E(Y_i) = \lambda_i$ depicts the mean of $Y_i$, which in Poisson regression is assumed to be equal to its variance, noted $Var(Y_i)$. For the studied cases, there might be several independent variables that trigger clicking through the internet advertisements. As a result, the relationship between $\lambda_i$ and those

independent variables is: $E(Y_i) = \lambda_i = \exp(x_i'\beta)$.

To estimate the regression coefficients, one can use the Maximum Likelihood Estimation (MLE) as follows,

$$L(\beta) = \prod_i^n \frac{[\exp(x_i'\beta)]^{Y_i} \exp[-\exp(x_i'\beta)]}{Y_i!}$$

If the assumption $E(Y_i) = Var(Y_i) = \lambda_i$ is not supported, then one can assume that the $\lambda_i$ follows a random distribution, for example the Gamma distribution, and solve the problem with the negative binomial regression. In this model, the dependent variable is parameterized with $\alpha$ and $\theta_i$ as follows,

$$P(Y_i|\alpha, \theta_i) = \int p(Y_i|\lambda_i) g(\lambda_i|\alpha, \theta_i) d\lambda_i ,$$

$$= C_{Y_i}^{Y_i+\alpha-1} \left(\frac{\theta_i}{\theta_i+1}\right)^{Y_i} \left(\frac{1}{\theta_i+1}\right)^{\alpha},$$

Where

$$P(Y_i|\lambda_i) = \frac{(\lambda_i)^{Y_i} \exp(-\lambda_i)}{Y_i!},$$

$$g(\lambda_i|\alpha, \theta_i) = \frac{1}{\theta\Gamma(\alpha)}\left(\frac{\lambda_i}{\theta_i}\right)^{\alpha-1} \exp\left(-\frac{\lambda_i}{\theta_i}\right)$$

and $\lambda_i \sim Gamma(\alpha, \theta)$. Consequently, the mean is

$$E(Y_i|\alpha, \theta_i) = \alpha \cdot \frac{\theta_i}{\theta_i+1} \cdot \left(\frac{1}{\theta_i+1}\right)^{-1} = \alpha\theta_i,$$

and the variance is

$$Var(Y_i|\alpha, \theta_i) = \alpha \cdot \frac{\theta_i}{\theta_i+1} \cdot \left(\frac{1}{\theta_i+1}\right)^{-2} = \alpha\theta_i(\theta_i+1).$$

After incorporating those independent variables into the previous equation, we arrive

$$E(Y_i|\alpha, \theta_i) = \alpha\theta_i = \exp(x_i'\beta).$$

By applying MLE on

$$L(\beta) = \prod_1^n f_i(Y_i) = \prod_1^n C_{Y_i}^{Y_i+\alpha-1} \left(\frac{\theta_i}{\theta_i+1}\right)^{Y_i} \left(\frac{1}{\theta_i+1}\right)^{\alpha},$$

$\alpha\theta_i = \exp(x_i'\beta)$ is obtained.

An immediate question is then raised: which model is appropriate for the present analysis? In most empirical cases, the variances are significantly greater than the means, which is called "overdispersion (Cameron 1986)." To investigate whether it is a case of overdispersion, it is essential to test the following hypotheses:

$$H_0 : r(\theta) = 0$$
$$H_1 : r(\theta) \neq 0$$

Two testing procedures can be applied: either the Likelihood ratio test (LRtest): $T_{LR} = -2[L(\tilde{\theta}_{Poisson}) - L(\tilde{\theta}_{NB})]$. If $T_{LR} > \chi^2_{(h;\alpha)}$, then the hypothesis $H_0 : r(\theta) = 0$ is rejected. That is to say, the negative binomial is more appropriate. or the Wald test:

$$T_w = r(\hat{\theta}_u)\left\{\frac{\partial r(\theta)}{\partial \theta}\bigg|_{\hat{\theta}_u}\left[\frac{1}{n}\hat{A}(\hat{\theta}_u)^{-1}\right]\frac{\partial r(\theta)}{\partial \theta'}\bigg|_{\hat{\theta}_u}\right\}^{-1} r(\hat{\theta}_u).$$

If $T_w > Z_\alpha$, then the hypothesis $H_0 : r(\theta) = 0$ is rejected.

**Results**

*Manipulation check*
First of all, subjects' attitudes toward both "search quality" and "experience quality" are presented in Table 1, where the *student t-values* with respect to the search quality and experience quality are listed in the second and the third columns. Student t-tests are performed to test whether or not the two qualities are greater than zero.

Table 1- Paired Student-t-tests on attitudes to search vs. experience

|  | Search | Experience |
|---|---|---|
| Computer game | -0.80 | 3.59** |
| Notebook computer | -0.24 | 3.93** |
| Color inkjet printer | 0.53 | 2.79** |
| Mobil phone | -0.24 | 2.27** |
| Computer magazine | 1.94* | -0.15 |
| Taipei-Kaohsiung fly ticket | 3.71** | -1.49 |

Note: * for p_value is less than 0.05 and ** for p_value is less than 0.01.

This result indicates that computer game and notebook computer represent experience goods whereas computer magazine and Taipei-Kaohsiung fly ticket fall into the category of search goods. In terms of the color inkjet printer and mobile phone, according to the first stage result, they are supposed to be classified in the mid of the experience goods and the search goods. The subjects hired for the second stage experiments seem tend to recognize them as experience goods. Nevertheless, this does not affect our hypothesis testing.

*Descriptive statistics and the correlation check*
Before the regressions, we conduct a correlation analyses on the independent and the control variables. Table 2 shows the correlations. Given the minor correlations for some variables, co-linearity may not be of concern to our regression analyses.

Table 2– Correlations between each independent variable

|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| (1)Search good index | 1 | | | | | | | | |
| (2)Experience good index | -0.51* | 1 | | | | | | | |
| (3)Price | -0.06 | 0.08 | 1 | | | | | | |
| (4)Product involvement | -0.05 | 0.03 | 0.05 | 1 | | | | | |
| (5)Advertisement types (1:banner) | 0.00 | 0.00 | 0.00 | 0.00 | 1 | | | | |
| (6)Gender | 0.09 | -0.10* | -0.01 | 0.14* | 0.00 | 1 | | | |
| (7)School years | -0.06 | -0.08 | -0.11* | 0.09 | 0.00 | 0.22* | 1 | | |
| (8)Experience with internet | 0.01 | 0.05 | -0.02 | 0.10 | 0.00 | 0.41* | 0.47* | 1 | |
| (9)Average hours on web per day | 0.03 | -0.08 | 0.03 | -0.15* | 0.00 | -0.05 | 0.27* | -0.02 | 1 |
| (10)Purchase style (1: internet shopper) | -0.13* | 0.13* | 0.08 | -0.03 | 0.00 | -0.30* | 0.08 | 0.16* | -0.11* |

Note: * indicates p_value is less than 0.05 significance level

Furthermore, validity and reliability regarding the product involvement derived with factor analysis on Zaichkowsky's scale for Personal Involvement Inventory are also checked. The Scree plot shows that the first factor is dominant for the rest and is the only factor whose Eigenvalue value is greater than 1, which renders a cumulative percentage of variance of 71.2%. In terms of the validity, the value of the KMO（Kaiser-Meyer-Olkin）is 0.946（greater than 0.5）; i,e,, the measuring is appropriate for the factor analysis. The Bartlett's testing is also significant with $\chi$ = 1795.9, while Cronbach $\alpha$ is 0.95

which also satisfies reliability concern.

In addition, the mean and variance for the dependent variable – click-through – were 1.34 and 9.70, respectively. That is to say, overdispersion may be of concern to our further analysis of regression. Since the variance for the negative binomial regression is $mean + k \times mean^2$, where $k \geq 0$, the hypothesis testing regarding

$$\begin{cases} H_0 : r(\theta) = 0 \\ H_1 : r(\theta) \neq 0 \end{cases}$$

can be transformed as

$$\begin{cases} H_0 : k = 0 \\ H_1 : k > 0 \end{cases}.$$

If $k = 0$ is rejected, it concludes with the negative binominal case. By Poisson regression, we derive the value of log likelihood as -584.506, and -529.619 with negative binominal regression. We firstly test the overdispersion problem with the Likelihood Ratio test. The estimate is

$$T_{LR} = 2 \times (584.506 - 529.619) = 109.774 > \chi^2_{0.98(1)} = 5.41 \cdot$$

Hence, the null hypothesis is rejected. Secondly, we performed the Wald test and the estimate is

$$T_w = 56.66 > Z_{0.99} = 2.33 \cdot$$

Again, the null hypothesis $H_0 : k = 0$ is rejected. Hence, we choose negative binominal regression for our further analyses.

### Negative binominal regressions

Consequently, the negative binominal regressions are applied and the results are shown in Table 3.

Table 3 - Negative binominal regression on counts of click-through advertisements

| Models / Variables | Search goods model | | | Experience goods model | | |
|---|---|---|---|---|---|---|
| | Coef. | Std. | Z-value | Coef. | Std. | Z-value |
| Search index | -0.05 | 0.04 | -1.24 | — | — | — |
| Experience index | — | — | — | 0.11 | 0.05 | 2.25* |
| Price | 0.21 | 0.09 | 2.42* | 0.20 | 0.08 | 2.37* |
| Product involvement | 0.08 | 0.08 | 0.99 | 0.08 | 0.08 | 0.92 |
| Advertisement types (1:banner) | -0.73 | 0.17 | -4.29** | -0.74 | 0.17 | -4.31** |
| Gender | -0.19 | 0.20 | -0.95 | -0.13 | 0.21 | -0.65 |
| School years | 0.05 | 0.08 | 0.63 | 0.08 | 0.08 | 0.97 |
| Experience with internet | -0.12 | 0.11 | -1.12 | -0.17 | 0.11 | -1.50 |
| Average hours on web per day | -0.00 | 0.07 | -0.04 | 0.00 | 0.07 | 0.04 |
| Purchase style(1: internet shopper) | 0.18 | 0.36 | 0.50 | 0.20 | 0.36 | 0.55 |
| Constant | -1.53 | 0.66 | -2.34 | -1.54 | 0.65 | -2.38 |
| log likelihood | -542.002 | | | -540.173 | | |

Note: * indicates that p_value is less than 0.05 significance level; ** is less than 0.01

### Ordinary least squares regression on time-spent

Another dependent variable representing the information search efforts is the time spent for the information searches. Table 4 shows the OLS regressions results.

Table 4 – OLS Regressions on search time (seconds) spent on each product (random-effects)

| Models / Variables | Search goods model | | | Experience goods model | | |
|---|---|---|---|---|---|---|
| | Coef. | Std. | Z-value | Coef. | Std. | Z-value |
| Search good index | -22.42 | 12.79 | -1.75 | — | — | — |
| Experience good index | — | — | — | 29.69 | 13.69 | 2.17* |
| Price | -29.99 | 25.64 | -1.17 | -30.09 | 25.56 | -1.18 |
| Product involvement | -32.42 | 18.23 | -1.78 | -34.44 | 18.19 | -1.89 |
| Advertisement types (1:banner) | 0.00 | 46.61 | 0.00 | 0.00 | 46.46 | -0.00 |
| Gender | 9.87 | 97.03 | 0.10 | 16.79 | 98.39 | 0.17 |
| School years | -1.96 | 38.29 | -0.05 | 5.98 | 38.76 | 0.15 |
| Experience with internet | 3.31 | 51.31 | 0.06 | -6.16 | 52.06 | -0.12 |
| Average hours on web per day | -6.83 | 32.21 | -0.21 | -6.22 | 32.63 | -0.19 |
| Purchase style(1: internet shopper) | 203.97 | 186.97 | 1.09 | 206.81 | 189.18 | 1.09 |
| Constant | 662.34 | 296.55 | 2.23 | 658.48 | 299.71 | 2.20 |
| Sample size (groups) | 396(33) | | | 396(33) | | |
| $R^2$ (overall) | 0.026 | | | 0.030 | | |

Note: * indicates that p_value is less than 0.05 significance level; ** is less than 0.01

The results in Table 4 show that the correlation directions and statistical significances are the same as those in Table 3 where the count of click-throughs served as the instrumental variable representing the information search efforts.

### Discussion

The results in Table 3 and 4 are surprising which clearly indicate that subjects made more click-throughs and spent more time on the experience goods than search goods. According to Nelson's theory, consumers shall endeavor more to search for information regarding search goods. This is because consumers can fully identify search goods utility based on product specifications. Further investigation on the seemingly contradictive result was then conducted. We went through those web pages that subjects had clicked through.

The investigation arrives two major findings: firstly, it is easy for web-page information providers to offer complete information about search goods. For instance, "EZtravel" is the web site of a local travel agency that provides fly tickets information. Web visitors can obtain a list of comprehensive side-by-side comparison regarding the flights within any designated period; the flight information collectors do not need to take any further search

action. On the other hand, for experience goods, it is difficult for web-page information providers to construct a web site with thorough information regarding the goods of different brands or alternatives.

Secondly, we found that internet is also a wonderful place for experience goods users to exchange their usage experience. Internet blogs particularly are the places that users would like to share their personal experiences. Although experience goods by Nelson's definition could not be appreciated prior to purchase, a perspective consumer may borrow other users' experiences virtually. At the same time, borrowing through the forums and blogs is literally costless. For instance, "Mobile01" is an extremely popular web site for 3C (consumer, computer, communication) products users as well as other hobbies. The forums of the web site provide thousands of users' experiences and comments regarding all sorts of electronic equipments and their related "big toys" such as bicycles. Our investigation shows that experiment participants spent most of their time surfing around to gather the information they needed on experience goods. As a result, the amount of click-throughs for experience goods is greater than the clicks for search goods, which does not agree to our hypotheses derived from the product information search theory.

The experiment results show that the search good quality did not contribute more search efforts than the experience good quality do, which is contrary to our hypotheses based on information search theory (Nelson, 1974). To resolve this puzzling result, further investigation efforts were set by screening the web pages that experiment participants had gone through. The findings were twofold: firstly, for the web-page information providers, it is easy to offer product information of search goods than that of experience goods. Consumers can obtain a complete list of side-by-side comparison regarding the search goods but not for the experience goods. Secondly, although experience goods could not be appreciated prior to purchase, with the help of forums and blogs, perspective consumers may virtually experience other users' experiences without any cost prior to purchase. In our experiment, when collecting information, participants exerted more search efforts (the amount of time spent and the number of click-throughs) on experience goods than on search goods.

Instead of showing Nelson's theory whether is outdated or not for the new media, the present study wishes to shed some lights on the uniqueness of the internet and the significance for advertising. The uniqueness is that the internet does not simply provide a costless vehicle for product information search, but also offer a robust tool for information

providers – such as the *consumer report* – as well as advertisement agents to present product qualities to the consumers. And this is particularly favorable for search goods (by Nelson's definition) because the product specifications of search goods can be easily reduced to item-by-item or side-by-side charts to deliver product information desired by consumers.

On the other hand, it is more difficult to communicate the products with merely specifications of experience goods in conventional media. Accordingly, consumers may seek to consult other users' consumption experiences – the virtual experience, as Klein (1998) would coin. These efforts are not easily accessible before the internet era. However, due to the low cost of sharing information on the web, gratification after making their experiences known, and the immediacy of going public, consumers are more willing to document and post their experiences on web sites, e.g. electronic forums and blogs, as supposed to the traditional medium, such as magazines. As a result, perspective consumers can acquire needed information online in a timely fashion. Consequently, experience goods induce more search efforts than search goods. And it leads to an important implication for advertising, that is, the need for advertisements of experience goods may surpass that of search goods. An evidence for the implication is the omni-present ads on electronic forums and blogs on the social networking sites nowadays.

Although our hypotheses drawn from Nelson's theory are rejected in light of the new medium, Nelson' eminent work pertains to show the significance of the distinction of product information attributes – search versus experience, even with the new medium. And the reverse of advertising implications indeed indicates the strengths of internet compared to traditional media, which echoes Klein (1998)'s demand for new assessment of the new medium.

For practices, our study underlines an emerging market for advertising wherein demands for sharing the experience of experience goods are rising. In conventional advertising media, making personal experiences sharing is not only time consuming, but also unlikely to be achieved inexpensively. The internet, however, is a perfect medium to this end. Consumers are enticed to surf the web with minuscule cost of searching for product information and of sharing their use experiences on the web. Although, practitioners have far reckoned the potential for advertising since the inception of the internet (Verity, Hof, Baig, & Carey, 1994), the present study helps to enrich our understanding of the internet by highlighting its ubiquitous characteristic not to be found in any other advertising media.

*Future studies*

While our research objective is to investigate product information search online, one of the instrumental variable for search efforts that we adopt is click-trough, and the finding shows that click-through rate is positively affected by the attributes of goods' experience qualities. This finding may complement another research thread about click-through behavior. This thread of research is motivated by that click-through rate on internet ads is a widely adopted pricing mechanism nowadays, thus factors that could induce click-through are highly thought-after and carefully designed by advertisements. Shamdasani et al.(2001), for instance, address web advertising placement by examining two variables: website reputation and the relevance between website content and banner ad product category. Cho et al.(2001) explore the effects of different levels of forced exposure of web visitors to banner ads on advertising responses (e.g., banner click-through). Hofacker and Murphy (2000) study the effectiveness of the design of advertisement banners on click-through rates. Robinson, et al.(2007) examine the banner design elements affecting the effectiveness of banner ads in gaming industry and show that banners that are larger in size, longer in content, absent in promotional incentives and the presence of casino gaming information induce higher click-through rates.

Beyond those design elements described above, Cho (2003) indicates that the level of product involvement, congruency between the content of a vehicle and the product category of an advertising banner, attitude toward the vehicle, and the overall attitude toward web advertising are four important factors affecting the click through rates. Moreover, although not directly on advertising responses of click-through, Novak et al.(2000) propose a construct wherein the web consumers' cognitive state experienced during navigation is investigated with a structural modeling on online data.

To conclude, it would be beneficial to include product information attributes in the click-through study framework. Further, along with Kulviwat, et al. (2004)'s framework, we can expect an extensive descriptive model of information search behavior in internet.

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