A Study about Online Search Determinants across Several Product Categories

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Abstract
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This study verifies the relationship between online search effort and some influencing factors across several product categories. The online search effort is measured by search volume on google which was offered by google trend and keyword everywhere. Three search determinants, price, competition degree and knowledge, are selected from extended Beatty-Smith's scheme.

Keyword: online search determinants, external search, consumer decision making, google search volume

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Table of Contents

Chapter 1. Introduction

1.1. Study Background

Consumer search behavior, as an essential step of pre-purchase behavior in decision making process, is widely studied by researchers.

The majority of those papers are based on survey data. The researchers try to account for consumer search behavior influenced by motivating antecedent variables attributed to 1) environment factors, 2) focused product features, or 3) consumer characteristics by asking consumers about their purchasing experience in a specific store or simulation. The literatures have proved relationships between various variables (Table 1) and external search effort.

Table 1. Determinants of External Search Effort①

Environment Factors

Market Environment
- competition degree
- information availability
- city size of residence
- perceived variance in retail operations

Situational Variables
- pressure
- organizational procedures
- physical and mental conditions
- ease of access to information sources
- special buying opportunities
- store loyalty or preference

Focused Product Features

Potential Payoff

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① This Table is an update of Beatty and Smith's scheme (1987).

- price
- social visibility
- perceived risk
- differences among alternatives
- number of crucial attributes
- status of decision-making activity
- product class importance
- length of commitment necessary

Consumer Characteristics

Knowledge and Experience
- knowledge (stored knowledge, experience)
- usage rate of product or previous choices
- satisfaction
- brand loyalty or preference

Individual Differences
- ability
- perceived ability
- approach to problem solving
- approach to search
- involvement
- demographics
- personality (self-confidence)
- perceived role (household role)
- goal (satisficing versus optimizing)

However, there is time interval between purchasing happened and data collecting by survey, which means data lost or frauds will exist as many of the search behaviors are fundamentally trivial and quickly forgotten (Kiel and Layton, 1981). Additionally, with the development of internet and mobile technology, survey data is less convincing to explain today's consumer behavior. Internet replaced the offline information sources to be the most important data source in consumer decision making process as it became so easy for companies to provide an extremely large amount of information about their products on the internet (Lu and Gursoy, 2015).

1.2. Purpose of Research

This paper chooses three of above motivating antecedent variables (price, competition degree and knowledge), one from each section, to study the influence on online search behavior measured by search volume data on Google.com provided by Google Trend and Keyword Everywhere. And the Purposes are:

1) To verify the determinants are common traits and fundamental consumer property but not a category-specific by using google search data which can directly measure online search effort. Since most studies of consumer search behavior focus on a specific category of products each time.

2) To acquire whether there are significant differences among influences of environmental, product-related and customer characteristic determinants on online search behavior.

3) To acquire whether there is any difference between offline and online search behavior.

Gursoy et al. (2017a) suggest that besides Friends and family, online review sites, the online search engines like Google, Yahoo, etc. are the most important external information sources nowadays. And it is certain that Google is by far the most dominant search engine with over 80% of U.S. internet users, followed by Yahoo (6%) and Bing (3%) so that the volume of Google searches can plausibly be viewed as a reflection of the search effort of total U.S. consumers.

The structure of this paper is as follows: The next section reviews some search behavior literatures and formulates a set of hypotheses of relationship between online search effort and three variables. Then, data descriptions. The fourth section do the analysis and show the results and the final section provides the implications, limitations, and directions for further research.

Chapter 2. Literature Review

2.1 Search Effort

For the consumers who begin to search information, the first thing they will do is examine memories of past consumption (Bettman 1975; Leigh and Rethans 1984; Lynch and Srull 1982). This is called internal search effort, which, as the view of Engel, Blackwell and Miniard (1995) is simply a quick scan for the mind of themselves. If they realize the stored knowledge in their long-term memory is not enough to solve their problem, consumer will move to external search effort by getting information from the sources outside themselves (Kotler and Armstrong 1994; Murray 1991). And online search behavior is one of the external efforts.

Measures of search effort generally include a variety of survey-based measures, such as the time spent in search activity, the number of types of information sought, the number of alternatives considered etc. This paper measures search effort by online search volume on google.com, which has not received much attention from previous scholars.

2.2 Mechanism in Information Search Activity

To study the determinants on consumer search behavior, we should know how these determinants works in the mind of consumers in search activities. In other words, the mechanism in information search activity should be explained first.

Prior literatures did researches on the demand for external research. For example, some research noted that consumers will not stop searching for product information as long as they believe that the additional search output would bring them more useful information than what it cost them in the searching activity (Gursory,

2001). And some believed that consumer search information for efficiency since consumer would search more with purchasing products if it is less irritating (Sherry, 1990). In general, there are two major perspectives of the mechanism for search behavior: 1) consumer search information because they want, 2) consumer search information because they can. The front usually presents as "motivation to search" while the latter known as "perceived ability to search". Actually, the two mechanisms work together (Figure 1) and information search can be inhibited without either one (Bettman and Park,1980), which is also be proved by Bettman's (1979) model and Petty and Cacioppo's (1986) Elaboration Likelihood Model.
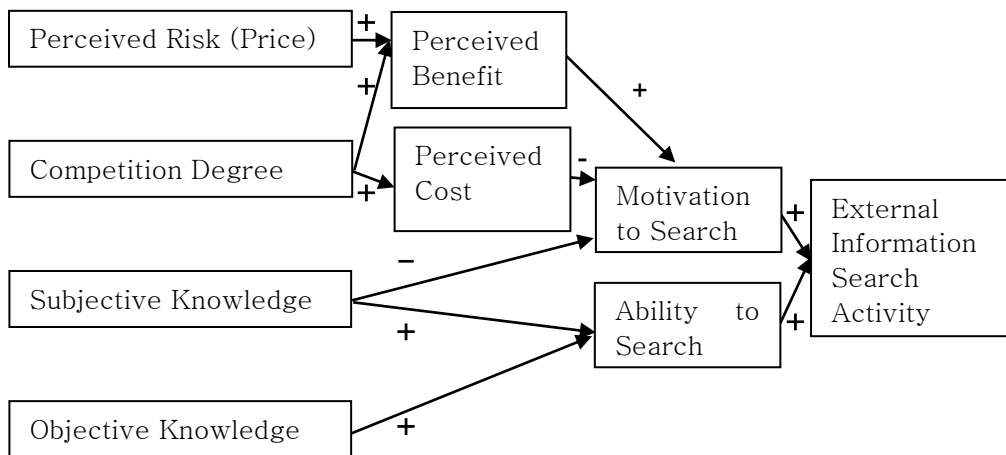

Figure 1. Mechanism of Information Search Activity

* The figure is an application of the structure of Schmidt and Spreng (1996).

2.3 Antecedent Variable

Price

Though literatures about search behavior have been existed from early 1910s, it is from the economic paper of Stigler (1961) utilizing consumer search to analyze the price dispersion in market, a large number of researchers began to study on the topic of search behavior. The main idea of Stigler is that sellers' price the same product differently in real market, making it necessary for a buyer who wishes to get more benefit to survey various sellers before purchase happening; this phenomenon is defined by Stigler as 'search'. We can extract some keywords from the assertion above: price, buyer, get more benefit and survey various sellers, indicating the fundamental influence of price on consumer search behavior.

Consumers always try to avoid risks and maximize their satisfactions, which can be achieved by searching enough information. Beatty and Smith (1987) argued that people prefer to search product information when there is a higher perception of risk regarding the product. Thus, price, as an indicator of risk, which can be significantly decreased and therefore get more benefits from, is assumed to be positive correlated with search behavior, which have been noted by various researchers (Braden, 1973; Bucklin, 1966; Dommermuth and Cundiff, 1967; Katona and Mueller 1954; Kiel and Layton, 1981; Newman and Staelin, 1972; Udell, 1966; Towery, 1970). This paper tries to prove the positive correlation by google data across categories.

Propose the following hypothesis:

H1: Price will be positively associated with online search effort across product categories.

Competition Degree

As shown in Stigler's definition of 'search' as behavior to survey various companies, the competition degree of sellers can be another important variable affecting consumer search behavior.

Cox and Rich studied the apparel and furniture market and find the positive relationship of number of alternatives with search behavior, which was continued proving by Bucklin (1966), Dommermuth and Cundiff (1967), and Newman and Staelin (1972) in other product markets and all of them noted that number of alternatives are positively associated with search behavior. These results can be supported by the theory that people have the desire to make an optimal decision.

However, as the Schmidt and Spreng (1996) indicates that when the number of alternatives increases, consumers prefer to make decision in a defined set rather than search all alternatives implying a higher cognitive cost in evaluating. Considering this hypothesis might only be proved in a perfect competition market, ignore this situation in this paper.

Some literatures measured the competition degree in other methods besides number of alternatives. For example, Cort and Dorninquez (1977) measured competition degree with store distribution and proved a negative correlation between store distribution and search behavior; Claxton, Fry, and Portis (1974) measured competition degree with product differences in appliance and car market and got a positive influence of it on search behavior. Based on the concern that number of alternatives can be less effective in oligopoly market because there is a huge gap of market power between companies with large market share and companies with small market share, moreover, internet even enlarges this kind of gap, this paper induces an economic variable: concentration ratio

and try to prove a negative relationship with search behavior.

Propose the following hypothesis:

H2: Concentration ratio will be negatively associated with online search effort across product categories.

Knowledge

Knowledge is usually studied as one general variable in literatures. However, this concept can be classified into two detailed categories: objective knowledge and subjective knowledge, which maintain a huge distinction (Brucks 1985; Park, Mothersbaugh, and Feick 1994; Spreng and Olshavsky 1990). More specifically, objective knowledge is the thing that consumer already knew and can be aroused from their memory when they need it, while subjective knowledge is the thing that consumer 'believe' they knew about no matter what the fact is.

So the definition of knowledge can be extended from stored knowledge once studied by, for example, Kie and Layton (1981) and Punj and Staelin (1983), to a wider concept including experience as it gives consumers the feeling that they know about the product domain (Park et al., 1994). This wider definition of knowledge is used in this paper.

There are literatures proved knowledge has a positive association with search behavior and also literatures proved a negative association with search behavior. For example, Chase and Simon (1973), Bhatnagar et al. (2000) pointed out a high level of knowledge boosts a higher confidence and making people be able to comprehend and organize information more easily, which leading to more search behavior. While Johnson and Russo (1984) argued that

knowledge will decrease search behavior because a high level of knowledge makes consumer over-confident about themselves with enough knowledge and think less benefit coming from search behavior (Urbany et al., 1989).

The distinction comes from the fact that different mechanism shown in above Figure 1 works in consumer search behavior in different situations. When knowledge increases consumers' perceived ability to search, it leads to a positive association with search behavior. When knowledge decreases consumers' motivation to search, it comes out a negative correlation between knowledge and consumer search behavior.

This paper uses the number of consumer reviews to measure knowledge level. It is certain that in the view of review viewers, the more reviews, the higher subjective knowledge they will have. However, in the perspective of review writers, the objective knowledge and subjective knowledge can be measured in two ways:

Within the domain of specified category, a higher number of product reviews indicates a higher level of subjective knowledge and a lower objective knowledge. Since there are some theories argue that people's expectations of how others will evaluate their decision will impact the choices they make (Ariely and Levav 2000; Belk 1988; Calder and Burnkrant 1977), and in many circumstances they would like to switch away from a favored item that another person chose in order to assert their uniqueness (Ariely and Levav 2000), or avoid boredom in repetitive decision processes (Howard and Sheth 1969), as a result, changing brand circumstance can be especially frequent for a frequent consumption product (Howard and Sheth 1969). Consistent with these previous researches, this paper assume that consumers prefer to recommend some products new online as in a public space can be observed by others, in other words, some products without much stored knowledge in society level (rather low stored knowledge) but they think they know about it (high subjective

knowledge) instead of something familiar to them (both high objective knowledge and high subjective knowledge). Thus, the higher number of reviews of product there is, the less knowledge with the product people have comparing to other products in the same category.

However, in the view across categories, the circumstance can be different. The frequency to purchase different categories of products is quite different from TV to tissue, from movie ticket to moon pie for example. Since the reviews are given by people who have at least one consumption experience and as Park et al. (1994) argues that experience is a distinct construct to knowledge, a more frequent consumption category of products has a higher probability with a higher number of reviews and as a result, a higher level of objective knowledge comparing to other less frequent consumed categories.

The paper focuses on the level across categories rather than within category, so proposes the following hypothesis:

H3: Knowledge will be positively associated with online search effort across product categories.

Chapter 3. Method

3.1 Description of Data

The total search volume index is a combination of actual search volumes of related queries to search the specified category of product on google.com. For example, to search information about "cell phone", people might search a query like "best cell phone", "LG phone", "phone in Walmart" etc. These kind of category related queries are provided by Google Trend. However, since the data in Google Trend are relative value data, the absolute search volume data are got on keyword everywhere, which is an average month volume of the total searches that people have performed for each query over the last 12 months in google. For example, a search volume of 800 means that people have searched for this query on google for 800 times a month in google last 12 months. And the paper focuses on the region of USA since google.com is not available in some regions or countries like China and is limited in languages can be used. And USA is one of the world's largest countries in terms of internet usage and about 286,942,362, about 88.5 % of people are using internet (Internet Live Stats, 2016).

The paper analyses three motivating antecedent variables: price, competition degree (measured by concentration ratio) and knowledge across 88 categories, which can be roughly classified into apparel, beauty, food and beverage, entertainment and media, electronics, furniture, toy, transport etc. Those categories are randomly selected from Walmart.com, an online store of Walmart, which is an American retail corporation that operates a chain of hypermarkets, discount department stores, and grocery stores etc. Assume that the data provided by Walmart can represent the general level of price, competition degree and knowledge over the whole country since Walmart is the largest general retailer in the United States.

Price

Price data is from Walmart.com. The paper uses the average price to measure price level of each category.

Since the major user of google.com to search information for products are general people who have an average level of salary and enough spare time. There are some studies given by Cowan (2010) and Day (2011) that those consumers who are not willing to or cannot invest significant amount of time and effort in information search and processing, are likely to have limited cognitive abilities for evaluating complex information, which means, there are higher possibility for them to utilize a small number of information sources, a more professional website which can be used with specific purpose like using Bloomberg to search for financial information rather than using google.

Concentration Ratio

Concentration Ratio data are from Walmart.com and are extracted from filtering of brand. This paper chooses C_4 ratio, one of the mostly used Concentration Ratio, to show the competition degree of each product market. The formula is as follows, where S_1 to S_4 denoting to market share of top 4 brands and the market share is calculated by the product number proportion of total product number in each category.

$$C_4 = S_1 + S_2 + S_3 + S_4$$

Knowledge

Knowledge data is measured by the maximum number of reviews for one product in the category of product on Walmart.com. The maximum number of reviews are chosen for two reasons: First, it has a higher probability to be seen by consumer browsing around which means a higher priming effect of indirect experience. Second, since brand changing can be more often for a frequent consumption goods to avoid bored decision procession (Howard and Sheth 1969), products with a higher purchasing frequency are not always with a higher average number of reviews.

Walmart.com allows purchased consumers to rate and write commends for the product. This paper focuses on the influence of general level of knowledge on the consumer online search activity without considering the different influence of various ratings or more specifically positive/negative reviews.

Chapter 4. Analysis and Results

4.1 Collected Data

Table 2 shows an average month data in past 12 months （Full table in Appendix）. Each category contains around 1000 products' data. The category of product with the highest search volume is mp3 player with 17104670 search volume (average price $60, CR4 32%, review 1861) while the category of product with the lowest search volume is plier with 15430 search volume (average price $27, review 48, CR4 19%).

Table 2. Search Volume Across Categories

Category	SV	Price	CR4	Review
watches	13766100	61	0.08	53
earring	1278400	34	0.03	74
flats	2368200	29	0.15	77
skirt	1914400	20	0.03	100
necklace	2137500	30	0.01	119
heels	2411800	41	0.31	246
boots	8668800	38	0.04	389
sweater	2235480	20	0.01	420
slippers	3487600	21	0.14	442
shorts	1490100	18	0.02	910
jean	1652490	24	0.02	1437
perfume	2212260	38	0.11	987
blush	1183020	10	0.24	1058
contour	1819840	39	0.20	1259
brows	998500	17	0.30	1942
sun cream	66200	21	0.27	2891
...				

4.2 Descriptive Statistics and Pearson Correlations

Table 3 shows the descriptive statistics of one dependent variable （search volume） and three determinants （Price, Concentration ratio and Review number）. Table 4 shows the

pearson correlations between two of them.

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
SV	88	15430	17104670	4176690	4237991	1.449	.257
Price	88	4.73	1162.87	115.83	190.18	3.263	.257
CR4	88	.0064	.96	.23	.21	1.829	.257
Review	88	.0	32022	4116.08	6668.96	2.692	.257
Valid N (listwise)	88						

According to results of table 4, summarizes the verification results as follow:

H1: **Supported**. Price will be positively associated with online search effort across product categories.

H2: **Contrary logic.** Concentration ratio will be positively associated with online search effort across product categories rather than negatively associated with.

H3: **Unsupported**. Knowledge was not associated with total online search effort across product categories.

Table 4. Correlations

		Search Volume
Price	Pearson Correlation	.503**
	Sig. (2-tailed)	.000
	N	88
CR4	Pearson Correlation	.211*
	Sig. (2-tailed)	.048
	N	88
Review	Pearson Correlation	-.019
	Sig. (2-tailed)	.858
	N	88

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

However, when draw a scatter diagram with "P" indicating "Price", "R" indicating "Review number", "C" indicating "Concentration Ratio" and "SV" indicating "Search Volume", what kind of relationship between variables are there are hard to be estimated.
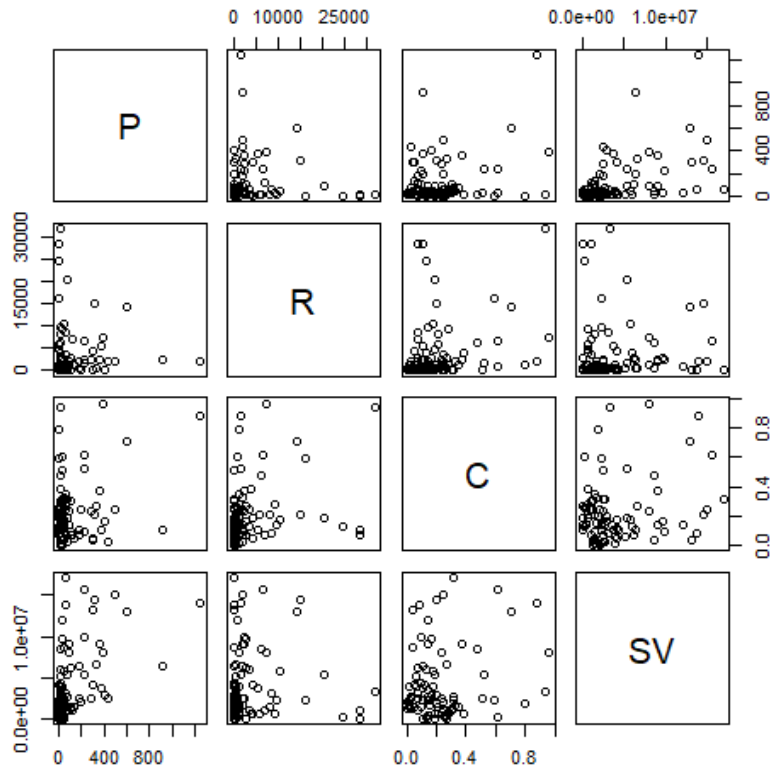

Figure 2. Scatter Gram of all determinants and Search Volume

4.3 Regression Analysis

Assume those variables are linearly associated and apply the model:

$$\log(\text{SV}) = \beta_0 + \beta_1 \log(P) + \beta_2 C + \beta_3 R + \varepsilon$$

Log transform search volume variable and price variable because the distributions of them are positively skewed (Greene 2003).

4.4 Results

The results show that only the price variable is significantly and positively associated with search volume (Table 5) in the linear regression model, approving the first hypothesis that people will search more for higher price product. However, the significant correlation of concentration ratio disappeared when considering the effect of price at the same time. Because Concentration ratio is highly related to price variable ($t = 2.9188$, $df = 86$, p-value = 0.004484) and also related to review number ($t = 2.348$, $df = 86$, p-value = 0.02117). But there is no collinearity between those variables (VIF<2).

Table 5. Results of Regression

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.605	.318		17.652	.000***
P_log	.466	.101	.451	4.619	.000***
CR4	.231	.279	.083	.828	.410
Review	−8.362E−6	.000	−.096	−.960	.340

***. Correlation is significant at the 0.001 level (2−tailed).

Draw and observe the scatter gram between price and search volume (Figure 3) below, notice that the influence of price on search behavior may not consistent and search volume is not affected by price at all when below a specific price line which is estimated in the range of $0 to $100.
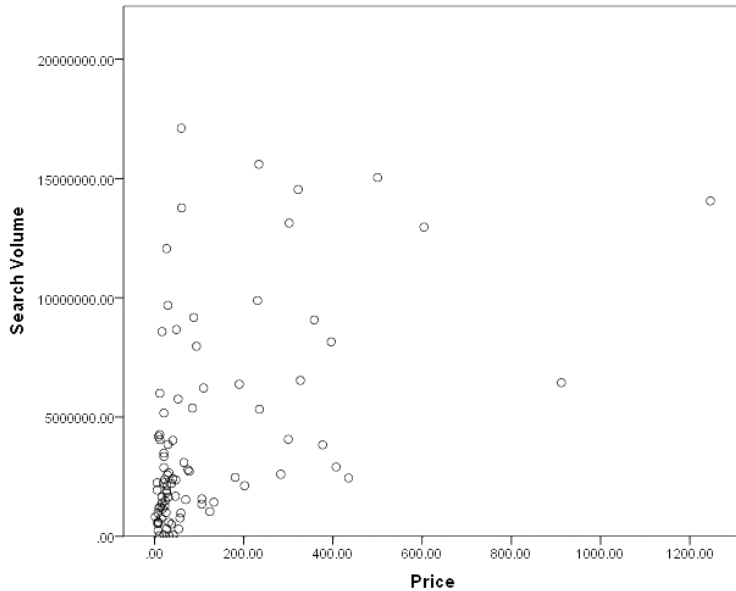
Figure 3. Scatter Gram between Price and Search Volume

Extend from the scatter gram, the paper believes the reason why Concentration Ratio and Review Number are not significantly related to search behavior is because there can be a break point for the search effort curve (Figure 3):

- upper the break point, most determinants for external search behavior keep significant correlation with online search behavior
- below the break point, most of the determinants will have less or even no influence on search behavior.

Since the cost of gathering information is much lower online than offline (Hoffman and Novak 1996; Zettelmeyer et al., 2006), thus, the constrained power of determinants from environment segment or customer characteristic segment (Table 1 in Chapter 1) which influence the search behavior by increasing or decreasing the cost or benefit indirectly, unlike product related determinants representing the cost or benefit themselves in some degree, will be lower in online consumption environment.
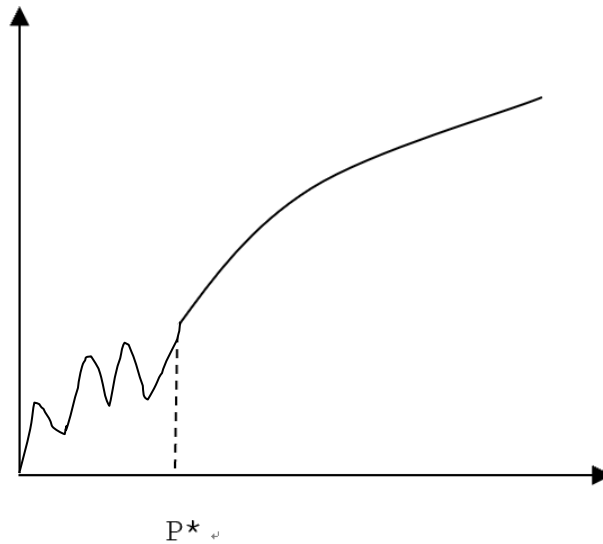
P*

Figure 4. Conceptual Figure of Search Effort Function with a Break Point

Table 6 is the combination table of not only price variable but all three determinants' correlations with search volume in different price segmentations. "10" in the first row means the product price is "$10", the "High" and "Low" in the second column mean "products are more expensive than $XX" and "products are cheaper than $XX".

According to the table, the break point is roughly estimated to be located between $60 and $70.

Table 6. Correlations Segmented by Price

	Price	10	20	30	40	50
Price	High	0.48***	0.47***	0.45***	0.43***	0.38*
	Low	0.22	0.22	0.35*	0.23	0.11
CR4	High	0.25*	0.24*	0.33*	0.32*	0.38*
	Low	0.21	0.14	−0.04	−0.07	−0.07
Review	High	0.07	0.14	0.22	0.23	0.19
	Low	−0.29	−0.26	−0.17	−0.18	−0.16

	Price	60	70	80	90	100
Price	High	0.30	0.35	0.41*	0.43*	0.45*
	Low	0.22	**0.22***	0.25	0.32*	0.36**
CR4	High	0.40*	0.47*	0.49**	0.50*	0.50*
	Low	−0.02	−0.06	−0.06	−0.07	−0.07
Review	High	0.16	**0.45***	0.25	0.41*	0.41*
	Low	−0.12	−0.12	−0.14	−0.11	−0.12

***. Correlation is significant at the 0.001 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Chapter 5. Discussion and Limitation

5.1 Implications

There are three major theoretical implications of the paper:

First, the paper uses google search data to measure the online search effort while the prior researchers use rather undirect measurements. And the total search volume data is calculated based on google trend and keyword everywhere, the two authoritative search data collecting websites.

Second, the paper does the research across product categories, which is meaningful in proving the consumer similarity rather than heterogeneity as the purchase behavior of consumers often occur simultaneously in multiple categories.

Third, found that price variable is positively correlated with online search effort which significance is extremely high while the other two determinants is not consistently related to search behavior but showing different relationships in different segment of price. Which means, there can be a break point with specified price for the search effort function. With the low cost of online searching, consumers will not be constrained by environmental or customer characterized external search effort determinants below the break point.

5.2 Limitations

Besides the possibility of existence of break point in online search effort curve, the causes of no significant correlation between search volume and concentration ratio (or review numbers) can be summarized into three other possible reasons:

- The sample size is not big enough. The paper collected nearly 9000 products' brand, price and review data. However, when it comes to category level, the number of categories shrinks into 88 small category and 7 big

categories.

- · An accuracy problem in data collecting. The search volume data is the collection of search volume of each category's related searching queries. However, there can be personal typing habits, abbreviation, mis-spelling etc. making the data collection more difficult to be accurate enough.
- · The determinants in this paper are from survey-based papers, which can be not suitable in the online searching process.

5.3 Further Studies

For further studies, more variables should be selected to do the research as the paper chooses only three determinants, one from each segment across environment, product themselves and customer characteristics.

To give a more persuasive conclusion about the existence of break point in searching function and the existence of differences between cost (benefit) directly related determinants like price in product segment from Table 1 and indirectly influencing factors like knowledge or competitive degree from consumer characteristic segment and environment segment from Table 1 below and upper the break point in online searching function, more variables and larger sample size should be required.

References

Ariely, D. and Levav, J. (2000) "Sequential choice in group settings: Taking the road less traveled and less enjoyed." Journal of Consumer Research 27(3):279 – 90.

Beatty, S.E., Smith, S.M., (1987). "External search effort: an investigation across several product categories." J. Consum. Res. 14 (June), 83–95.

Bettman, J.R. (1975). "Issues in Designing Consumer Information Environments." Journal of Consumer Research, 2 (December): 169–77.

Bettman, J.R. (1979), "An Information Processing Theory of Consumer Choice," Reading, MA: Addison-Wesley.

Bettman, J.R. and Park, C.W., (1980). "Effects of prior knowledge and experience and phase of the choice process on consumer decision processes: a protocol analysis." J. Consum. Res. 7, 234–248.

Bhatnagar, A., Misra, S. and Rao, H. R. (2000), "On risk, convenience, and internet shopping behavior", Communications of the ACM, Vol. 43 No. 11, pp. 99–105

Bloch, P. H., Bruce, G. D. (1984). "Product involvement as leisure behavior." In: T. C. Kinnear (Ed.), Advances in Consumer Research, Vol. 11 (pp. 197–202). Ann Arbor, MI: Association for Consumer Research.

Braden, P. L. (1973), "A Longitudinal Examination of Information Search During Major Household Economic Decisions," unpublished DBA thesis, Indiana Universi

Brucks, M. (1985), "The Effects of Product Class Knowledge on Information Search Behavior," Journal of Consumer Research. 12 (June), 116.

Bucklin, L. P. (1966), "Testing Propensities to Shop." Journal of Marketing. 30 (January), 22–27.

Calder, B. J. and Burnkrant, R. E. (1977), "Interpersonal Influence on Consumer Behavior: An Attribution Theory Approach." Journal of Consumer Research, 4 (June), 29–38.

Chase, W. G. and Herbert A. S. (1973). "Perception in Chess." Cognitive Psychology 4 (January): 55-81

Claxton, J. O., Joseph, N. F. and Portis, B. (1974), "A Taxonomy of Prepurchase Information Gathering Patterns," Journal of Consumer Research. 1 (December),35-42

Cort, S. G. and Luis, V. D. (1977), "Cross- Shopping and Retail Growth," Journal of Marketing Research. 14 (May), 187-192

Dommermuth W.P. and Cundiff, E.W. (1967), "Shopping Goods, Shopping Centers and Selling Strategies," Journal of Marketing, 31 (January), 32-36.

Engel, J., Blackwell, R. D. and Miniard, P., (1995). "Consumer Behavior", 8th ed. Dryden, Fort Worth, TX.

Greene, William H. (2003), "Econometric Analysis", 5th ed. New York: McMillian

Gursoy, D., (2001). "Development of travelers' information search behavior model." Unpublished Doctoral Dissertation. Virginia Polytechnic Institute and State University, Blacksburg, VA.

Hoffman, D. L. and Novak, T. P. (1996), "Marketing in Hypermedia Computer Mediated Environments: Conceptual Foundations," Journal of Marketing, 60 (July), 50–68

Howard J. A. and Sheth, J. N. (1969), "The Theory of Buyer Behavior." New York: John Wiley

Huang, P., Lurie, N. H., and Mitra, S. (2009). "Searching for Experience on the Web: An Empirical Examination of Consumer Behavior for Search and Experience Goods," Journal of Marketing (73:2), pp. 55-69.

Johnson, E. J. and Russo, J. E. (1984), "Product Familiarity and Learning New Information." Journal of Consumer Research 11 (June): 542-550.

Johnson, T.J., Kaye, B.K., (2009). "In blog we trust? Deciphering credibility of components of the internet among politically interested internet users." Comput. Hum. Behav. 25 (1), 175-182

Katona, G and Mueller, E. (1954), "A Study of Purchase Decisions," in Consumer Behavior. Vol. 1, ed. Lincoln

Kiel, G. C. and Layton, R. A. (1981), "Dimensions of Consumer

Information Seeking," Journal of Marketing Research. 18 (May), 233–239.

Kotler, P. and Armstrong, G. (1994), "Principles of Marketing." 6th ed. Englewood Cliffs, NJ: Prentice Hall.

Kulviwat, S., Guo, C. and Engchanil, N. (2004), "Determinants of online information search: a critical review and assessment", Internet Research, Vol. 14 No. 3, pp. 245–53.

Leigh, T. W., and Rethans, A. J. (1984), "A Script-Theoretic Analysis of Industrial Purchasing Behavior." Journal of Marketing, 48 (Fall): 22–32.

Lu, A.C.C., Gursoy, D., (2015), "A conceptual model of consumers' online tourism confusion." Int. J. Contemp. Hosp. Manag. 27 (6), 1320–1342.

Lynch, J. G. and Srull, T. K. (1982), "Memory and Attentional Factors in Consumer Choice: Concepts and Research Methods." Journal of Consumer Research, 9 (June): 18–37.

Murray, K. B. (1991). "A Test of Services Marketing Theory: Consumer Information Acquisition Activities." Journal of Marketing, 55 (January): 10–23.

Newman J. W. and Staelin R. (1972), "Prepurchase Information Seeking for New Cars and Major Household Appliances," Journal of Marketing Research. 9 (August), 249–257

Park, C. W, Mothersbaugh, D. L. and Feick. L. (1994), "Consumer Knowledge Assessment." Journal of Consumer Research 21 (June): 71–82

Petty, Richard E., John T. Cacioppo, and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," Journal of Consumer Research. 10 (September), 135–146

Punj, G. N. and Staelin, R. (1983), "A Model of Consumer Information Search Behavior for New Automobiles," Journal of Consumer Research. 9 (March), 366–380.

Schmidt, J. B. and Spreng, R. A. (1996). "The Effect of Price, Brand Name, and Store Name on Buyers' Perceptions of Product Quality: An Integrative Review." Journal of Marketing Research 26

(August): 351-357.

Sherry, J. F. (1990), "A sociocultural analysis of a midwestern flea market". Journal of Consumer Research, 17 (June), 13-30

Spreng, R. A. and Olshavsky, R. W. (1990), "The Impact of Standard of 'Comparison and Knowledge Domain on the Measurement of Subjective Knowledge." In Proceedings of the American Marketing Association Summer Educators' Conference. F_As. A. Parasuraman and W. Bearden. Chicago: American Marketing Association, 44-48.

Stigler, G., (1961), "The economics of information". J. Polit. Econ. 19, 213-225.

Towery, H. (1970), "A Study of the Buying Behavior of Mobile Home Purchasers," Southern Journal of Business. 5 (July), 66-74

Udell, J. G. (1966), "Prepurchase Behavior of Buyers of Small Electrical Appliances," Journal of Marketing, 30 (January), 50-52

Urbany, J. E., Dickson, P. R. and Wilkie, W. L. (1989), "Buyer Uncertainty and Information Search." Journal of Consumer Research 16 (September): 208-215.

Zettelmeyer, F., Morton, F. S. and Risso, J. S. (2006), "How the Internet Lowers Prices: Evidence from Matched Survey and Automobile Transaction Data," Journal of Marketing Research, 43 (May), 168-81.

Appendix

Appendix 1. Full Table of Table 2

Category	SV	Price	CR4	Review
watches	13766100	61	0.08	53
earring	1278400	34	0.03	74
flats	2368200	29	0.15	77
skirt	1914400	20	0.03	100
necklace	2137500	30	0.01	119
heels	2411800	41	0.31	246
boots	8668800	38	0.04	389
sweater	2235480	20	0.01	420
slippers	3487600	21	0.14	442
shorts	1490100	18	0.02	910
jean	1652490	24	0.02	1437
perfume	2212260	38	0.11	987
blush	1183020	10	0.24	1058
contour	1819840	39	0.20	1259
brows	998500	17	0.30	1942
sun cream	66200	21	0.27	2891
mascara	761990	15	0.38	4134
eyeshadow	607110	8	0.19	4583
eyeliner	541800	7	0.26	5087
concealer	567943	9	0.21	5865
lipstick	8580760	17	0.47	6486
foundation	1395490	17	0.22	8308
primer	596430	32	0.28	9567
face wash	245600	8	0.13	24866
hair conditioner	33700	11	0.10	28716
shampoo	980270	8	0.07	28716
camcorder	13127700	265	0.04	186
computer monitor	6536234	302	0.27	523
air purifier	1571300	143	0.09	558
hair dryer	310440	54	0.26	862
headphone	2661980	32	0.14	999
heater	2788980	53	0.03	1020
toaster	7967490	94	0.24	1364
mp3 player	17104670	60	0.32	1861
camera	14057800	1163	0.88	1885
coffee maker	9175250	88	0.15	2104
air conditioner	15035830	500	0.24	2236
TV	9073800	358	0.37	2456
oven	2603990	283	0.23	2494
microwaves	979110	59	0.25	3724
refrigerator	3835390	377	0.11	5488
cell phone	15588420	234	0.61	6742
desktop	8152830	414	0.96	7344
blender	5756960	53	0.17	10417
laptop	12959800	604	0.71	14579
washer	14537490	322	0.21	14996

mixer	5376380	85	0.19	20637
horror	4265580	12	0.10	90
roller skates	2724000	78	0.31	161
scooter	6376130	190	0.11	369
comedy	4180240	10	0.11	410
action	4057177	12	0.18	415
stroller	2908960	237	0.17	552
toy	3853900	30	0.02	1295
mountain bike	5326450	235	0.52	1688
skateboard	2576580	45	0.51	0
pretzel	812380	5	0.24	314
nuts	1163307	16	0.24	318
pudding	2884340	21	0.20	409
cookies	5167600	21	0.06	418
soft drink	60530	42	0.14	548
popcorn	1646730	17	0.15	758
cracker	12057800	27	0.14	817
rice cake	322600	27	0.61	982
oatmeal	1538480	70	0.35	1333
cereal	1941970	6	0.79	1333
granola bar	769200	57	0.28	1415
breakfast bar	512550	38	0.15	1415
sports drink	1683100	47	0.33	1996
coffee	5995300	12	0.13	3807
granola	1350730	46	0.31	4628
water	3095400	66	0.08	8479
juice	2384860	23	0.14	9798
tea	2249800	6	0.59	16300
bookcase	1431750	133	0.05	1113
dining room sets	2446900	435	0.03	2001
tv stand	2471680	181	0.07	2224
sofa	6441850	912	0.10	2257
beds	9881690	231	0.10	2324
kids bedding	9683200	30	0.17	2781
office chair	6219020	110	0.07	2944
dresser	4065700	300	0.05	4396
desks	1043300	124	0.07	7130
plier	15430	27	0.19	48
ceiling fan	2124060	119	0.24	259
curtains	1243600	13	0.01	662
lamp	4022630	27	0.06	799
laundry detergent	3348620	21	0.94	32022

Abstract

이 논문은 여러 카테고리에서 온라인 검색활동과 그에 대한 영향요인사이의 관계를 새로운 데이터를 활용하여 재검증을 하였습니다. 온라인 검색활동은 Google Trend에서 제공하는 카테고리별 관련된 모든 검색 내용의 구글 검색량으로 측정하고 총합을 내여 직접적으로 검색활동을 나타냈습니다. Beatty-Smith의 연구로부터 세가지 영향요인: 가격, 경쟁정도와 지식을 선택하여 검색량과의 상관관계를 분석하였습니다.

주요어: 온라인 검색의 결정요인, 외부 검색, 소비자 의사결정, 구글 검색량
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