

Information Search Behavior Scale Development: Internal and External Search

Kamal Ghalandari,

Department of Business Management, Payame Noor University, PO BOX 19395-3697 Tehran, I.R. of IRAN
Corresponding Author E-Mail: kamal.ghalandari@gmail.com

Abdollah Norouzi,

Department of Business Management, Science and Research Branch, Islamic Azad University, Tehran, Iran

Sareh Masoudi,

Fatemiyeh (P. B. U. H) Shiraz Nongovernmental, Nonprofit High Education Institute, Shiraz, Iran

Hasan Aminpoor,

Department of Psychology, Payame Noor University, PO BOX 19395-3697 Tehran, I.R. of IRAN

Asghar Taheri

Course Planning and Management Master, Namazi High School Chief (second period) Shiraz Training and Education Organization, Fourth Area

ABSTRACT — The present study outlines the development of a scale for information search measurement and begins with a brief discussion of the origins of the information search construct with two aspects: external and internal search. In order to scale development after literature review, the related items created. In this respect, employing literature on construct of customer value and seeking opinions of marketing experts in a focus group. After test of validity and reliability in the next step, in order to conduct main study, students in master and Ph.D. program of studies in Tehran area who have at least on experience of buying the intended product (laptops) were used. In total 293 questionnaires were completed and gathered. In the other step exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used. Final measure was designed consisting of 9 items; 5 items for external search and 4 ones for internal search. The present research showed that information search by consumer can be conducted in two forms. In first one consumer pays attention to references and reports and/or existing advertisements associated with intended product and obtains required information and in second form consumer can refer to information in his/her memory and trust it.

KEY WORDS: Information Search Behavior, External Search, Internal Search, Pre-purchase Search, Ongoing Search.

Introduction

One of the troublesome issues confronting consumer behavior research concerns the nature of the information search behavior as a major step in the consumer decision making process. Nearly every introductory marketing and consumer behavior textbook depicts the consumer purchase decision process as a series of steps progressing from problem recognition, to information search, to evaluation of alternatives, to purchase decision, and finally to post-purchase behavior. In the information search stage, consumer's actively collect information to make potentially better purchase decisions (Schmidt and Spreng, 1996). To understand consumer behavior, consumer knowledge is an important construct. This is because, before the consumer performs actual purchasing behavior, he/she most likely experiences two procedures:

1) Information search: this means when the consumer faces many consuming relevant questions, he/she requires relevant information to assist with his/her consuming decision. This type of search of appropriate information procedure is called information search (Lin and Chen, 2006). Information processing: includes consumer self-selects to expose, notice, recognize, agree, accept, or retain. No matter how much knowledge the consumer has, it all affects his/her procedures concerning information search and information processing (Brucks, 1985). In the information search stage, consumers actively collect information to make potentially better purchase decision. It should be noted consumer also acquire product-related information even when they are not planning to buy the product in the near term but rather sometime in the future (Schmidt and Spreng, 1996). In the dynamic global environment of today, understanding how consumers acquire information is important at the micro level for marketing management decisions and at the macro level for public policy decisions (Srinivasan 1990; Wilkie and Dickson 1985). For marketing managers, understanding information search determinants is crucial for designing effective marketing communication campaigns because "Information search represents the primary stage at which marketing can provide information and influence consumers' decisions" (Wilkie and Dickson 1985, p. 85). Consumer information search is important for managerial decisions. Because ability to search is intrinsic, managers can choose to lower search costs or increase benefits of search, which will increase consumers' motivation to search. Further, during this period of rapid change, information is more ubiquitous than ever before. However, it is imperative that consumers be given quality information, in the proper form, at the right time (Schmidt and Spreng, 1996). If it is true that information search is an important stage in consumer purchase decision

making process, then managers need to understand what information search and where they should focus their attention to achieve competitive advantage. Despite information search's importance, however, there has been relatively little empirical research to develop an in-depth understanding of the concept. Even less research has focused on specifying its domain or on developing a practical and operational information search scale. In other hand many of researches used single dimension for information search measurement (e.g. Schmidt and Spreng, 1996; Mattila and Wirtz, 2002). Therefore, this research is trying to explore on multi dimensions of information search. The objectives of the research are: (1) Discussion of the origins of the information search construct and its dimensions; (2) Investigate the development of a scale for information search along two important dimensions: Internal and External search. In this relation, Schmidt and Spreng (1996) investigated about external information search. They showed that the effects of antecedents of information search are mediated by four variables: ability, motivation, costs, and benefits. This model integrates the psychological search literature by incorporating ability and motivation to search for information and the economic paradigm that centers on the perceived costs and benefits of information search.

The Concept of Information Search Behavior

Consumer information search is one of the most enduring literature streams in consumer research (Beatty and Smith 1987). As a field of study, marketing has been interested in consumer pre-purchase information seeking since at least 1917 (e.g., Copeland 1917). Claxton, Fry, and Portis (1974) provide one explanation for the observed lack of pre-purchase search reported by consumers (p. 35): Information gathering is a continuous process, even when the purchase is not foreseen. As a result, when the decision is made to make a purchase, relatively little explicit search is required. Although consumer information search has long been conceptualized as a pre-purchase activity, a few researchers have recognized that consumers search at other times and for other reasons. Tauber (1972) delineated a list of shopping motives, most of which were separate from desires to make a good purchase. Bellenger and Korgoankar (1980) found that many consumers enjoy the act of shopping itself, without respect to buying, while Bloch and Richins (1983) found that retail store browsing was positively related to product interest, product knowledge, and word-of-mouth activity concerning the product. Kiel and Layton (1981) also, indicated that "consumer information search behavior can be conceptualized as a series of interrelated behaviors" (p. 239). Bloch, Sherrell and Ridgway (1986) distinguished between pre-purchase search and ongoing search. Pre-purchase search has been defined as (Kelly 1968, p. 273): Information seeking and processing activities which one engages in to facilitate decision making regarding some goal object in the marketplace. Search occurring outside of purchase contexts, as noted earlier, is a considerably more obscure concept and is the primary focus of the present investigation. Ongoing search is conceptualized as search activities that are independent of specific purchase needs or decisions. That is, ongoing search does not occur in order to solve a recognized and immediate purchase problem. While it is conceptually useful to differentiate ongoing search from pre-purchase search, the two concepts are difficult to separate in practice. The problem lies with precisely specifying when a purchase problem has been recognized and the decision process started. The willingness and ability of the consumer to make a purchase at the time the search occurs may be the best distinguishing characteristic of these two search domains. When a person is searching with an interest in a product but without a demand (i.e., financial resources or intention to buy are lacking), s/he is engaging in ongoing rather than pre-purchase search (Bloch, Sherrell and Ridgway, 1986). The term "ongoing" indicates that the behavior occurs on a relatively regular basis, independent of sporadic purchase needs. Ongoing search for automobiles, for example, may include subscriptions to automotive magazines. In contrast, pre-purchase search may involve reading the same magazines, but only once every three or four years, when a new car purchase is at hand. While pre-purchase search and ongoing search can be differentiated by their purposes, the activities involved would appear identical to an outside observer (Furse, Punj, and Stewart, 1984). The information search process may be internal or external. Internal search occurs when consumers use information already stored in memory, whereas external search involves seeking information from the environment because the required information was not previously acquired or is unable to be recalled from memory (Schmidt and Spreng, 1996). Searching the memory for product-related information as internal search is fast and requires relatively little cognitive effort (Punj and Staelin, 1983). Beatty and Smith (1987) defined external search effort as "the degree of attention, perception, and effort directed toward obtaining environmental data or information related to the specific purchase under consideration"(p. 85). Schmidt and Spreng (1996) defined external search as the degree of attention, perception, and effort directed toward obtaining environmental information associated with consumption-related objects, regardless of whether the consumption objects are related to a specific purchase under consideration. This type of search, also called ongoing search (Bloch, Sherrell, and Ridgway 1986, p. 120).The sources of information that are used during external search by Olshavsky and Wymer (1995) classified into several types: marketer controlled communications (e.g., personal selling, advertising, product information on package, product brochures), reseller information (e.g., catalogs by reseller, information charts, consultants), third-party independent organizations (e.g., Consumers Union, newspaper and magazine articles), interpersonal sources (e.g., friends, acquaintances, word of mouth), and direct inspection (e.g., observation, inference). In this study we use of these type of information search (external and internal search) for scale development.

Methodology

Extraction of Items

In present study, the process suggested by Churchill (1979) was used for developing appropriate scale to measure the intended construct. Churchill (1979) states that the first step in relation to develop an appropriate scale in marketing is to study theoretical literature on the intended construct and/or examine existing theories related to it. In the next step, researcher should be able to develop items using these theories and related literature. In order to extract items related to construct, in addition to use extant literature, a focus group was formed from eight Ph. D. students in the field of marketing. From these eight individuals, four ones

were female and the rest were male and mean age of them was 31 years old. In this session, experts expressed their views in relation to items of information search. They proposed information search items in the form of internal and external search. In total, 58 items were extracted using reviewed theoretical literature on information search and gathering expert opinions from focus group. From 58 extracted items, 37 ones were on external information search and 21 ones were on internal information search. These items were developed using 5-point Likert scale.

Purification of Items

Face Validity: After collecting items via reviewing extant literature in the field of consumer information search and gathering expert opinions through setting up focus group, items should be purified. In this step, face validity and content validity were examined. Intended items were examined employing marketing experts. Also items were evaluated from subjects (master's and Ph. D. students) perspective to ensure that they understand items. After gathering their opinions, 39 items were remained. Twenty two items related to external search and 17 ones related to internal search were results obtained from this step.

Content Validity: In the next step in order to purify and validate extracted items, content validity of remaining items was examined. In this step, suitability of extracted items to evaluate the intended construct was examined from experts' viewpoints. After gathering opinions of experts and extracting Lawshe (1975) coefficient, suitability or unsuitability of items was determined. The formula being used for evaluating content validity is as follows:

$$CVR = \frac{ne - \frac{N}{2}}{\frac{N}{2}} \quad (1)$$

Where N is number of evaluators and n is number of individuals who agreed with the intended item. This coefficient should be more than 78% for 9 participating experts. After calculating this coefficient, items were reduced to 25 ones. Fourteen items remained for evaluating external search and eleven ones were used for evaluation of internal search.

Selection of Subjects and Stimulus

Based on previous research on consumer cognition and information (Johnson and Russo, 1984; Roa and Monroe, 1988; Braunsberger, buckler and Lockett, 2008), masters and Ph. D. students in various fields of management in Tehran region were employed as study population. Stimuli chosen for present study was laptops. The reason for this selection was that based on collected data, 87% of the study population had experience of purchasing laptops. Another reason was that with respect to technology of laptops, everyday new information spreads on them and this fact can be useful for information search construct. Responders to items were those who experienced purchasing laptops at least one time and had been involved in purchasing them.

Pre-test

In the next step of purification of items and evaluation of their reliability with participation of students, 48 questionnaires including 25 items extracted in previous steps and with laptops as stimulus were distributed to subjects and were collected after completion. Cronbach's α (0.82) was extracted using software SPSS. In order to increase Cronbach's α , those items eliminating them increases its value can be deleted. After eliminating five irrelevant items, Cronbach's α increased to 0.872. At the end of this step of study, number of items decreased to 20 ones which among them 11 remaining ones were related to external search and 9 ones remained for evaluating internal search.

Main Study

In order to obtain results and extract suitable items the main study was conducted by participation of 293 masters and Ph. D. students in Tehran region. Subjects were those who had experience of purchasing laptops at least one time and somehow had been involved in buying this product. Based on collected data, 54 percent of sample was female and 46 percent were male. Also 81 percent of students were at master's level and 19 percent were Ph. D. students. Mean age of sample was 27.

Results

In first step after collection of data, Exploratory Factor Analysis (EFA) using SPSS software was employed for exploration of items and enhancement of items validity. In order to use this method, at first adequacy of sample should be ensured by conducting related test and then EFA can be performed. In order to ensure adequacy of sample for EFA, Kaiser-Meyer-Olkin (KMO) test was used and the reported value was 0.743 which showed adequacy of sample for conducting EFA. After ensuring sample adequacy for EFA, this analysis was performed. Purpose for conducting this test was to calculate the extent of communalities and eliminate items having low communality. After conducting Exploratory Factor Analysis, irrelevant items or in other words items with low communality were eliminated. Communality values are shown in table1. Communality values less than 0.5 were considered irrelevant and eliminated. After completion of Exploratory Factor Analysis, items were reduced to 15 ones and 5 items were eliminated because of their low communalities. From remaining 15 items, 8 ones were related to external information search and 7 ones were for internal information search.

Table 1. Communalities

Items	Ext. 1	Ext. 2	Ext. 3	Ext. 4	Ext. 5	Ext. 6	Ext. 7	Ext. 8	Ext. 9	Ext. 10	Ext. 11
Extraction	0.787	0.791	0.624	0.472	0.817	0.579	0.778	0.726	0.490	0.696	0.473
Items	Int. 1	Int. 2	Int. 3	Int. 4	Int. 5	Int. 6	Int. 7	Int. 8	Int. 9		
Extraction	0.705	0.786	0.678	0.684	0.473	0.681	0.658	0.430	0.532		

Ext.: Items for external search

Int.: Items for internal search

In next step, in order to purification of scale and achieving a valid scale for evaluating information search behavior, Confirmatory Factor Analysis was conducted and software LISREL was employed in this respect. The extracted model showed a good fitness as reflected by fitness indices (RMSEA=0.08, CFI= 0.94, NFI= 0.90, NNFI= 0.91, GFI= 0.92). After extraction of model, t-value reported for each item was employed to eliminate irrelevant items. In other words each item with insignificant t-value was eliminated. After this step, remaining items were reduced to nine ones among them five ones were related to external information search and four ones were related to internal information search. All standardized factor loadings are higher than 0.5. order to ensure reliability of extracted items and create an appropriate scale for evaluating information search behavior, composite reliability and average variance extracted (AVE) were obtained and statistical data are summarized in Table2. These findings show that the extracted scale has appropriate reliability because composite reliability was above 0.7 and AVE was above 0.5. In order to evaluate discriminant validity, the method described by Fornell and Larker (1981) was used. In this method shared variance is compared with AVE and if AVE of each construct is larger than shared variance of other construct, it can be concluded that discriminant validity exist.

Table 2. Confirmatory factor analysis results and composite reliability and AVE

		Items	1	2	3	4	5	Factor Loading	Composite Reliability	AVE
Information Search Behavior	External Search	I obtain information on this product through my friends	1	2	3	4	5	0.52	0.83	0.63
		I obtain main information on this product through advertisements and promotions but I will search other information too.	1	2	3	4	5	0.51		
		I would like to obtain information on this product.	1	2	3	4	5	0.61		
		I would like to study about this product.	1	2	3	4	5	0.67		
		I pay attention to advertisements and reports on this product.	1	2	3	4	5	0.77		
	Internal Search	In purchasing this product, I am certain about having a satisfactory purchase based on my previous information.	1	2	3	4	5	0.62	0.82	0.61
		In purchasing this product, I refer to information in my memory.	1	2	3	4	5	0.61		
		In purchase of this product, I review my previous purchase experience.	1	2	3	4	5	0.56		
		In purchase of this product, I rely on previous personal experience.	1	2	3	4	5	0.75		

- (Fitness indexes: RMSEA= 6.69, CFI= 6.86, NFI= 6.86, NNFI= 6.82, GFI= 6.81).
- Composite reliability computed as $(\sum \lambda)^2 / [(\sum \lambda)^2 + \sum \text{var}(\epsilon)]$ / Average variance extracted, which is the proportion of variance in the construct that is not due to measurement error (Fornell and Larker, 289)

Discussion and Conclusion

Purpose of present study was to develop a scale to measure information search behavior which based on opinions of such experts as Brucks (1985), Matilla and Wirtz (2002), and Schmidt and Spreng (1996), it included two types of internal search and external one. Research by above-mentioned experts was widely focused on studying the effect of variables and their relationships with information search and such variables as consumer knowledge and paid little attention to development of a scale for measurement

of search behavior. Study steps were designed based on paradigm proposed by Churchill (1979) which addresses steps for construction of scales in marketing field. After conducting validity and reliability tests including content validity, discriminant validity, Cronbach's α , composite reliability and AVE together with exploratory and confirmatory factor analyses, the final scale was designed which consisted of nine items from which five ones measured external information search behavior of consumer and four ones measured internal information search behavior of consumer. Present study showed that search of information by consumer can be conducted in two forms. In first one consumer pays attention to references and reports and/or existing advertisements associated with intended product and obtains required information and in second form consumer can refer to information in his/her memory and trust it. It was shown that in order to understand and evaluate consumer's search behavior in a correct manner, both types of information search and the relationship between them should be studied and comprehensive promotional and advertising plans should be devised and implemented based on these two types. On the other hand present study similar to previous ones showed that consumer information search is an important factor in managerial decision making because ability to search is an intrinsic capability and by understanding it, managers can reduce search costs and on the other hand increase benefits of it and in this way enhance consumers' motivation to search information and drive them to search information on their intended product. On the other hand, given increasing pace of change and exchange of information, today information exists anywhere and it is clear that consumer focuses on quality, timeliness and appropriateness of information which this drives firms and their marketing managers to be more careful about type of information provided to consumers and avoid providing useless information which increases search costs and decreases consumers' motivation for information search. So by better understanding of search behavior of consumers and types of it, managers can be successful in this respect and provide suitable information about their products and services to consumers so that they can obtain more share of consumer buying in ultracompetitive atmosphere of market and increase their market share. Among limitations of present study was the fact that it addressed only one product and it is probable that consumers showed only one type of information search behavior in purchasing that product. Another limitation was that only students with experience of purchasing product were chosen as sample and this may influence generalizability of results. Thus, for generalization of present study results, it is recommended that this scale is tested on other consumers and its reliability and validity is reexamined. Also it is recommended that various types of products e.g. utilitarian and hedonic products and/or products with high and low involvement are considered in studying types of information search behavior for these products and in this way more valid results can be obtained. On the other hand it is recommended to study consumer information search behavior in various communities with different cultures related to the extent of using communicational media and advertising messages so that factors influencing usage of various types of search behavior are indicated and in this way more meaningful advertising messages can be designed and provided.

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