

**Search mode and purchase intention in online shopping behavior**

**Paper ID number: IJIMA-0019**

**Word count: 8979**

Per E. Pedersen

Agder University College

Grooseveien 36

4876 Grimstad

Norway

Herbjørn Nysveen

Norwegian School of Economics and Business Administration

Breiviksveien 40

5045 Bergen

Norway

**Abstract:** This study focuses on the effect of website visitors' degree of goal-oriented search mode on purchase intention in online environments. In a study of 874 respondents recruited from 13 online shops representing a diversity of product categories and customer segments, the effect of visitors' degree of goal-oriented search mode on purchase intention is found to be moderated by product risk. Furthermore, product involvement, product risk and Internet experience are found to have positive effects on the degree of goal-oriented search mode of the visitors. Also, product knowledge, product risk and Internet experience are reported to have direct effects on purchase intention. The results point to the importance of understanding the characteristics of website visitors, and to customize the support and search services offered on the website to the characteristics and preferences of the individual visitor to increase purchase intention, and eventually online sales.

**Keywords:** goal-oriented search mode, purchase intention, product knowledge, product risk, product involvement, Internet experience

**Reference** to this paper should be made as follows: Pedersen, P. E. and Nysveen, H. (xxxx) 'Search mode and purchase intention in online shopping behavior' *International Journal of Internet Marketing and Advertising*, Vol. X, No. Y, pp.000-000.

**Biographical notes:** Per Egil Pedersen is a Professor at Agder University College in Norway. He received his PhD from the Norwegian School of Economics and Business Administration. His teaching and research interest are in the area of e-commerce and m-commerce. More specific, research on the adoption of mobile services and effects of mobile (SMS/MMS) channel addition has been focused the last year. He has published articles in journals such as *Journal of Interactive Marketing*, *Decision Support Systems*, *Information Technology and*

*Tourism, The International Journal of Bank Marketing, International Journal of Electronic Commerce, and Journal of Organizational Computing and Electronic Commerce.*

**Biographical notes:** Herbjørn Nysveen is an Associate Professor at the Norwegian School of Economics and Business Administration. Nysveen also holds a part time position at European Tourism Research Institute (ETOUR) in Östersund, Sweden. He received his PhD from the Norwegian School of Economics and Business Administration. His teaching and research interest are in the area of e-commerce and m-commerce. More specific, research on the adoption of mobile services and effects of mobile (SMS/MMS) channel addition has been focused the last year. He has published articles in journals such as *Journal of Interactive Marketing, Decision Support Systems, Information Technology and Tourism, The International Journal of Bank Marketing, Journal of Information Technology, and International Journal of Market Research.*

**Corresponding author:** Herbjørn Nysveen, E-mail: [herbjorn.nysveen@nhh.no](mailto:herbjorn.nysveen@nhh.no)

## 1 Introduction

Understanding customers' objectives when they visit a web site is of vital importance to assist the individual consumer effectively by offering support that is in accordance with the customers' specific needs [1]. Supporting customers' search behavior may lead to more satisfied customers and increase the purchase intention of the visitors. Thus, it is of vital importance to know the objectives and plausible search mode of consumers when they visit a web site. Categorizing customers depending on their search modes when visiting a web site therefore seem to be a useful strategy. Several suggestions have been made on categorizing customers' online search mode. Moe [2] divided online customers' shopping strategies into four categories based on customers' search behavior (directed versus exploratory) and customers purchasing horizon (immediate versus future). Moe [2] also related the online search behaviors to purchase intention, and made interesting findings indicating that online search mode is closely related to purchasing intention. Hoffman and Novak [3] divided online customers' search process into goal-directed and experiential. A goal-directed search process is among other factors characterized by utilitarian benefits and directed search. An experiential search process is characterized by hedonic benefits and non-directed search. Singh and Dalal [4] divided visitors to a web site into searchers, defined as goal-oriented customers looking for specific information, and surfers, defined as fun-seekers that desire entertainment and stimulation. They find that the emotional appeal of a home page has a stronger persuading effect on surfers than a rational appeal, pointing to the importance of understanding the objectives of consumers' search behavior at a web site to obtain positive persuading effects. Furthermore, Dholakia and Bagozzi [5] suggest differentiating between goal-oriented and experiential mind sets. Goal-oriented mind-sets are divided into deliberative and implemental mind-sets while experiential mind-sets are divided into exploratory and hedonic mind-sets. Although the authors discuss the relevance of this typology to digital

environments, they do not discuss antecedents of the mind-sets or effects of the mind-sets on purchase intention.

Building on the line of work mentioned above, the purpose of this article is fourfold. One purpose is to focus on the antecedents of customers' search behavior when visiting a web site. Due to the interactivity characterizing Internet, online customers are often highly involved and goal-oriented when searching for information. Exploratory search characterizes a person who is not actively searching for information whereas goal-oriented search refers to some level of planned and active information search [6]. Due to the interactivity of the Internet, we assume some level of active search, and thus, some level of goal-oriented search mode among customers visiting a web site. We, therefore, focus on the degree of goal-oriented search mode in this study. Second, we argue that consumers' search mode is a psychological construct, and that it should be measured as such rather than through behavioral measures as done by Moe [2]. By understanding the determinants of consumers' search mode it will be easier to predict their search behavior when they visit a web site, and, thus, to adapt the web site to the visitors search objectives. Third, Moe [2] revealed a general effect of customers' search behavior at a web site on their purchase intention. In this article we also focus on potential moderating effects on the relation between customers search mode and their purchase intention. The fourth purpose is to study direct effects of other variables than search mode on consumers' purchase intention when visiting web sites. Although we base some of this article on the promising work of Moe [2], the purpose of the article is not to validate Moes' [2] four categories of search mode. Rather, we focus more on one of the search behaviors discussed by Moe [2] - directed search.

## 2 Theoretical framework

Consumers' buying decision process can be divided into interpretation, integration, and behavior [7]. Interpretation includes how customers select sources of information and how they create the subjective meaning of the selected information. This part of the decision process often has a low level of goal-oriented search. Integration points to the overall evaluation of a product based on various sources of information and choices among alternative behaviors toward the product. Consumers will be more goal-oriented in their behavior in the integration phase than in the interpretation phase due to the fact that they have a clearer picture of their goal as a result of the information search they have undertaken during the interpretation phase. Thus, in different phases of the consumers' buying decision process, the level of goal-oriented search behavior at a web site may vary. A managerial implication may be that companies should offer more applications to support structured information search and sales functions when dealing with consumers in later phases of a decision process than when dealing with consumers in the interpretation phase. In the interpretation phase, promotional offerings should have a higher priority [8].

**Comment:** Denne setningen må du gå gjennom en gang til Herbjørn

The consumer research literature has primarily focused on goal-directed search behavior [6]. "Goal-directed behavior occurs when consumers are motivated to use a stored search routine to gather information more effectively" [6, p. 290]. It refers to a planned search for information or data based on some form of search routine. According to Hoffman and Novak [3], goal-directed behavior in online environments is characterized by extrinsic motivation, instrumental orientation, situational involvement, utilitarian benefits, directed search, and goal directed choice.

Srinivasan [9] divide the consumer information search literature into three lines of research. The first is the psychological/motivational approach which includes the individual, the product/service, and task-related variables. The second is the cost-benefit (economics) approach, and the third is the consumer information processing approach. Within the psychological/motivational approach, which is applied in this article, studies of customers' information search includes antecedents and effects of information search. Among these antecedents, characteristics of the customer [10, 11, 12, 13, 14, 15, 16, 17, 18], characteristics of the product/service [10], and situational characteristics [10, 6] are most often focused. Customer characteristics included are knowledge, risk, involvement, expertise, skills, prior brand perception, search motives, and uncertainty. Product/service characteristics include complexity and differences. Situational characteristics include time pressure, information accessibility, and information presentation format. Studies of the effects of information search typically focus on attitudes and intentions regarding the product/service in question [19, 2], and product/service choice decisions [17]. Based on existing research, we included four antecedents previously shown to influence consumers' search behavior. The antecedents included were product knowledge, product risk, product involvement, and Internet experience.

To further elaborate on the promising work of Moe [2], intention to purchase the product/service in question was included as an effect of the degree of goal-directed search. As predicted in models explaining purchase intention, characteristics of the customers are assumed to influence purchase intention [7]. For example, the theory of reasoned action [20] includes consumer characteristics such as external factors influencing consumer behavioral intention. However, it also seems reasonable to argue that the effect of search mode on purchase intention can be moderated by characteristics of the customers. For example,

Janiszewski [6] argues that variables can moderate the effect of goal-directed search on information gathering efficiency. Thus, we argue that the customer characteristics included in this study may moderate the effect of goal-directed search on purchase intention. The effects discussed are summed up in figure 1.

INSERT FIGURE 1 HERE

Based on figure 1, we suggest 13 hypotheses on the determinants of online search mode and purchase intention, on the relationship between search mode and purchase intention, and on moderating variables of this relationship. For some of the hypotheses arguments may be found suggesting alternate directions of the effects predicted. Some of these arguments are included in the discussion. Although these arguments may be used to propose both positive and negative effects, the chosen directions suggested in our hypotheses are based on the dominating findings in psychological/motivational consumer research [9].

### **3 Hypotheses**

Customers in the interpretive phase will typically be in a search mode with low degree of goal-orientation. In this phase of the decision process, customers do not have strong ideas about their decision outcome. Customers in the integrative phase have started to form ideas about their decision and will be in a more goal-oriented search mode. This means that customers will be more goal-oriented the closer they are to a behavioral decision. In the interpretative phase customers have probably not reflected strongly about purchase intention. However, in the integrative phase customers have started to form a purchase intention. Furthermore, Moe [2] argues that consumers' underlying objectives when visiting a web site will have an effect on consumers' purchase intention on the web site. Results from her study

also indicate a positive effect of a goal-oriented search mode on purchase intention. Based on these arguments, we present the following general hypothesis:

H1: Consumers with a high degree of goal-oriented search mode will have a more positive purchase intention than consumers with a low level of goal-oriented search mode.

Even though there may be a general relationship between a goal-oriented search mode and purchase intention, it is important to understand how the degree of goal-oriented search mode varies across customers by the phases of the decision process they are in, and by the type of product purchased. For example, customers differ in their prior knowledge of products.

Knowledge has been defined as a function of familiarity and expertise [21]. Prior product knowledge can influence consumers' search for information [22]. Thus, it may be argued that customers with a high level of product knowledge have a lower need for goal-oriented information search from external sources. From such an argument we may infer that high product knowledge reduces the level of goal-oriented information search from external sources. However, given a situation where customers search for information on the Internet, customers with high product knowledge have often passed the interpretation phase of the buying process. Thus, their judgment criteria are likely to have been established [23].

Furthermore, consumers with high product knowledge are more likely to know where to look for relevant information [15]. It is also revealed by Brucks [16] that prior product knowledge increases search efficiency. This indicates that consumers with high product knowledge will be more goal-oriented in their information search mode than consumers with low product knowledge. Thus, the following hypothesis may be suggested:

H2a: Consumers with much product knowledge will have a higher degree of goal-oriented search mode than consumers with low product knowledge.

Product risk is often defined as consumers' perception of the uncertainty and adverse consequences of buying a product or service [24]. Several studies have revealed that risk reducing information search activities increase with higher levels of perceived product risk [24, 25]. Perceived overall risk is a function of several sub categories of perceived risk, e.g. psychological risk, physical risk, social risk, and financial risk [26, 27]. Goal-directed search is characterized by extrinsic motivation, instrumental orientation, situational involvement and utilitarian beliefs [3]. When planning to buy a product characterized by high risk, information search will be more goal-oriented both to reduce the level of risk in general and to reduce the specific product risks. When product risk is low, the need to enter a goal-oriented search mode will be less, and information search will have a more superficial character. We therefore propose a positive relation between perceived product risk and goal-oriented search mode:

H2b: Consumers who perceive a high level of product risk associated with a purchase will have a higher degree of goal-oriented search mode than consumers who perceive a low level of product risk associated with a purchase.

Product involvement represents a concern with a product that the consumer brings into a purchase decision [28, 22]. Consumers' involvement with a product reflects the products' "personal relevance" [29 p. 342] and it affects consumers' motivation to engage in problem solving activities [7]. Customers with high product involvement are therefore supposed to be more motivated to engage in intensive and goal-oriented search for information about the

product. Therefore, we propose that customers with high product involvement are more goal-oriented in their search for information than consumers with low product involvement:

H2c: Consumers with high product involvement will have a higher degree of goal-oriented search mode than consumers with low product involvement.

A study by Navarro-Prieto et al. [30] found that web searchers with much Internet experience planned their search ahead based on their knowledge about the web, whereas web searchers with low experience hardly planned at all and were mainly driven by what they saw on the screen. It may also be argued that consumers with much Internet experience will perceive a web site as less complex than consumers with less Internet experience [31], making it easier for experienced consumers to make goal-oriented search on a web site. Based on this, we argue that consumers with much Internet experience are more inclined to make goal-oriented information searches than consumers with less Internet experience. We therefore propose a positive relation between Internet experience and the degree of goal-oriented search mode:

H2d: Consumers with much Internet experience will have a higher degree of goal-oriented search mode than consumers with less Internet experience.

Studying the effects of product knowledge, risk, involvement and Internet experience on search mode and purchase intention is complex because these variables may have effects on both purchase intention [20] as well as moderating effects [6] on the relationship between search mode and purchase intention. We first discuss the direct effects of these variables on purchase intention and then turn to their potential moderating effects.

In a buying process, consumers with much product knowledge have often passed the interpretation phase. Thus, they are closer to considering a purchase than consumers in the interpretation phase [7]. Furthermore, having much knowledge about a product may also indicate that customers already have a high intention of buying the product. Another argument for a positive effect of product knowledge on purchase intention is that consumers with much product knowledge are more able than consumers with little product knowledge to infer intended product benefits from external sources, in particular from technical information [21], leading to an increased purchase intention. Thus, the following hypothesis seems plausible:

H3a: Consumers with much product knowledge will have a more positive purchase intention than consumers with little product knowledge.

Most consumers want to reduce risks related to a product purchase to a minimum. High risk means that the likelihood of negative consequences related to a purchase is high. Because consumers want to reduce the likelihood of negative consequences when buying a product, they avoid buying the product with high perceived risk and choose alternative products. Erdem [32] shows that consumers considering a planned product purchase as risky choose a known product rather than a new product, a result that is supported by other studies in this line of research [33]. We therefore propose a negative relation between product risk and purchase intention:

H3b: Consumers who perceive a high level of product risk associated with a purchase will have a less positive purchase intention than consumers who perceive a low level of product risk.

Product involvement is described as a motivational variable by Kardes [34]. Motivation points to the consumers' interests in elaborating product information from various sources. Product information presented on businesses' web sites may be seen as advertisements [4], and often have a positive valence. Elaboration of information with a positive valence results in a persuading effect [35, 36] often measured by attitude toward the product [37]. It is well established that attitude toward a product has a positive effect on intention to purchase a product [38]. Thus, we propose a positive relationship between product involvement and purchase intention:

H3c: Consumers with high product involvement will have a more positive purchase intention than consumers with low product involvement.

Customers get used to the process of searching for information and buying products on the Internet when they have extensive experience in using it [39]. This learning process reduces the reluctance to buying products online and increases consumers' general online purchase intention. Also, web pages that Internet novices perceive as complex are probably not perceived as complex by consumers with high Internet experience [31]. A reduction in perceived web site complexity may increase consumers' intentions to make purchases on the web site. Although Bruner and Kumar [31] did not find a direct effect of web experience on purchase intention, they found positive effects of web experience on attitudes toward the web site and attitudes toward advertisements, a variable found to mediate purchase intention [40, 37]. Thus, we propose a positive relation between Internet experience and purchase intention:

H3d: Consumers with much Internet experience will have a more positive purchase intention than consumers with less Internet experience.

We have proposed that goal-oriented search mode has a positive effect on purchase intention (H1). Results presented by Moe [2] also support this proposition. However, Moe [2] only studied this relationship in an online store selling nutrition products. We argue that there are direct effects of several product-related variables on search mode and purchase intention. Thus, it also seems reasonable to argue that the relationship between search mode and purchase intention may be moderated by the same variables, something Moe [2] was unable to identify due to bias in the studied product category. For example, consumers with high product knowledge more easily interpret product information found on the Internet. They also have a better understanding of the relevance and importance of information about the attributes of a product presented on the web. Consumers with much product knowledge, therefore, have better preconditions for taking advantage of a goal-oriented search on the Internet. For consumers with little product knowledge, it will be more difficult to see the implications of all information accessed in a goal-oriented information search. Consequently, we propose the following hypothesis:

H4a: The degree of goal-oriented search mode will have a more positive effect on the purchase intention of consumers with much product knowledge than consumers with little product knowledge.

Product risk leads to risk management activities. Among these activities are search for information to reduce the level of risk [41]. Entering a goal-oriented mode of extensive information search is a strategy used to reduce the risks related to a product purchase. In situations characterized by high product risk, a comprehensive and goal-oriented search for risk reducing information may be necessary to persuade the consumer about the quality of a

product and to reduce purchase uncertainty. For low risk products, a goal-oriented search mode will be less relevant because there are few risks to reduce applying an extensive, goal-oriented information search. We therefore argue that:

H4b: The degree of goal-oriented search mode will have a more positive effect on the purchase intention of consumers who perceive high product risk than consumers who perceive low product risk.

High product involvement reflects concern with a product and high motivation to engage in problem solving activities. However, consumers can be persuaded both under high and low involvement conditions. Under low involvement conditions, this persuasion is often based on peripheral cues while persuasion is based on elaboration of message cues under conditions of high involvement [42]. For high involving consumers, supporting a goal-oriented search mode is well suited for increasing purchase intention. For low involving consumers, superficial information search with focus on peripheral cues will probably be a more effective support strategy than supporting a goal-oriented strategy. Thus, we suggest that the positive effect of a goal-oriented search mode on purchase intention will be stronger among consumers with high product involvement than among consumers with low product involvement:

H4c: The degree of goal-oriented search mode will have a more positive effect on the purchase intention of consumers with high product involvement than consumers with low product involvement.

If web sites are perceived as more complex by consumers with little Internet experience than consumers with much Internet experience [31], it seems reasonable to argue that consumers

with much Internet experience are more able to take advantage of applications on the Internet supporting goal-oriented information search. They can use search engines more effectively and better utilize product comparison services ("recommendation agents"). Consumers with little Internet experience are less able to make structured information search because they perceive web sites as more complex. It is therefore more difficult for them to make goal-oriented information search, and their search strategy is often more arbitrary than that of consumers with much Internet experience. The positive effect of a goal-oriented search mode on purchase intention will therefore be stronger among consumers with much Internet experience:

H4d: The degree of goal-oriented search mode will have a more positive effect on purchase intention of consumers with much Internet experience than consumers with less Internet experience.

Twelve of the thirteen hypotheses suggested above are summarized in table 1.

INSERT TABLE 1 HERE

Table 1 illustrates the proposed effects of product knowledge, perceived risk, involvement and Internet experience on goal-oriented search mode (H2) and purchase intention (H3). As can be seen from the table, all effects of the consumer characteristics variables on the degree of goal-oriented search mode are proposed to be positive. Product knowledge, product involvement and Internet experience are proposed to have positive effects on purchase intention while product risk is proposed to have a negative effect on purchase intention. Moderating effects on the relation between goal-oriented search mode and purchase intention

are all proposed to be positive (H4). In addition to the twelve hypotheses presented in table 1, we also proposed a general positive effect of degree of goal-oriented search mode on purchase intention (H1),

#### **4 Method**

To test the thirteen hypotheses proposed in section 3, a 13-group posttest only research design was developed. To get sufficient variation in product knowledge, risk, involvement and Internet experience, subjects were recruited at 13 different web shops including web malls, bookstores, music stores, computer and electronics stores, care sales sites, used product auction sites, and banks. A banner advertisement and a text link with equal wording were put at similar locations of the front page of each of these sites. If subjects clicked on the banner or text link, they were brought to the start page of the study. This page introduced a stimulus setting presenting different services and support tools applied to help consumers' information search. The subjects were then asked to "*keep in mind the product they were searching for information about right now*" if they were now considering buying a specific product. If not, they were asked to keep in mind "*the product they were searching for information about the last time they considered buying a product*". The subjects were next asked to categorize and describe the product of this particular information search episode. This procedure was used to link our measures to a specific product and information search episode that was clear and evident in the consumers mind. After this initial "priming", subjects were guided through an online questionnaire containing our measures. The questionnaire was personalized based upon the information given about the specific product of their recent information search so that the subjects were constantly reminded of their stimulus context.

A convenience sample of 874 usable responses was recorded after elimination of repeated answers and careless response (careless response was identified as subjects answering the questionnaire using less than 180 seconds). The demographic characteristics of the sample are shown in table 2.

INSERT TABLE 2 HERE

When comparing the demographic characteristics of the sample to known Internet population demographics, it was found that our sample contained a smaller proportion of young subjects and a larger proportion of men than the local Internet population (bi-monthly demographic statistics from the corresponding Internet population are available from Gallup ASA, see <http://www.gallup.no>). Actually, according to Gallup (May, 2003), users between 13 and 19 years are the heaviest Internet users in the local population (88 percent of the users in this category have used the Internet during the last 30 days), underlining the importance of including this group of online consumers in surveys like the one reported here. The youngest user group reported in table 2 range from 0 - 19 years. Based upon visitor information from the web sites the respondents were recruited from, we assume that most of the respondents in this category are teenagers. Furthermore, 72 percent of the men and 60 percent of the women in the population have used the Internet the last 30 days, indicating that women are underrepresented in the sample used in the study reported here. Therefore, all analyses presented below have been controlled for gender and age. However, no interactions were found between these variables and the results presented below. Thus, we concluded that, for the purpose of our investigation, the sample was representative of the local Internet population of the study.

The following constructs were included in the questionnaire: Search mode, purchase intention, product knowledge, product risk, product involvement and Internet experience. Only multiple measures were applied, and all items except purchase intention were measured by the subjects indicating their agreement or disagreement with item statements on a seven point scale. Search mode was measured using six psychometric items based upon the behavioral measures of Moe's four search behavior categories [2]. The search mode items were further analyzed applying principal components analysis. Two factors were extracted. The first factor may be interpreted as the degree of goal-oriented search mode, while the second factor may be interpreted as the degree of exploratory search mode, mainly reflecting the directed versus exploratory search behavior dimension of Moe [2]. By using the two items with the highest factor loadings of the factor reflecting goal-oriented search, a measure of the degree of goal-oriented search mode with satisfactory reliability ( $\alpha$  of 0.70 ) was designed.

Product knowledge was measured using four items collected from Smith and Park [43] and Mitchell and Dacin [44], and adapted for our purpose. Product risk is a less standardized construct. Our measure was adapted from Chaudhuri [18]. It is based on product risk stemming from economic risk, functional risk, security risk, risk of lost cognitive self recognition, and risks from social consequences of use. The measure is adapted to our setting and contains items representing three of these sources of product risk. Product involvement was measured with a seven point semantic scale using five bipolar expressions. The measure has previously been used by, among others, McQuarrie and Munson [45] showing good reliability. Internet experience was measured using five items partly adapted from Bruner and Kumar [31] that we have used and tested in previous studies of online search behavior [46]. All independent variable items are shown in Appendix A. In appendix B, a confirmatory factor analysis of all these items is shown. This measurement analysis shows acceptable

convergent and discriminant validity of all concepts applied. In table 3, the mean, standard deviations, reliability and correlation matrix of all measures are shown.

INSERT TABLE 3 HERE

Purchase intention was measured by using a multiple measure designed by combining the Juster scale [47] and a psychometric measure of purchase intention used by Singh and Cole [48] and Singh et al. [49]. The measure has a reliability of  $\alpha=0.79$ , and both items have previously been shown to be highly correlated with actual purchasing behavior. Even though some of the measures had to be developed and adapted for our purpose, most of them are based upon previously validated scales and are considered to be sufficiently reliable and have acceptable convergent and discriminant validity.

## **5 Results**

Regression analysis was used to test the proposed hypotheses. In table 4, results of these analyses are shown. We also indicate the relevant hypothesis tested as well as whether the hypothesis is supported or not.

INSERT TABLE 4 HERE

We first analyzed the relationship between search mode and purchase intention. The analysis revealed no direct effect of search mode on purchase intention. Thus, we found no support for H1. Next, the direct effects of product knowledge, risk, involvement, and Internet experience were also tested using regression analysis. The results are shown in table 4. We found that the proposed direct relationships between product risk, involvement and Internet experience and

degree of goal-oriented search mode were positive and significant. The proposed effect of product knowledge on the degree of goal-oriented search mode was not found significant. These findings supported hypotheses H2b, c, and d, but not H2a. A similar analysis of the direct effects of product knowledge, risk, involvement, and Internet experience on purchase intention supported the hypotheses that proposed a direct effect of product knowledge (H3a), product risk (H3b) and Internet experience (H3d), but not the hypothesis of a direct effect of product involvement (H3c) on purchase intention.

Separate regression analyses including search mode, product knowledge, risk, involvement, Internet experience and the interactions between search mode and these variables were used to test the hypotheses of moderating effects on the relationship between search mode and purchase intention. These analyses were done by first investigating the two main effects on purchase intention and next investigating the added explained variance and significance of the interaction term of the two main effects. In table 4, the results showing the incremental explained variance of the interaction terms and the significance of the interaction terms are shown. These analyses revealed that product risk significantly moderated the relationship between search mode and purchase intention. Even though the level of significance is not very high, these findings supported hypotheses 4b proposing a moderating effect of product risk on the relationship between search mode and purchase intention. One of the conclusions that may be drawn from this finding is that investigating the relationship between search mode and purchase intention for single categories of products or homogeneous products may result in a spurious effect of search mode on purchase intention that should be attributed to the interaction of product risk with search mode rather than with search mode itself.

## **6 Discussion**

One of the purposes of this study was to investigate recent research by Moe [2] and others [4, 5] on search behavior, search mode and purchase intention in online environments. The results revealed in this study partly confirm and extend the findings of these studies that search mode and purchase intention are related. Although no main effect was found for the degree of goal-oriented search mode on purchase intention, the relationship between the two variables was moderated by product risk. Thus, an effect of goal-oriented search mode is found on purchase intention in some situations. For example, when product risk is low, a low degree of goal-oriented search mode gives the highest purchase intention, but when product risk is high, a high degree of goal-oriented search mode gives the highest purchase intention. This finding reflects the identified interaction effects of search mode and product risk on purchase intention. It also confirms our conception of the degree of goal-oriented search mode as an important dimension of search mode with respect to purchase intention. It also confirms our assumptions that purchase intentions may be high in situations of impulse purchasing of product with low risk when the degree of goal-oriented search mode is low, and in situations of planned purchasing of products with high risk when the degree of goal-oriented search mode is high. Thus, to attain sale from websites, visitors' degree of goal-oriented search mode should be matched with information about the visitors' perception of product risk. Sales-generating efforts should be implemented differently based on information of visitors' likely degree of goal-oriented search mode and knowledge of customers' risk perceptions for various product categories. The product category studied by Moe [2] was nutrition products, a product category mainly consumed by persons who probably perceive food consumption as more risky than most people. Thus, it can be argued that the direct effect of goal-oriented search mode on purchase intention indicated by Moe [2] was revealed among consumers perceiving food as a high risk product category, thus supporting the moderated effect found in this article.

Product risk, product involvement and Internet experience were found to have direct positive effects on goal-oriented search mode. Given that the degree of goal-oriented search mode in some situations has a positive effect on purchase intention, the effects of these variables on goal-oriented search mode should be considered carefully by companies operating on the web. Customization of websites to attain the best fit between provided services and the users' characteristics and preferences seems to be a strategy for improving website effectiveness and obtain competitive advantage. Visitors with a high degree of goal-oriented search mode may, for example, be offered a broader selection of decision support services than visitors with a low degree of goal-oriented search behavior.

Our results also reveal positive effects of product knowledge and Internet experience on purchase intention in online environments and a negative effect of perceived product risk on purchase intention. These results have implications for the marketing strategy of website operators. Visitors with much product knowledge and Internet experience seem to be the customers closest to making a purchase. Thus, on websites offering transaction based services, sales promoting efforts may in particular be targeted towards these customers. In addition, decision support functions offered on the website may in particular focus on serving these customers since they represent the most plausible buyers. In addition, the results point to the importance of more marketing activities to increase customers' product knowledge and Internet experience in general. Through such activities, customers' general purchase intentions are stimulated. Increased product knowledge may also lead to the customer perceiving the product purchase as less risky and indirectly increase purchase intention. However, explicit presentation of risk reducing information on companies' websites should be

focused to reduce customers' perceived risk and through this, increase their purchase intention.

It should be noted that no main effect of degree of goal-oriented search mode on purchase intention was revealed, and that only one of the four variables proposed to moderate this relation were significant. Although the result can be interpreted as a partial support of a significant relation between the degree of goal-oriented search mode and purchase intention, it seems reasonable to argue that other variables than search mode should also be focused to increase the purchase intention of online customers. In particular, results from the study reported here indicate that product knowledge, perceived product risk and Internet experience influence purchase intention directly. Thus, information on consumers' degree of goal-oriented search mode may still be important to predict purchasing intention, but the explanatory variables are more likely to be Internet experience, perceived product risk, and product knowledge than search mode. It, therefore, seems like websites should be adapted to visitors' product knowledge, perceived product risk, and Internet experience rather than to their degree of goal-oriented search mode.

The constructs used in the study are based on measures used in related studies and thus, are assumed to have high construct validity. Also, the reliability of the constructs used is fairly good. However, there are several potential limitations to the findings presented in this study. Self-selection of respondents in this study is a potential threat to internal validity. However, biases in gender and age were controlled for and revealed no interaction with the results presented in the article, indicating that the sample was representative of the local online population targeted in this study. Thus, based on these variables, self-selection does not seem to have biased the results presented in this article significantly. The degree of goal-oriented

search mode was measured by two items with an alpha of 0.70. Even though measures of goal-oriented search mode as a psychological construct in empirical research are rare, other items may be included in our measure to increase the reliability of the measure. Further research on the psychometric properties of the construct "goal-oriented search mode" is also suggested.

The study setting implied that respondents clicked on a banner advertisement to get access to the questionnaire. The banner was available at 13 online shops. Respondents were not recruited from online shops with particular high/low level of product complexity, risk, or involvement. Rather, products available at the online shops reflected a broad range of product types. The results therefore, should be valid for most types of online shops. The setting and instruments used in the study were pre-tested and these tests revealed no comments indicating that the experimental setting was perceived as unusual. Also, no particular external incident took place during the period of the study that may have influenced our results. The respondents were asked to "*keep in mind the product they were searching for information about right now or the last time they were searching for information about a product*". This meant that some of the respondents answered the questionnaire while being in a current search situation while other respondents had to recall from memory their last online search situation. However, we have no indications that the mix of respondents being in a current search situation and respondents recalling an online search situation differed at their levels of goal-oriented search mode. In addition, the customization of the measurement instrument based upon the subject's most recent product search history was applied to reduce recall problems as a threat to internal validity as well as to create a quasi-experimental situation similar to what is typically applied in traditional experiments introducing a specific stimulus context.

The study reveals that the effect of search mode on purchase intention is moderated. Other variables than those included in this study may also have an impact on customers' information search. Examples of such variables are product expertise and familiarity [21]. More potential moderating variables should therefore be included in future studies to reveal more detailed knowledge of the moderated effect of search mode on purchase intention. From attitude theory, purchase intention of a product is assumed to be a function of attitudes toward the product [38]. Also, attitudes toward market information about the product (advertisements) have been shown to have an effect on purchase intention [37]. Thus, further research should include traditional antecedents of purchase intention to develop a more comprehensive model explaining purchase intention in online environments. Still, findings from our study indicate that product knowledge, product risk, product involvement and Internet experience have an impact on search mode and purchase intention. This means that these variables should be included as covariates in future studies of online buying behavior to more fully explain the drivers of purchase intention.

[Received May 4, 2003. Accepted July 19, 2003. Two revisions]

### **Acknowledgements**

The authors want to thank the reviewers for valuable comments on the first draft of this article.

## References

- 1 Ariely, D (2000). 'Controlling the Information Flow: Effects on Consumers' Decision Making and Preferences', *Journal of Consumer Research*, Vol. 27, September, pp.233-248.
- 2 Moe, W. W. (2003) 'Buying, Searching, or Browsing: Differentiating between Online Shoppers Using In-Store Navigational Clickstream', *Journal of Consumer Psychology*, Vol. 13, No s. 1&2, (forthcomming).
- 3 Hoffman, D. L. and Novak, T. P. (1996) 'Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations', *Journal of Marketing*, Vol. 60, July, pp. 50-68.
- 4 Singh, S. N. and Dalal, N. P. (1999) 'Web Home Pages as Advertisements', *Communication of the ACM*, Vol. 42, No. 8, pp. 91-98.
- 5 Dholakia, U. and Bagozzi, R. (2001) 'Consumer Behavior in Digital Environments', in Wind, J. and Mahajan, V. (eds.): *Digital Marketing*, New York, Wiley, pp. 163-200.
- 6 Janiszewski, C. (1998) 'The Influence of Display Characteristics on Visual Exploratory Search Behavior', *Journal of Consumer Research*, Vol. 25, December, pp. 290-301.
- 7 Peter, J. P. and Olson, J. C. (1996) *Consumer Behavior and Marketing Strategy*, Chicago, Irwin.

8. Moe, W. W., and Fader, P. S. (2001) *Which Visits Lead to Purchases? Dynamic Conversion Behavior at e-Commerce Sites*, Working Paper, University of Texas. (submitted to Management Science).
9. Srinivasan, N (1990) 'Pre-Purchase External Search for Information', in Zeithaml, V. E. (ed.). *Review of Marketing*, Chicago, American Marketing Association, pp. 153-189.
10. Schmidt, J. B., and Spreng, R. A. (1996) 'A Proposed Model of External Consumer Information Search', *Journal of the Academy of Marketing Science*, Vol. 24, No. 3, pp. 246-256.
11. Moorthy, S., Ratchford, B. T., and Talukdar, D. (1997) 'Consumer Information Search Revisited: Theory and Empirical Analysis', *Journal of Consumer Research*, Vol. 23, March, pp. 263-277.
12. Chao, P., and Gupta, P. B. (1995) 'Information Search and Efficiency of Consumer Choices of New Cars. Country-of-Origin Effects', *International Marketing Review*, Vol. 12, No. 6, pp.47-59.
13. Dholakia, U. M. (2001) 'A Motivational Process Model of Product Involvement and Consumer Risk Perception', *European Journal of Marketing*, Vol. 35, Nos. 11/12, pp. 1340-1360.
14. Urbany, J. E., Dickson, P. R., and Wilkie, W. L. (1989) 'Buyer Uncertainty and Information Search', *Journal of Consumer Research*, Vol. 16, September, pp. 208-214.

- 15 Selnes, F., and Troye, S. V. (1989) 'Buying Expertise, Information Search, and Problem Solving', *Journal of Economic Psychology*, Vol. 10, No. 3, pp. 411-428.
- 16 Brucks, M. (1985) 'The Effects of Product Class Knowledge on Information Search Behavior', *Journal of Consumer Research*, Vol. 12, June, pp. 1-16.
- 17 Bloch, P. H., Sherrell, D. L., and Ridgway, N. M. (1986) 'Consumer Search: An Extended Framework', *Journal of Consumer Research*, Vol. 13, June, pp. 119-126.
- 18 Chaudhuri, A. (2000) 'A macro analysis of the relationship of product involvement and information search: the role of risk', *Journal of Marketing Theory and Practice*, Vol. 8, No. 1, pp. 1-16.
- 19 Koufaris, M., Kambil, A. and LaBarbera, P.A. (2001) 'Consumer Behavior in Web-Based Commerce: An Empirical Study', *International Journal of Electronic Commerce*, Vol. 6, No. 2, pp. 115-138.
- 20 Fishbein, M. (1980) 'An Overview of the Attitude Construct', in Hafer, G. B. (ed.). *A Look Back, A Look Ahead*, Chicago, American Marketing Association.
- 21 Alba, J. W., and Hutchinson, J. W. (1987) 'Dimensions of Consumer Expertise', *Journal of Consumer Research*, Vol. 13, March, pp. 411-454.

- 22 Bei, L.-T., and Widdows, R. (1999) 'Product Knowledge and Product Involvement as Moderators of the Effects of Information on Purchase Decisions: A Case Study Using the Perfect Information Frontier Approach', *The Journal of Consumer Affairs*, Vol. 33, No. 1, pp. 165-186.
- 23 Bettman, J. R., and Sujan, M. (1987) 'Effects of Framing on Evaluation of Comparable and Noncomparable Alternatives by Expert and Novice Consumers', *Journal of Consumer Research*, Vol. 14, September, pp. 141-154.
- 24 Dowling, G. R., and Staelin, R. (1994) 'A Model of Perceived Risk and Intended Risk-handling Activity', *Journal of Consumer Research*, Vol. 21, June, pp. 119-134.
- 25 Beatty, S. E., and Smith, S. M. (1987) 'External Search Effort: An Investigation across Several Product Categories', *Journal of Consumer Research*, Vol. 14, June, pp. 83-95.
- 26 Moutinho, L. (1987) 'Consumer Behavior in Tourism', *European Journal of Marketing*, Vol. 21, No. 10, pp. 5-44.
- 27 Stone, R. N., and Grønhaug, K. (1993) 'Perceived Risk: Further Considerations for the Marketing Discipline', *European Journal of Marketing*, Vol. 27, No. 3, pp. 39-50.
- 28 Rotchild, M. L. (1979) 'Advertising Strategies for High and Low Involvement Situations', in Maloney, J. C. and Silverman, B. (eds.), *Attitude Research Plays for High Stakes*, Chicago: American Marketing Association, pp. 74-93.

- 29 Zaichkowsky, J. L. (1985) 'Measuring the Involvement Construct', *Journal of Consumer Research*, Vol. 12, December, pp. 341-352.
- 30 Navarro-Prieto, R., Scaife, M., and Rogers, Y. (1999) *Cognitive Strategies in Web Searching*, Presented at the 5<sup>th</sup> Conference of Human Factors and the Web, Galthersburg, Maryland, June 3. [<http://zing.ncsl.nist.gov/hfweb/proceedings/navarro-prieto/index.html>]
- 31 Bruner, G. C., and Kumar, A. (2000) 'Web Commercials and Advertising Hierarchy-of-Effects', *Journal of Advertising Research*, Vol. 40, Nos. 1&2, pp. 35-42.
- 32 Erdem, T. (1998) 'An Empirical Analysis of Umbrella Branding', *Journal of Marketing Research*, Vol. XXXV, August, pp. 339-351.
- 33 Campbell, M. C., and Goodstein, R. C. (2001) 'The Moderating Effect of Perceived Risk on Consumers' Evaluations of Product Incongruity: Preferences for the Norm', *Journal of Consumer Research*, Vol. 28, pp.439-449.
- 34 Kardes, F. R. (1988) 'Spontaneous Inference Processes in Advertising: The Effects of Conclusion Omission and Involvement on Persuasion', *Journal of Consumer Research*, Vol. 15, September, pp. 225-233.
- 35 Kisielius, J., and Sternthal, B. (1984) 'Detecting and Explaining Vividness Effects in Attitudinal Judgment', *Journal of Marketing Research*, Vol. XXI, February, pp. 54-64.

- 36 Kisielius, J., and Sternthal, B. (1986) 'Examining the Vividness Controversy: An Availability-Valence Interpretation', *Journal of Consumer Research*, Vol. 12, March, pp. 418-431.
- 37 Brown, S. P., and Stayman, D. M. (1992) 'Antecedents and Consequences of Attitude toward the Ad: A Meta-analysis', *Journal of Consumer Research*, Vol. 19, June, pp. 34-51.
- 38 Fishbein, M., and Ajzen, I. (1975) *Belief, Attitude, Intention, and Behavior*, Reading, Mass.: Addison-Wesley.
- 39 Liang, T.-P., and Huang, J.-S. (1998) 'An Empirical Study on Consumer Acceptance of Products in Electronic Markets: A Transaction Cost Model', *Decision Support Systems*, Vol. 24, No. 1, pp.29-43.
- 40 Mitchell, A. A., and Olson, J. C. (1981) 'Are Product Attribute Beliefs the Only Mediator of Advertising Effects on Brand Attitude?', *Journal of Marketing Research*, Vol. XVIII, August, pp.318-332.
- 41 Murray, K. B. (1991) 'A Test of Services Marketing Theory: Consumer Information Acquisition Activities', *Journal of Marketing*, Vol. 55, No. 1, pp. 10-25.
- 42 Petty, R. A., Cacioppo, J. T., and Schuman, D. (1983) 'Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement', *Journal of Consumer Research*, Vol. 10, September, pp. 135-146.

- 43 Smith D.C. and Park C.W. (1992) 'The Effect of Brand Extensions on Market Share and Advertising Efficiency', *Journal of Marketing Research*, Vol. 29, No. 3, pp. 296-313.
- 44 Mitchell, A.A., and Dacin, P.A. (1996) 'The Assessment of Alternative Measures of Consumer Expertise', *Journal of Consumer Research*, Vol. 23, December, pp. 219-239.
- 45 McQuarrie E.F. and Munson, J.M. (1987) 'The Zaichkowsky Personal Involvement Inventory – Modification and Extension', *Advances in Consumer Research*, Vol. 14, pp. 36-40.
- 46 Nysveen, H. and Pedersen, P.E. (2003) 'An Exploratory Study of Customers' Perception of Company Web Sites Offering Various Interactive Applications: Moderating Effects of Customers' Internet Experience', *Decision Support Systems*, 1046, pp. 1-14.
- 47 Juster, F. T. (1966) 'Consumer Buying Intentions and Purchase Probability: An Experiment in Survey Design', *Journal of the American Statistical Association*, Vol. 61, pp. 658-696.
- 48 Singh M. and Cole, C.A. (1991) 'The Effects of Length, Content and Repetition on Television Commercial Effectiveness', *Journal of Marketing Research*, Vol. 30, No. 1, pp. 204-219.

49 Singh, M., Balasubramanian, S.K., and Chakaborty, G. (2000) 'A Comparative Analysis of Three Communication Formats: Advertising, Infomercial, and Direct Experience', *Journal of Advertising*, Vol. 29, No. 4, pp. 59-76.

**Table 1.** The hypotheses.

	Degree of goal-oriented search mode <b>H2</b>	Purchase intention <b>H3</b>	Degree of goal-oriented search mode ----->Purchase intention <b>H4</b>
Knowledge (a)	+	+	+
Risk (b)	+	-	+
Involvement (c)	+	+	+
Experience (d)	+	+	+

**Table 2.** Sample demographics

Income (US\$)	% (N=786)	Age	% (N=796)
Below 25'	17,7	0-19	10,1
25' -49'	29,5	20-29	33,4
50' -74'	31,4	30-39	30,3
75' -100'	14,5	40-49	16,8
Above 100'	6,9	50-59	7,7
		Above 60	1,8
Gender	% (N=794)	Education	% (N=793)
Male	71,9	Primary	7,4
Female	28,1	Secondary/High school	33,4
Marital status	% (N=791)	University/College, less than 4yrs	33,0
Married or equiv.	59,7	University/College 4yrs or more	26,1
Single or equiv.	31,1		
Other	9,2		

**Table 3.** Mean, standard deviation, reliability and correlations between variables.

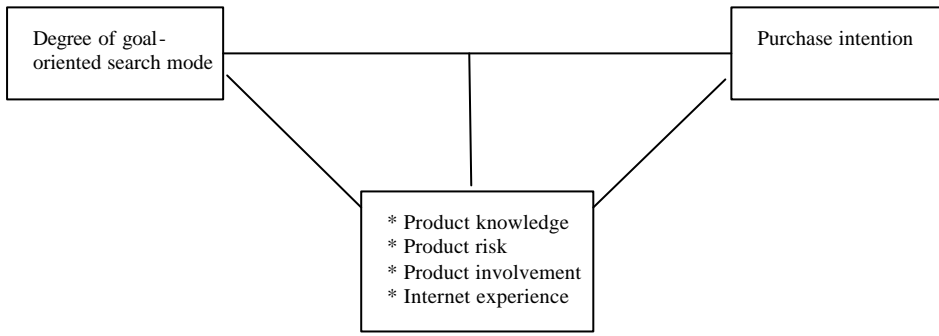
Variable	N	Mean	Std. dev.	Alpha	1	2	3	4	5
Goal-oriented search mode (1)	797	4.50	1.62	0.70					
Product knowledge (2)	836	4.61	1.38	0.87	0.023				
Product risk (3)	808	2.69	1.58	0.77	0.140*	0.009			
Involvement (4)	810	4.71	1.33	0.81	0.108*	0.210**	0.033		
Experience (5)	789	4.87	1.44	0.92	0.083*	0.403**	-0.035	0.082*	
Purchase intention (6)	507	4.79	1.01	0.79	0.050	0.232**	-0.088	0.032	0.138**

Note: \*\* and \* indicate significance at  $p < 0.01$  and  $p < 0.05$  respectively

**Table 4.** Regression analyses

Dependent variable	Independent variable	d.f.	R <sup>2</sup>	B	SE B	?	Hyp.	Supp.
Purchase intention	Goal-oriented search mode	504	0.003	0.006	0.057	0.050	+	n.s.
Goal-oriented search mode	Product knowledge	790	0.001	0.003	0.042	0.023	+	n.s.
	Product risk	774	0.020	0.142	0.036	0.140**	+	+
	Involvement	770	0.012	0.130	0.043	0.108**	+	+
	Experience	756	0.007	0.009	0.041	0.083*	+	+
Purchase intention	Product knowledge	502	0.054	0.350	0.065	0.232**	+	+
	Product risk	491	0.008	-0.116	0.059	-0.088*	-	-
	Involvement	487	0.001	0.005	0.070	0.032	+	n.s.
	Experience	485	0.019	0.208	0.068	0.138**	+	+
	Goal-oriented search mode * Product knowledge	499	0.001	-0.001	0.039	-0.068	+	n.s.
	Goal-oriented search mode * Product risk	489	0.012	0.004	0.018	0.198*	+	+
	Goal-oriented search mode * Involvement	484	0.001	0.003	0.041	0.171	+	n.s.
	Goal-oriented search mode * Experience	482	0.002	-0.003	0.040	-0.183	+	n.s.

Note: \*\* and \* indicate significance at  $p < 0.01$  and  $p < 0.05$  respectively, n.s. indicates not supported, R<sup>2</sup> for interaction terms indicate incremental R<sup>2</sup>



**Figure 1.** Theoretical framework

## Appendix A.

Items of goal-oriented search mode, product knowledge, risk, involvement and Internet experience (item number used in the measurement analysis indicated)

### Goal-oriented search mode:

1. I need much information search to decide when buying this product
2. When buying this product I have to be goal-oriented in my search for information

### Product knowledge:

1. I feel very knowledgeable about this product
2. I have enough knowledge about this product to give others advice about it
3. Others often seek my advice on this type of product
4. I feel very confident about what is relevant when buying this product

### Product risk:

1. Unknown brands of this product may damage your health or be a security risk
2. Using unknown brands represents a risk that I will not identify myself with the product
3. Using unknown brand represents a risk that others will look at me in ways I don't want them to

### Involvement:

1. Entertaining/Not very entertaining
2. Interesting/Not very interesting
3. I am very concerned with it/I am not very concerned with it
4. Exciting/Not very exiting
5. Means a lot to me/ Means little to me

### Internet experience:

1. I see myself as an experienced Internet user
2. I see myself as good at utilizing the Internet to find the information I search for
3. Compared to other I know, I am an expert at using the Internet
4. I know what is required to use the internet effectively
5. Others often seek my advice on using the Internet

## Appendix B.

Measurement analysis of independent variable items (factor loadings below 0.25 not shown).

Factor no:	1	2	3	4	5
Eigenvalue:	(4.947)	(2.951)	(2.161)	(1.936)	(1.404)
Explained variance:	(26.035)	(15.530)	(11.376)	(10.190)	(7.392)
Search mode 1					0.836
Search mode 2					0.859
Product knowledge 1			0.876		
Product knowledge 2			0.883		
Product knowledge 3			0.756		
Product knowledge 4			0.799		
Product risk 1				0.772	
Product risk 2				0.858	
Product risk 3				0.849	
Involvement 1		0.582			
Involvement 2		0.810			
Involvement 3		0.861			
Involvement 4		0.834			
Involvement 5		0.722			
Experience 1	0.874				
Experience 2	0.854				
Experience 3	0.857				
Experience 4	0.870				
Experience 5	0.822				

