

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

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### **Abstract**

This study focuses on the effect of website visitors' 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' goal-oriented search mode on purchase intention is found to be moderated by product involvement and product risk. Furthermore, product involvement, product risk, product knowledge and Internet experience are found to have positive effects on the degree of goal-oriented search mode of the visitors. Also, product knowledge and Internet experience are reported to have direct positive 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. Customization of this kind may partly be based on immediate visitor history (referrer) and may be used to increase purchase intention, and eventually online sales.

Keywords: search mode, purchase intention, product knowledge, product risk, product involvement, Internet experience

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

### **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 (Ariely, 2000). Supporting customers' search behavior may lead to more satisfied customers and increase purchase intention among the visitors. It is therefore of vital importance to know the objectives and plausible search mode of consumers when they visit a web site. Categorizing customers depending on their objectives of visiting a web site therefore seems to be a useful strategy. Several suggestions have been made on categorizing customers' online search mode. Hoffman and Novak (1996) divided online customers' search process into goal-directed and experiential. Li et al. (1999) tried to categorize customers by their online "shopping orientations", but focused on the demographic determinants of "shopping orientations" rather than on buying behavior. Koufaris et al. (2001) focused on the type of search mechanisms used online, but did not provide any typology of search behaviors. Based on the customers' mind-set, Dholakia and Bagozzi (2001) suggested differentiating between goal-oriented and experiential mind sets. The two mind-sets are furthermore divided into sub mind-sets. Although the authors discussed the typology related to digital environments, they did not discuss antecedents of the mind-sets or effects of the mind-sets on purchase intention. Moe (2003) divided online customers into four categories based on customers' search behavior (directed versus exploratory) and customers purchasing horizon (immediate versus future). Moe (2003) also related the online search behaviors to purchase intention, and made interesting findings indicating that online search mode is closely related purchasing intention.

Building on the work of Moe (2003), the purpose of this article is threefold. One purpose is to focus on the antecedents of customers' search behavior when visiting a web site. We argue that customers' search mode is a psychological construct, and that it should be measured as such rather than through behavioral measures as done by Moe (2003). 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 objectives. Second, Moe (2003) revealed a general effect of customers' search behavior at a web site and their purchase intention. In this article we also focus on potential moderating effects on the relation between customers search behavior and their purchase intention. The third purpose is to study direct effects of other variables on purchase intention to reveal the importance of other potential antecedents of purchase intention on a web site.

## **2. Theory and hypotheses**

Customers' buying decision process can be divided into interpretation, integration, and behavior (Peter and Olson, 1996). 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 has an exploratory character. Integration point to the overall evaluation of a product based on various sources of information and choices among alternative behaviors toward the product. Customers 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 exploratory interpretation phase. In different phases of this process, consumers' search behavior at a web site may vary. A visitor in the interpretation phase will usually have a more exploring search behavior than a visitor in the integration phase. 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 (Moe and Fader, 2001).

To understand customers' search behavior on the Internet, Hoffman and Novak (1996) divided online customers' search process into goal-directed and experiential. A goal-directed search process is among other factors defined by utilitarian benefits and directed search. An experiential search process is characterized by hedonic benefits and non-directed search. Singh and Dalal (1999) 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 emotional appeal of a home page has a stronger persuading effect than rational appeal among surfers, pointing to the importance of understanding the objective of consumers search behavior at a web site to obtain positive persuading effects. Furthermore, Dholakia and Bagozzi (2001) divided customers into categories based on their 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-set. The typology presented by Moe (2003) also categorized search behaviors into four groups. These were directed buying and search/deliberation, reflecting goal-oriented search behavior, and hedonic-browsing and knowledge building, reflecting a more exploratory search behavior. The typologies presented above share a main categorization of search behaviors in two main categories; exploratory and goal-oriented. We suggest that the observed search behavior is a direct manifestation of an underlying psychological construct - search mode. We also suggest that the two categories of search behavior reflect the contrasting values of one dimension, the degree of goal-oriented search mode, in which

exploratory search behavior indicate a search mode with low degree of goal-orientation.

Based on these two assumptions, 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.

Related to customers' decision process, 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 purchase intention. Furthermore, Moe (2003) argue that consumers underlying objectives of visiting a web site will have an effect on consumers' intention of purchase 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: Goal-oriented search mode has a positive effect on purchase intention.

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 consumers, with the phases of the decision process they are in, and with the type of products purchased. For example, customers differ in their prior knowledge of products. Knowledge has been defined as a function of familiarity and expertise (Alba and Hutchinson, 1987). Prior product knowledge can influence consumers' search for information (Bei and

Widdows, 1999). Customers with high product knowledge have often passed the interpretation phase of the buying process. Thus, their judgement criteria are likely to be established (Bettman and Sujan, 1987). Furthermore, consumers with high product knowledge are more likely to know where to look for relevant information (Selnes and Troye, 1989). It is also revealed by Brucks (1985) that prior product knowledge increase search efficiency. This indicates that consumers with high product knowledge will be more goal-oriented in their information search mode than customers with low product knowledge. Thus, the following hypothesis may be suggested:

H2a: Product knowledge has a positive effect on goal-oriented search mode.

Product risk is often defined as consumers' perception of the uncertainty and adverse consequences of buying a product or service (Dowling and Staelin, 1994). Several studies have revealed that risk reducing information search activities increase with higher level of perceived product risk (Dowling and Staelin, 1994; Beatty and Smith, 1987). Perceived overall risk is a function of several sub categories of perceived risk, e.g. psychological risk, physical risk, social risk, and financial risk (Moutinho, 1987; Stone and Grønhaug, 1993). 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 types of 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: Product risk has a positive effect on goal-oriented search mode.

Product involvement represents a concern with a product that the consumer brings into a purchase decision (Rotchild, 1979; Bei and Widdows, 1999). Consumers' involvement with a product reflect the products' "personal relevance" (Zaichkowsky, 1985, p. 342) and affects consumers' motivation to engage in problem solving activities (Peter and Olson, 1996). Customers with high product involvement are therefore supposed to be more motivated to 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: Product involvement has a positive effect on goal-oriented search mode.

A study by Navarro-Prieto et al. (1999) found that web searchers with much Internet experience planned their search ahead based on their knowledge about the web while web searchers with low experience hardly plan at all, and mainly were driven by what they saw on the screen. It may also be argued that consumers with a high Internet experience will perceive a web sites as less complex than consumers with low Internet experience (Bruner and Kumar, 2000), making it easier for experienced consumers to make goal-oriented search on a web site or when using traditional search engines. Based on this, we argue that consumers with high Internet experience are more inclined to be in a goal-oriented search mode than consumers with low Internet experience. We therefore propose a positive relation between Internet experience and the degree of goal-oriented search mode:

H2d: Internet experience has a positive effect on goal-oriented search mode.

Studying the effects of product knowledge, risk, involvement and Internet experience on search mode and purchase intention is complicated because these variables may have both direct effects on purchase intention as well as moderating 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 moderating effects.

Consumers with a high level of product knowledge have often passed the interpretation phase. Thus, they are closer to considering a purchase than consumers' in the interpretation phase (Peter and Olson, 1996). Furthermore, building a high level of 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 high product knowledge are more able than consumers with low product knowledge to infer intended product benefits from external sources, in particular from technical information (Alba and Hutchinson, 1987), leading to an increased purchase intention. Thus, the following hypothesis seems plausible:

H3a: Product knowledge has a positive effect on purchase intention.

Most consumers want to reduce risks related to a product purchase to a minimum. High risk means that the likelihood for negative consequences related to a purchase is high. Because consumers do not want high likelihood for negative consequences when they buy a product, they avoid buying the product with high perceived risk and choose alternative products.

Erdem (1998) 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

stream of research (Campbell and Goodstein, 2001). We therefore propose a negative relation between product risk and purchase intention:

H3b: Product risk has a negative effect on purchase intention.

Product involvement is described as a motivational variable by Kardes (1988). Motivation points to the consumers' interest in elaborating product information from various sources. Product information presented on businesses' web sites can be seen as an advertisement (Singh and Dalal, 1999), and often has a positive valence. Elaboration of information with a positive valence results in a persuading effect (Kisielius and Sternthal 1984; 1986), often measured by attitude toward the product (Brown and Stayman, 1992). It is well established that attitude toward a product have a positive effect on intention to purchase a product (Fishbein and Ajzen, 1975). Thus, we propose a positive relationship between product involvement and purchase intention:

H3c: Product involvement has a positive effect on purchase intention.

Customers get used to the process of searching for information and buying products on the Internet when they have extensive experience in using the Internet (Liang and Huang, 1998). This learning process reduces the reluctance to buying products online, increasing consumers' online purchase intention. Also, web pages that Internet novices perceive as complex are probably not perceived as complex by consumers with high Internet experience (Bruner and Kumar, 2000). A reduction in perceived web site complexity may increase consumers' intention to make purchases on a web site. Although Bruner and Kumar (2000) did not find a direct effect of web experience on purchase intention, they found positive effects of web

experience on attitude toward the web site and attitude toward advertisements, a variable found to mediate purchase intention (Mitchell and Olson, 1981; Brown and Stayman, 1992). Thus, we propose a positive relation between Internet experience and purchase intention:

H3d: Internet experience has a positive effect on purchase intention.

We have proposed that goal-oriented search mode has a positive effect on purchase intention (H1). Results presented by Moe (2003) also indicate support for such a proposition. However, Moe (2003) 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 relationship between search mode and purchase intention may be moderated by the same variables that Moe 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 regarding various attributes of a product presented on the web. Consumers with high product knowledge, therefore, have better preconditions for taking advantage of a goal-oriented search on the Internet. For consumers with low 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: Goal-oriented search mode will have a more positive effect on the purchase intention of consumers with high product knowledge than consumers with low product knowledge.

Product risk leads to risk management activities. Among these activities are search for information to reduce the level of risk (Murray, 1991). 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: 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 condition this persuasion is often based on peripheral cues while persuasion is based on elaboration of message cues under conditions of high involvement (Petty, Cacioppo, and Schuman, 1983). 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: Goal-oriented search mode will have a more positive effect on 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 low Internet experience than consumers with high Internet experience (Bruner and Kumar, 2000), it seems reasonable to argue that consumers with high Internet experience are more able to take advantage of applications on the Internet for making goal-oriented information search. They can use search engines more effectively and better utilize product comparison services ("recommendation agents"). Consumers with low 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 high Internet experience. The positive effect of a goal-oriented search mode on purchase intention will therefore be stronger among consumers with a high Internet experience:

H4d: Goal-oriented search mode will have a more positive effect on purchase intention of consumers with high Internet experience than consumers with low Internet experience.

The 13 hypotheses suggested above are summarized in figure 1.

INSERT FIGURE 1 HERE

The figure illustrates the proposed general effect of goal-oriented search mode on purchase intention (H1), the proposed effects of product knowledge, perceived risk, involvement and Internet experience on goal-oriented search mode (H2) and purchase intention (H3). The

arrow between the mentioned variables and purchase intention is marked by both a + and a – to indicate differences in the directions of the effects (perceived risk is supposed to have a negative effect on purchase intention while the three other variables are postulated to have a positive effect on purchase intention). Moderating effects on the relation between goal oriented search mode and purchase intention are all proposed to be positive (H4).

### **3. Method**

To test the 13 hypotheses proposed in section 2, a quasiexperimental 13-group posttest only design was set up. 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 of equal wording were put at similar locations of the front page of the 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 or the last time they were searching for information about a product". They were then asked to indicate the information support service best suited for providing the information they were searching with this specific product in mind. The 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 on the specific product and information support service preferred so that the subjects were constantly reminded of their stimulus context.

A total of 874 usable responses were 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 1.

INSERT TABLE 1 HERE

When comparing the demographic characteristics of the sample to known population demographics obtained from the Norwegian InterTrack and Media Barometer it was found that our sample contained a smaller proportion of young subjects and a larger proportion of men than the population. The differences were not large, but all analyses have been controlled for gender and age. However, no interactions were found between these variables and the results presented below. Thus, we concluded that our sample was representative of the Norwegian Internet population.

The following measures 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. The search mode items were further analyzed applying principal components analysis. The items and the results of the analysis are shown in table 2.

## INSERT TABLE 2 HERE

The analysis of table 2 shows that we were unable to reproduce four search modes corresponding to the search behaviors of Moe (2003). Instead, 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. Using the four items with the highest factor score to test the reliability of applying the regression score of the first factor as a measure of the degree of goal-oriented search mode gives an  $\alpha$  of 0.69. We have argued that the degree of goal-oriented search mode is of most importance in explaining online purchase intention. In addition, the rotated factor score pattern indicates that goal-oriented and exploratory search modes are negatively correlated supporting our assumption that it is more productive to focus on the degree of goal-oriented search mode in online shopping. In the following, the degree of goal-oriented search mode is measured as the subjects' regression score on the first factor of the analysis shown in table 2.

Product knowledge was measured using four items collected from Smith and Park (1980) and Mitchell and Dacin (1996), and adapted for our purpose. Product risk is a less standardized construct. Our measure was adapted from Chaudhuri (2000). 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 adapted to our setting and contains items representing all of these five sources of product risk. Product involvement was measured with a seven point semantic scale using eight bipolar expressions. The measure has previously been used by, among others, McQuarrie and Munson (1987) showing good reliability. Internet experience was measured using five items partly adapted from Bruner and Kumar (2000) that we have used and tested in previous studies of online search behavior

(Nysveen and Pedersen, 2002). All these items are shown in table 3 with corresponding reliability coefficients.

INSERT TABLE 3 HERE

Purchase intention was measured by using a multiple measure designed by combining the Juster scale (Juster, 1966) and a psychometric measure of purchase intention used by Singh and Cole (1991) and Singh et al. (2000). 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.

#### **4. Results**

Before testing the hypothesis we studied the relationship between our measure of search mode and search behavior. Because subjects had reported their preferred service for supporting the search for information of their individual products, analysis of variance was performed to see if the degree of goal-oriented search mode varied by preferred search service. The results are shown in table 4.

INSERT TABLE 4 HERE

The analysis shows how the degree of goal-oriented varies significantly between users of comparison services, search engines, directory services, product articles on portals and product advertisements on portals. As expected, the highest degree of goal-oriented search mode is found among users of comparison and directory services. This is services used by

consumers knowing exactly what they are looking for. The lowest degree of goal-oriented search mode was found among users of portal services typically used in the interpretation phase of a buying process or when buying products by impulse. We consider this test a confirmation of the relationship between the psychological concept of search mode and search behavior. In addition, it shows that web sites may use information about the type of information service a visitor comes from as a measure of the visitor's search mode.

Regression analysis was used to test the relationship between search mode and purchase intention. The analysis revealed no direct effect of search mode on purchase intention ( $\beta=0.01$ ,  $t_7=0.30$ , d.f.=458). Thus, we found no support for H1. The direct effects of product knowledge, risk, involvement, and Internet experience were also tested using regression analysis. The results are shown in table 5.

INSERT TABLE 5 HERE

From table 5 we see that all proposed direct relationships between product knowledge, risk, involvement and Internet experience and search mode were found significant. This finding supported hypotheses H2a, b, c, and d. 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 and Internet experience, but not the hypotheses of direct effects of product risk and involvement on purchase intention.

Separate regression analyses including search mode, product knowledge, risk, involvement, Internet experience and the interactions between search mode and these variables was used to test the hypotheses of moderating effects on the relationship between search mode and

purchase intention. These analyses revealed two significant relationships indicating that product risk ( $\beta = 0.19$ ,  $t_7 = 1.78^*$ ,  $d.f. = 440$ ) and involvement ( $\beta = 0.31$ ,  $t_7 = 1.82^*$ ,  $d.f. = 442$ ) moderated the relationship between search mode and purchase intention (1). Even though the level of significance is not very high, these findings supported hypotheses 4b and c proposing a moderating effect of product risk and involvement on the relationship between search mode and purchase intention. Of particular importance is that these moderating effects were found for the only two variables studied having no direct effects on purchase intention.

## 5. Discussion

One of the purposes of this study was to investigate recent research by Moe (2003) and others on search behavior, search mode and purchase intention in online environments. The results revealed in this study confirm and extend the findings of these studies that search mode and purchase intention are related. Although no main effect was found for goal-oriented search mode on purchase intention, the relationship between the two variables is moderated by product involvement and product risk. Thus, an effect of goal-oriented search mode is found on purchase intention in some situations. For example, when product risk or involvement is low, a low degree of goal-oriented search mode gives the highest purchase intention, but when product risk or involvement 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/involvement on purchase intention. It also confirms our conception of the degree of goal-oriented search mode as the most 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 or involvement when the degree of goal-oriented search mode is low, and in situations of planned purchasing of products with high risk or involvement 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' degree of product involvement and 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 and likely product involvement for various product categories. The product category studied by Moe (2003) was nutrition products, a product category mainly consumed by persons highly involved in health and food consumption. Thus, it can be argued that the direct effect of goal oriented search mode on purchase intention indicated by Moe (2003) was revealed in a high product involvement, thus supporting the moderated effect found in this article.

Product knowledge, product risk, product involvement and Internet experience were all found to have a direct positive effect on goal oriented search mode. In addition, our results show that the degree of goal-oriented search mode differs across users of different search support services. This means that product knowledge, product risk, product involvement, Internet experience and type of search support service all influence 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. Increasing product knowledge, product risk, product involvement and Internet experience seem to be effective strategies to increase the goal-oriented search mode of visitors, and through this, purchase intention. Customization of websites to attain the best fit between the websites' 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 should be offered a broader specter of decision support services than visitors

with a low degree of goal-oriented search behavior. The information about the individual visitor based on their use of search support services may be revealed from the immediate browsing history of the visitor (referrer), making it possible to reveal what kind of web site the individual visitors come from (recommendation agent, search engine, portal article, etc), and thus, their likely degree of goal-oriented search mode. Due to the moderating effects of product risk and involvement on the relationship between goal-oriented search mode and purchase, this should be considered important information for the website operators.

Our results also reveal positive effects of product knowledge and Internet experience on purchase intention in online environments. These results have implications for the marketing strategy of website operators. Visitors with high product knowledge and high Internet experience seem to be the customers closest to making a purchase. Thus, on websites offering transaction based services, sales promoting effort should in particular be targeted towards these customers. In addition, decision support functions offered on the website should in particular focus on serving these customers since these customers are the most plausible buyers. In addition, the result 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.

Methodologically, the constructs used in the study are based on measures used in earlier studies and thus 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 results presented in the article, indicating that the sample was representative for the

Norwegian Internet population. Thus, based on these variables, self-selection does not seem to have biased the results presented in this article significantly. Measurement of search mode revealed a two-factor structure pointing to a goal-oriented search mode and an exploratory search mode. In this study, search mode is viewed as a one-dimensional construct ranging from low goal-oriented search mode to high goal-oriented search mode. Our argument for this was that low degree of goal-oriented search mode reflects an exploratory search mode. The negative correlation between the two factors as well as the moderating effect of product risk and involvement on the relationship between goal-oriented search mode and purchase intention support our view.

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 pointing to the experimental setting as unusual. Thus, the results seem to be valid for usual user situations at online shops. Also, no particular external incident took place during the quasi-experiment period that should have influenced the results from the study. 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 means that some of the respondents answered the questionnaire while being in a search situation while other respondents had to recall from memory their last search situation online. However, we have no indications that the mix of respondents being in a search situation and respondents recalling a search situation online differed at various levels of goal oriented search mode. In

addition, the customization of the measurement instrument based upon the subjects' most recent product search history was used 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 (Alba and Hutchinson, 1987). 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 attitude toward the product (Fishbein and Ajzen, 1975). Also, attitude toward market information about the product (advertisements) have been shown to have an effect on purchase intention (Brown and Stayman, 1992). Thus, further research should include traditional antecedents of purchase intention to develop a more complete 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.

Our findings indicate that future research should investigate the relationship between the use of online search services and visitor behavior on the referred websites in a session context. While most studies either focus on users' search service behavior or on their website behavior, our findings indicate that a better understanding of online search and purchasing behavior

may be gained by taking a session approach following the users' website behavior across search services and referred websites. Also, having information about the user characteristics of search support services will make it possible to understand and predict visitors' intention and behavior at a website, and offer support services that are in accordance with their characteristics and intentions.

## **Footnotes**

(1) Indicates  $p < 0.05$  using one sided tests and  $p < 0.10$  using two sided tests. One sided tests are most appropriate in our study due to the direction specific hypotheses proposed.

Table 1. Sample demographics

Sex	% (N=794)	Age	% (N=796)
Male	72	0-19	10
Female	28	20-39	63
Education	% (N=793)	40-59	25
Primary	7	60 and above	2
Secondary/High school	35		
University/College	58		

Table 2. Factor analysis of the search mode items

Item	Factor 1	Factor 2
I need much information search and long time to decide when buying this product	0.71	-0.37
When buying this product I have to be goal-oriented in my search for information	0.62	-0.41
This is a product I may buy as an act of impulse	-0.21	0.70
I am first of all interested in acquiring as much knowledge as possible of this type of product	0.73	0.16
It is more important that the information about this product is presented in an entertaining way than that it is detailed and comprehensive.	0.16	0.79
In the phase of the purchasing process I am right now, I am very interested in hearing about other peoples experience with the product.	0.73	0.04
Eigenvalue	2.22	1.25
Variance %	37.0	20.7

Table 3. Items used to measure product knowledge, risk, involvement and Internet experience

Product knowledge	Product risk	Involvement	Internet experience
I feel very knowledgeable about this product	Buying an unknown brand of this product may have big economic consequences	Entertaining/Not very entertaining	I see myself as an experienced Internet user
I have enough knowledge about this product to give others advice about it	Unknown brands of this product may have defects or not function as required	Interesting/Not very interesting	I see myself as good at utilizing the Internet to find the information I search for
Others often seek my advice on this type of product	Unknown brands of this product may damage your health or be a security risk	I am very concerned with it/I am not very concerned with it	Compared to other I know, I am an expert at using the Internet
I feel very confident about what is relevant when buying this product	Using unknown brands represents a risk that I will not identify myself with the product	Exciting/Not very exciting	I know what is required to use the internet effectively
	Using unknown brand represents a risk that others will look at me in ways I don't want them to	Means a lot to me/ Means little to me	Others often seek my advice on using the Internet
		Says much about me/Says little about me	
		Is easy to choose/Is difficult to choose	
		Says much about a person/ Says little about a person	
? =0.87	? =0.80	? =0.77	? =0.92

Table 4. The degree of goal-oriented search mode of users of different search support services

Support service used	Degree of goal-oriented mode
Recommendation agent	0.15
Search engine	-0.09
Directory service	0.16
Portal article (editorial material)	-0.12
Portal advertisement (commercial material)	-0.12
d.f.	730
F-value	2.67**

\*\* Indicates  $p < 0.01$

Table. 5 Direct effects on search mode and purchase intention.

Variable	Effect on search mode ( $\beta$ , $t_\beta$ )	d.f.	Hyp.	Effect on purchase intention ( $\beta$ , $t_\beta$ )	d.f.	Hyp.
Product knowledge	$\beta = -0.10$ , $t_\beta = 2.70^{**}$	724	H2a	$\beta = -0.23$ , $t_\beta = 5.34^{**}$	502	H3a
Product risk	$\beta = -0.35$ , $t_\beta = 9.99^{**}$	704	H2b	$\beta = -0.05$ , $t_\beta = -1.02$	484	H3b
Involvement	$\beta = -0.11$ , $t_\beta = 2.77^{**}$	707	H2c	$\beta = -0.04$ , $t_\beta = 0.85$	487	H3c
Internet experience	$\beta = -0.12$ , $t_\beta = 3.29^{**}$	692	H2d	$\beta = -0.14$ , $t_\beta = 3.08^{**}$	485	H3d

\*\* Indicates  $p < 0.005$  using one sided tests and  $p < 0.01$  using two sided tests.

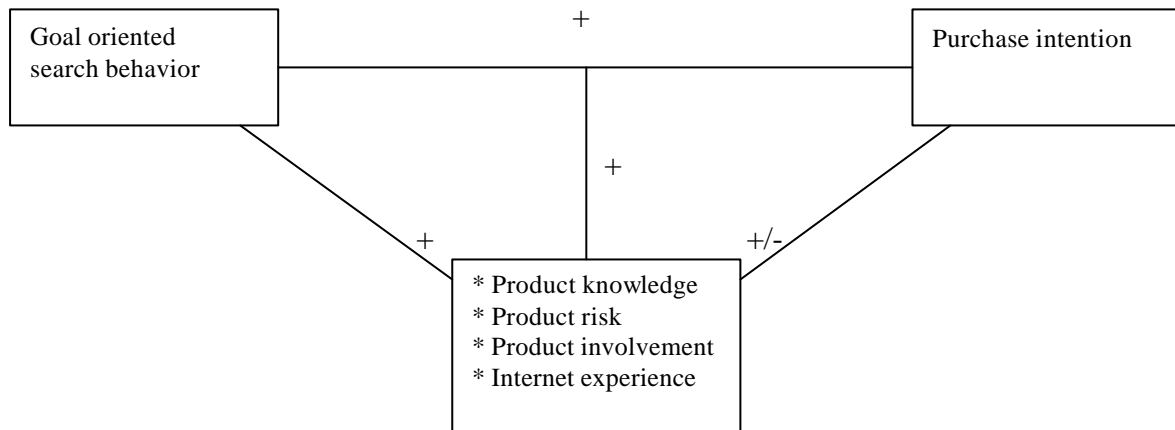


Figure 1: Hypotheses.

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