Understanding the role of prior product knowledge to information search

An application of process theory to the Indian market

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Abstract

Purpose – Existing literature offers conflicting evidence on how prior product knowledge influences amount of information search. A majority of these studies are based on variants of cost benefit frameworks where consumers engage in search until the benefits from information search exceed search costs. The purpose of this paper is to develop an expectancy theory-based framework to model consumers' information search and its antecedents, including motivation to search as an intervening construct.

Design/methodology/approach – The framework is tested using data from real consumers engaged in their actual purchase decisions, in an emerging market context, using longitudinal survey research design. The data are analysed using structural equation modeling to test the hypothesized model. The model shows an acceptable fit with $X2\ (271, 487) = 640.252$, $p < 0.00$ and 0.95 CFI.

Findings – Results indicate that the relationship between prior product knowledge to information search is mediated by motivation to search. Prior product knowledge influences motivation to search through its influence on the consumer's perceived ability to search and his/her perceived value of additional information. Furthermore, perceived ability to search is the strongest predictor of motivation to search. The parsimony of the proposed framework in providing a simpler account of factors influencing the search process along with its managerial implications is discussed.

Practical implications – The findings suggest that perceived ability to search and perceived value of additional information are two important levers that managers could use for achieving desired results. Furthermore, perceived ability to search is an important mediator, which completely mediates the relationship between prior product knowledge and motivation to search. These findings also provide strong indications about the need to simplify the search process for consumers, especially in the context when novelty is predominantly marketed.

Originality/value – The paper introduces a motivational measure of search in the literature and shows that the motivational measure is indeed the proximal measure to other antecedent constructs compared to a behavioral measure of search. Perceived ability to search and perceived value of additional information are shown as important mediators between prior product knowledge and motivation to search.

Keywords India, Emerging markets, Consumer behaviour, Information searches, Prior product knowledge, Motivation to search, Value of information, Expectancy theory

Paper type Research paper

Introduction

Understanding the consumer information search process plays a pivotal role in key strategic managerial decision areas such as communications planning, new product introduction and customer relationship management.

The consumer information search literature has evolved using three different theoretical perspectives: economic perspective (focusing on cost-benefit tradeoff), psychological perspective (focusing on individual differences) and information processing perspective (focusing on memory and cognitive information processing limitations of humans). Researchers have drawn from these perspectives (either from any one or from combination) to examine the pre-purchase information search process of consumers. A majority of these studies (Biswas, 2004; Ratchford, 2001; Srinivasan and Ratchford, 1991) derive their support from an economic rationality (cost-benefit) framework, which suggests that a customer engages in the search process till the time her incremental benefits of search exceed her incremental search costs.

The psychological perspective assumes that there are other factors in addition to the cost and benefit tradeoff that impact the consumer information search process. Researchers have argued for the explicit recognition of individual (like self efficacy) and situation specific variables (like time pressure) in the models (Loibl *et al.*, 2009; Grant *et al.*, 2007; Beatty and Smith, 1987; Duncan and Olshavsky, 1982).

The information processing perspective assumes that a consumer uses a set of cues to make a decision. These cues are stored in the memory and are activated when a purchase decision is to be taken. A decision process is thus viewed as a net through which an array of cues passes (Sternthal and Craig, 1982). These cues fall into three categories: choice object attributes (price, weight, etc.), external environment attributes (past experience, Word of Mouth, etc.) and internal cues or cognitive variables (perceived risk, task complexity). Thus, many researchers have modeled these variables in their consumer information search inquiry (Hu *et al.*, 2007; Baye *et al.*, 2006; Levin *et al.*, 2000).

Prior product knowledge has been given importance by all the perspectives. The economics perspective argues that prior product knowledge influences the cost and benefits of search whereas the psychological perspective argues that prior product knowledge influences individual specific variables like self efficacy. The information processing perspective argues that prior product knowledge is a part of memory which influences the cognitive capacity of consumers. Thus, many researchers have closely examined the relationship of prior product knowledge to consumer pre-purchase information search behavior, both conceptually and empirically (Basu, 1993; Bettman and Park, 1980; Chandler and Crown, 1991; Chao and Gupta, 1995; Coleman and Warren, 1995; Duncan and Olshavsky, 1982; Moorthy *et al.*, 1997; Ratchford, 2001). However, these studies have found support for positive, negative and inverse relationship between these constructs (Appendix 1) and have come with equally strong arguments in support of their research. The researchers who find positive relationship argue that more knowledge enables consumer to ask more questions whereas researchers who find negative relationship argue that more knowledge makes consumer more efficient in her search. Hence, there is a need to revisit the information search behavior of consumers and the process by which prior product knowledge influences it.

In this paper we explore the relationship between prior product knowledge and information search by developing a theoretical model using motivation theory framework and thereby propose a set of intervening variables that can help explain

the inconsistencies of results in the existing literature. The model examines motivation to search as a mediator between prior product knowledge and pre-purchase information search. Antecedents of motivation to search are proposed, deriving support from the expectancy theory of motivation. Empirical validation of the theoretical model is provided using data from consumers intercepted while undergoing their actual purchase process.

Relationship between prior product knowledge and pre-purchase information search – a literture summary

Prior product knowledge has been conceptualized as an important antecedent of information search by many researchers (Brucks, 1985; Engel *et al.*, 1968; Howard and Sheth, 1969; Bei and Widdows, 1999). These studies have been done in a variety of contexts ranging from automobile purchase (Chao and Gupta, 1995; Johnson and Russo, 1984), electronics goods purchase (Beatty and Smith, 1987; Selnes and Troye, 1989) home shopping contexts (Sundaram and Taylor, 1998) and grocery purchase (Putrevu and Ratchford, 1997; Putrevu and Lord, 2001).

Researchers such as Anderson *et al.* (1979), Fodness and Murray (1997) and Swan (1969), etc. have reported a negative relationship between prior product knowledge and the extent of information search. The essential arguments in favor of such negative relationships in the literature stems from the rationale that experienced consumers search less because of two reasons. First, prior knowledge suffices the need to know about the attributes of various alternatives and consequently limits the additional information search from external sources. Second, the knowledgeable consumers can perform more efficient information searches because they know what information is important and useful. Information may be categorized by consumers according to their degree of importance. Those with high prior product knowledge have already processed the most salient among that information and hence may feel less given to search for additional information. Additionally, the ambient environment for information (the so-called info-scape) may be such that the search for relevant information may entail stochastic time or effort costs. These costs are likely to be higher for relative novices in the category. As consumers acquire more knowledge about a category, this very process of information search becomes more directed and hence efficient. This explains the inverse relationship between prior product knowledge and amount of information search.

On the other hand, researchers who find positive relationship between the two constructs (Coupey *et al.*, 1998; Johnson and Russo, 1984; Ozanne and Brucks, 1992), argue that prior knowledge of product attributes allows consumers to formulate more questions and therefore, lead them to look for more information. These researchers further argue that category-specific knowledge helps individual consumers to evaluate responses to questions, thereby reducing cognitive cost of using information and increasing the benefits of obtaining it.

Researchers who find inverted U relationship (Bettman and Park, 1980; Moorthy *et al.*, 1997) argue that knowledge is divided into two parts: *prior knowledge*, which leads to more information search as it enables consumers to ask more question; and *expertise*, which leads to greater knowledge about how various brands are positioned and thus reduces the need for additional information. Prior knowledge is defined as "consumer knowledge of how much she knows about the values of various

choice alternatives on the attributes she is considering" (Moorthy *et al.*, 1997) and expertise is defined as "ability to perform product related tasks successfully" (Moorthy *et al.*, 1997). They argue that the effect of knowledge is initially dominant and expertise takes over later in the search process, causing the relationship between prior knowledge and information search to be inverted U.

The literature also suggests that there is a lack of consistency in the way various researchers measure different constructs like prior product knowledge and amount of information search. Researchers have used objective knowledge, subjective knowledge, prior experience and positive experience as surrogates for measuring prior product knowledge. Similarly, researchers have used time spent at different sources of information, number of information sources used and overall time spent on information search in order to measure amount of information search. Therefore, the relationship between prior product knowledge and amount of information search can be best described as inconclusive. A summary of studies that have investigated this relationship along with their results is provided in Appendix 1.

This paper examines the process by which prior product knowledge influences pre-purchase information search behavior deriving support from expectancy theory. The focus is on the following set of questions:

(1) Are there intervening variables that influence the relationship between prior product knowledge and amount of information search? If yes, what are they?

(2) Is actual information search influenced by these intervening variables, namely, consumer's motivation to search?

(3) How does prior product knowledge influence consumer's motivation to search for additional information?

In addressing the above questions, this research develops the theory in information search literature by introducing the constructs of motivation to search, perceived ability to search and perceived value of additional information. Motivation is claimed to be more proximal to the currently studied actual information search measures. Thus, it is more important to understand the relationship of various antecedent variables to motivation to search. In calibrating the proposed theoretical model, scales are developed for measuring each of the constructs and their psychometric properties are tested.

The model

As outlined in the previous section, this research focuses on understanding the process by which prior product knowledge influences pre-purchase information search. This section discusses the key process variables and their relationships.

Whenever a consumer decides to buy a product, she faces a choice situation where many products in the market claim to fulfill her need. The choice of product is influenced by her personal need criteria, her prior product knowledge (if any) and the information she gets during the search process (Punj and Brookes, 2001). It is important to develop a framework to explain the motivation to engage in information search and specifically examine the relationship of prior product knowledge to the motivation for information search and actual information search.

In this paper a model of information search behavior is developed using motivation to information search and amount of information search as separate constructs.

Motivation theory literature argues that motivations should be modeled separately from outcome variables to understand the relationships better. Mitchell (1982) in his review of motivation literature states that, "[...] purpose of motivation theories is to predict behavior [...] but motivation is not the behavior itself and it is not performance" (p. 81). He further argues that "[...] if one wants to assess the changes of motivation or influences of interventions on motivation, then one must measure motivation and its contribution to behavior [...]" (p. 83).

Furthermore, expectation theory (Vroom, 1964) is used a theoretical framework to model antecedents of motivation to search. Expectancy theory being a process theory of motivation emphasizes on individual perceptions of the environment and subsequent interactions arising as a consequence of personal expectations and thus is better placed to examine the inter-relationships (for example, Kopf (1992) and Fudge and Schlacter (1999) for further discussion). Also, Jacoby *et al.* (1992) state that expectancy theory is better placed to explain consumer choice and decision making.

Deriving support from expectancy theory the article proposes that motivation to search is influenced by perceived ability to search (analogous to expectancy in Vroom's theory) and perceived value of additional information (analogous to attractiveness (or composite of valence and instrumentality in Vroom's theory). *Perceived ability to search* is defined as a consumer's perception about her ability to perform information search tasks. Though the construct of ability already exists in marketing literature (in information processing literature) but the conceptualization of abilities in this article differs as the abilities here are defined as subjective abilities as opposed to objective abilities in information processing literature (Petty and Cacioppo, 1981).

Perceived value of additional information encompasses instrumentality and valence dimensions of expectancy theory. The first dimension of conceptualization captures the attractiveness of purchase outcome to the consumer (equivalent to valence) and second captures the strength of perceived usefulness of search in giving good information to the consumer (equivalent to instrumentality) (Vroom, 1964). The instrumentality construct is further adapted to incorporate element of cost attached to search activity by asking customers to take consideration of costs while responding to the questions relating to instrumentality. Thus, perceived value of additional information is composed of two factors: perceived attractiveness of the purchase objectives to the customer (thereby capturing the need of customer) and the strength of belief that additional search would provide information that would aid in achieving the purchase objectives. Hence, perceived value of additional information captures the importance of product to the customer and also captures the expected usefulness of the additional information to the customer. It is further agued that using perceived value of additional information is better than modeling cost and benefits of search separately as benefits and costs of search are ultimately encoded and decoded by consumers at a psychological stratum. Hence a more appropriate construct to explain search ought to account for not only the perceived benefits and costs of search, but also the strength of belief that search effort would produce relevant information for the consumer.

It is further proposed that *prior product knowledge* influences both, perceived ability to search and perceived value of additional information. Prior product knowledge is defined as the consumer perceived knowledge of how much she knows about the product category on different parameters (Brucks, 1985; Moorthy *et al.*, 1997). This definition of prior product knowledge is used because of two reasons: first, the model

is driven by motivation theory perspective and thus use of perceptual measures is more appropriate and second, there is moderate correlation between both subjective and objective measures of prior product knowledge. Also prior product knowledge acts as a control variable that captures the heterogeneity in customer search as already conducted search would add to the stock of prior product knowledge of the customer.

The literature also suggests that prior product knowledge is positively related to perceived ability (Eastin and LaRose, 2000; Celsi and Olson, 1988; Bettman and Park, 1980) and negatively related to prior product knowledge (Biswas, 2004). Thus, the model proposes that consumers who have lower product knowledge have larger value to be derived from information and the consumer who have higher product knowledge also have higher perceived abilities (refer Figure 1 for a schematic representation of the proposed model).

The proposed model shows that high (low) prior product knowledge level consumers can engage in high or low levels of information search depending upon the relative strengths of the mediating variables, i.e. perceived value of additional information, perceived ability to search and motivation to search. Therefore, this research conceptually proposes a possible reconciliation of the conflicting results of prior research in this area and proposes that positive relationship between prior product knowledge and motivation to search may exist if the relative strength of perceived ability to search is higher. On the other hand, a negative relationship between prior knowledge and search may be explained by the relatively low strength of perceived value of *additional* information. Thus, this article provides a theoretical framework wherein a positive and a negative relation between knowledge and search may coexist.

Relationship between constructs (hypotheses)
Prior product knowledge and motivation to search
Vroom (1964) suggests that there are three primary antecedents to motivation: valence, instrumentality and expectancy (VIE). It is therefore reasonable to expect that any variable which influences motivation should influence it through its relationship with these antecedent variables. It is hypothesized here that prior product knowledge influences both expectancy and attractiveness, defined as a composite of instrumentality and valence:

H1(a). The relationship of prior product knowledge to motivation to search is mediated by perceived ability to search.

H1(b). The relationship of prior product knowledge to motivation to search is mediated by perceived value of additional information.
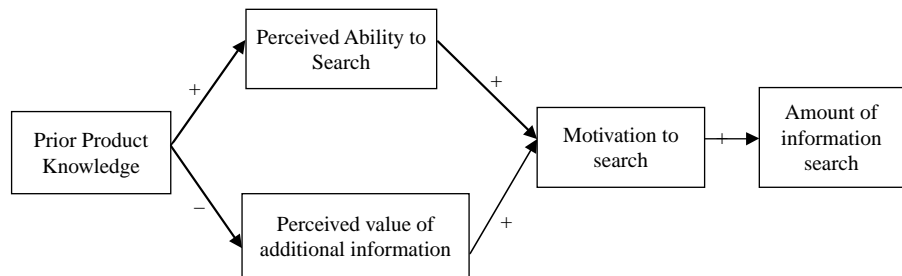

Figure 1.
Proposed model

Prior product knowledge and amount of information search
As discussed earlier, the debate on the relationship of prior product knowledge to information search is far from settled. Virtually analogous arguments have been proposed to explain diametrically opposite conclusions. Whereas some studies report findings that more category specific knowledge makes consumers efficient in their search and leads them to search less, others report that more accumulated knowledge enables consumers to ask more questions that lead them to search more. These conflicting evidences suggest that there is a possibility of underlying mediating variables that may accommodate various positions suggested by the literature.

In the proposed model (Figure 1) it may be noted that a construct measuring consumer's motivations to search has been explicitly introduced. The hypothesis proposed is that the relationship between prior product knowledge and information search is mediated by the motivation to search. The motivation construct is important as it may permit evaluation of the influence of interventions on motivation and their concomitant impact on behavior. Mitchell (1982), Bettman and Park (1980), Celsi and Olson (1988) and Schmidt and Spreng (1996) are some of the prior research that directly support our hypothesis:

H2. The relationship of prior product knowledge to amount of information search is mediated by motivation to search.

Perceived ability to search and motivation to search
Perceived ability to search is a construct similar to the expectancy construct of Vroom (1964), who hypothesized a positive relationship of expectancy to motivation. Subsequent empirical work in expectancy theory has shown that expectancy is positively correlated to information search (Eerde and Thierry, 1996). In the information search literature, Duncan and Olshavsky (1982) show that the consumer's belief in her ability to judge is positively related to the extent of information search. Putrevu and Ratchford (1997) further show that perceived ability to judge is positively related to information search. Shafizadeh (2007), while studying antecedents of intrinsic motivation shows that perceived ability is a significant predictor of motivation. Thus, it may be hypothesized that:

H3. There is a positive relationship between consumers' perceived ability to search and their motivation to search during pre-purchase information search process.

Prior product knowledge and perceived ability to search
Alba and Hutchinson (1987) suggest that lack of cognitive ability implies that knowledge structures required to perform complex mental tasks either do not exist, or cannot be readily accessed by consumers. Torkzadeh *et al.* (1999) show that training in computers significantly improved their self efficacy in accessing personal computers. This tends to suggest that prior knowledge has significant positive impact on consumers' self efficacy. Many authors in the information processing literature have measured consumers' ability to process new information. Bettman and Park (1980) argue that lack of prior knowledge structures inhibit the low knowledge customer's ability to process information. Celsi and Olson (1988) claim that ability to process

information is largely a function of the amount and the type of knowledge of the customer. This school of thought leads to the following hypothesis:

H4. Prior product knowledge is positively related to the perceived ability to search.

Perceived value of additional information and motivation to search
Perceived value of additional information has been conceptualized following the *attractiveness* construct of expectancy theory, which is defined as a composite of valence and instrumentality. Valence is defined as anticipated satisfaction or anticipated importance of the outcome to the consumer and instrumentality is defined as the strength of perceived usefulness of search in giving good information to the consumer so that she can get the desired purchased outcome.

Vroom (1964) hypothesized a positive relationship between motivation and both valence and instrumentality. Subsequent empirical research, such as Wanous *et al.* (1983) and Van Eerde and Thierry (1996), show that the composite construct of valence and instrumentality positively influences motivations.

Similarly, the rich literature on the economic theories of information search have collectively claimed that the consumer pursues search till the marginal utility of search becomes zero (Stigler, 1961; Srinivasan and Ratchford, 1991; Moorthy *et al.*, 1997). Thus, following the economic principals of diminishing returns to search it may be argued that the incremental value of information has a positive relationship with motivation to search:

H5. The relationship between perceived value of additional information and motivation to search is positive.

Prior product knowledge and perceived value of additional information
Perceived utility of additional information about the category decreases as consumers become more knowledgeable about a product category. Evidences in the marketing literature suggest that as consumers become more familiar with a category, the perceived value of search decreases for them because they already possess superior information about the existing products in the market (Johnson and Russo, 1984). Biswas (2004) propose that consumers who have lower product knowledge have larger value to be derived from information:

H6. The relationship between perceived value of additional information and prior product knowledge is negative.

Motivation to search and amount of information search
Motivation in itself captures the intensity to perform a certain task (Vroom, 1964; Eerde and Thierry, 1996). Mitchell (1982) focused on the need to model motivation as a separate construct, as distinct from behavior, because motivation is an important intervening variable that ultimately influence overt search behavior. Consumers engage in extended information search only when they have strong motivation to do so. Therefore:

H7. Motivation to search is positively related to amount of information search.

Research methodology

This section discusses the methodological issues of choosing an appropriate research methodology to address the research issues formulated in the previous sections. Research methodology is a structured set of guidelines or activities to assist in generating valid and reliable research results. Figure 2 shows the summary of choices available at various decision levels and the shaded option shows the option that was selected at each stage.

Two plausible data collection designs to examine the proposed relationships were: experimental design and survey design. Experimental design has a better control in terms of manipulating variables and has high internal validities but was difficult to operationalize in this context because:

- It was very difficult to manipulate certain constructs which were dispositional in nature like product knowledge and tendency to explore.
- It was also not easy to assign respondents into control group and treatment group on priori basis because of large number of variables.

The option of choosing a survey design looked more feasible as large number of variables did not pose much problem except for increasing the length of the questionnaire. This type of research design has been extensively used in the related literature (Srinivasan, 1987; Moorthy *et al.*, 1997; Srinivasan and Agrawal, 1988). Thus, survey research design was selected to test the proposed relationships.
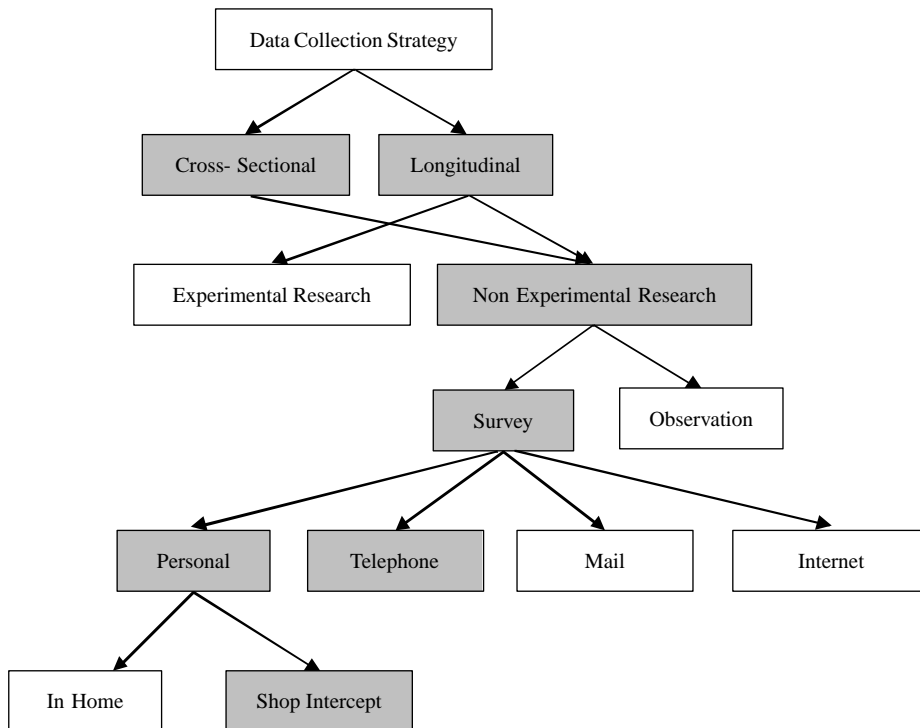

Figure 2.
Data collection – choices

Moreover, the research can either be cross-sectional or longitudinal. In this study, we apply a mixed design. Cross-sectional research involves the collection of information from any given sample of population elements only once where as longitudinal research provides an in-depth view of the situation and the changes that take place over time. The proposed model deals with psychological constructs like motivation to search that are temporal in nature and can be better captured at the time of task (information search activity) performed. But a part of model also tests the relationship between motivation to search and actual information search which is the resultant variable and can only be captured once the information search activity is over. Hence, a mixed design was selected where all variables except actual information search variables were captured in the first phase which is closer to a cross-section data collection method. This was done so that we have higher number of respondent data to test our model.

Because it is well documented in literature that longitudinal research suffers from respondents' refusal to cooperate and panel mortality. Thus, second stage of data was collected primarily to test the relationship between motivation to search to actual information search using a longitudinal research design.

Scale development and pretesting
All measures for this research have been developed using scale development approaches following Churchill (1979), Sethi and King (1994) and Hinkin (1995). The variables in the proposed model are perceptual, so the use of scales with appropriate psychometric properties becomes very important. The initial inventory of items was selected from related scales available in the literature and qualitative discussions with actual consumers and MBA students. This process is similar to the deductive and inductive approach suggested by Hinkin (1995). All scales were then content validated using ten experts (doctoral students who had taken the research methodology course and were knowledgeable of the process of content validation). These experts were provided with the definition of the constructs and the list of items characterizing these constructs and were asked to provide a judgment (using a dichotomous scale) on whether the items belonged to the nomological space of the constructs. Finally, the list of items was derived after applying an 80 percent convergence rule. The questionnaire was then pre-tested on 186 senior students studying business management and computer science.

Pretest data
The purpose of the pretest was to validate the scale items to be used in the research that were either developed specifically for the study, or modified from previous studies. A self-administered questionnaire was administered among senior students studying management or computer sciences. All the students were asked to respond to various items keeping in mind (or imagining) that they were planning to buy a product (namely, a motor-cycle) in the near future.

Checking for dimensionality of construct
One of the objectives of the pretest was to establish one dimensional nature of scales for further research. Single dimensionality refers to the existence of a single construct explaining a set of attributes (Segars, 1997) and is considered as an important aspect of theory testing using structural equation modeling (SEM) (Anderson and Gerbing, 1988).

To detect scale dimensionality, an exploratory factor analysis (EFA) with a principal component method was conducted for each construct.

Principal component analysis with orthogonal rotation was used for factor analysis. No "minimum eigenvalue" condition or "number of factors to be retained" condition was pre-specified. The Cronbach α or reliability coefficient for each scale was computed. The items used for data collection along with the results of EFA and other reliability measures are given in Appendix 2.

Convergent and discriminant validity
The final scales were tested for convergent validity (Anderson and Gerbing, 1988; Bagozzi, 1981; Fornell and Larcker, 1981). All the items significantly loaded on to the hypothesized construct in the measurement model ($X^2(269, 473) = 553.52, p < 0.00$, X^2/df $= 2.06$, GFI $= 0.91$, CFI $= 0.96$, TLI $= 0.95$, IFI $= 0.95$, RMSEA $= 0.047$, $p = 0.83$) thereby showing support for convergent validity. In addition, the Cronbach α of the scales ranged between 0.88 and 0.91 (recommended cut off 0.7, refer Hinkin (1995)) and average variance extracted by the scales of each construct was in the range of 0.51-0.7 (recommended cut off 0.5, refer Hinkin (1995)) thereby exhibiting satisfactory performance and single dimensional structure of scales (Table I).

Discriminant validity was assessed by using two methods. In Method-1 two models were tested for every possible pair of constructs. In the first model the correlation parameter was constrained between each pair of constructs to 1.00. The results were then compared to the second model which was estimated as unconstrained model (i.e. free model). A significantly lower χ^2 value for the unconstrained (free) model demonstrated that discriminant validity had been achieved (Anderson and Gerbing, 1988; Bagozzi, 1994). In Method-2 the average variance extracted (AVE) values associated with each construct were compared with the correlations among constructs (Staples *et al.*, 1999). Using Method-1 it was found that the χ^2 differences in all the pair of models was significantly lower for the unconstrained model, showing support for discriminant validity between the pairs. In Method-2 the square root of average variance extracted for each construct was higher than its correlation with other constructs, for example, prior product knowledge had an AVE of 0.71 as compared to its correlation of $0.28 - 0.54$ with other constructs thereby providing further evidence for discriminant validity (Table II).

Thus, the dimensionality as well as the convergent and discriminant validity of all scales is established.

Research design: main study
Since the proposed model deals with psychological constructs, these constructs are expected to result in unreliable data if captured after the completion of process and can

	AVE	Construct reliability
Perceived ability to search (ab)	0.54	0.89
Motivation to search (mot)	0.59	0.91
Prior product knowledge (ppk)	0.51	0.88
Perceived value of additional information (voi)	0.70	0.90

Note: For establishing convergent validity the value of average variance extracted (AVE) should be greater than 0.5 and the value of construct reliability should be greater than 0.7

Table I.
Scale reliability
(convergent validity)

be better captured reliably while the process is still active (in our case the process is information search process). But a part of the model also tests the relationship between motivation to search and actual information search which is the final outcome variable and can only be captured once the information search is over. Hence, a longitudinal design consisting of two different surveys (using same set of customers) was planned. All variables except actual information search variables were captured in the first survey. In the second stage, data was collected by means of call-back surveys, on the measures pertaining to the amount of actual information search.

In literature, information search behavior for both durable as well as non-durable product categories has been studied. Table III provides a summary of product categories used in literature to model the determinants of pre-purchase information search. Around 50 percent of studies (total number of studies were 42) use durable product category with maximum number of studies using car buyer or electronic good buyers as the subjects.

The choice of product category for this study was taken based on the product category largely studied in the literature as well as its relevance to Indian market context. The product category chosen for the study was motorcycles, because the purchase of this category signifies a relatively involved purchase decision and it forms one of the largest purchases of automobiles in Indian market. According to the figures published by Society of Indian Automobile Manufacturers (SIAM, 2011), the share of two-wheelers in automobile sector in terms of units sold has been around 75 percent between 2004-2005 and 2010-2011 (Figure 3).

As of 2010, the Indian two-wheeler industry is the second largest in the world and has grown at a compounded annual growth rate (CAGR) of ~ 10 percent in last seven years (source: SIAM data). The motorcycle industry constitutes 81.5 percent of total two-wheeler market in India. This high growth has been fuelled by Ghosh *et al.* (2011):

	ab	mot	ppk	voi
Perceived ability to search (ab)	0.73			
Motivation to search (mot)	0.54	0.76		
Prior product knowledge (ppk)	0.54	0.32	0.71	
Perceived value of additional information (voi)	0.53	0.42	0.28	0.84

Notes: The diagonal elements are the square root of the variance shared between the constructs and their measures (i.e. the average variance extracted); off diagonal elements are the correlations between constructs; for discriminant validity, the diagonal elements should be larger than any other corresponding row or column

Table II.
Scale reliability
(discriminant validity)

| Product category	Percentage of studies in literature
Automobiles	24
Clothes	10
Durable product (except auto)	26
Non durable	33
Others	7

Table III.
Product category used

- inadequate public transportation system, especially in the semi-urban and rural areas;
- increased availability of cheap consumer financing in the past three to four years;
- increasing availability of fuel-efficient and low-maintenance models;
- increasing urbanisation, which creates a need for personal transportation;
- changes in the demographic profile;
- difference between two-wheeler and passenger car prices, which makes two-wheelers the entry level vehicle;
- steady increase in *per capita* income over the past five years; and
- increasing number of models with different features to satisfy diverse consumer needs.

This industry has also seen spate of product innovation and frequent launches due to stringer emission norms, new technical collaborations and intense competition (Ghosh *et al.*, 2011). There were around 57 new models introduced in the market between 2006 and 2010 with around ten more in the pipeline (Ghosh *et al.*, 2011) providing adequate variety to the consumers.

Data collection
The data for this research was collected using a self administered questionnaire from consumers who were in the process of buying a motorcycle. The data was collected from the retail outlets of a leading motorcycle manufacturer in a major market in India during 2007-2008. The customers who came to purchase or inquire about the purchase of a new motorcycle were intercepted and requested to participate in this research. At the end of the shop intercept interview, the respondents were requested to provide their contact telephone numbers, for possible call-back interviews for additional information.

In the first stage, data was collected from 504 respondents. For getting these responses a total of 703 customers were contacted (response rate 71.6 percent). In the second (call back) stage, all those respondents who had provided usable information (487 respondents) in the first stage were contacted. The response rate in second stage was around 14.9 percent (73 respondents). This response rate compares well with the standard response rates obtained in telephonic surveys of 11.5 percent (Roster *et al.*, 2004).
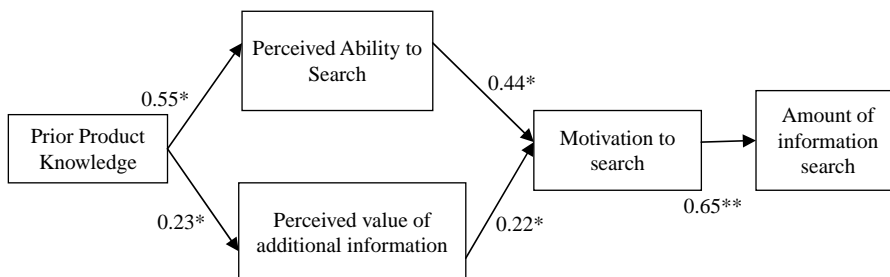
Source: Data extracted from SIAM, available at: www. siamindia.com/

Figure 3.
Automotive production
in India

Data analysis
SEM was used to empirically test the relationships between the constructs (up to motivation to search) in this study. SEM allows simultaneous estimation of:

- a measurement model that relates the items in each scale to the construct they represent, giving factor loadings for each item; and

- a structural model that relates constructs to one another, providing parameter values (i.e. path coefficients).

This method was chosen so that both an a priori model accounting for measurement error in the construct and their respective scale measurements and simultaneous estimation of those relationships for the complex model could be achieved (Anderson and Gerbing, 1988).

However, due to limited usable responses in the call-back phase, adequate data was not available to include the actual amount of information search in the SEM. A separate regression model was estimated to check for the association of amount of information search with the motivation construct.

The properties of the items of the constructs in the proposed model and the hypotheses were tested using the AMOS 4 SEM analysis package with maximum likelihood (ML) method of estimation (see Anderson and Gerbing (1988), Bollen (1989) and Hayduk (1987) for recommendations for ML) in combination with the two-stage process recommended by Sethi and King (1994) and Anderson and Gerbing (1988). The single dimensionality of congeneric measures and test for discriminant and convergent validity of all constructs were conducted before testing the structural relationships of the model.

Results
The main results of the model estimation are shown in Figure 4. Results indicate that six of the seven tested hypotheses were supported. The hypothesis that was proposed to examine the relationship between prior product knowledge and perceived value of additional information (*H6*) was found to be significant but did not support the hypothesized direction of the relationship. Hypothesized relationships between prior product knowledge and perceived ability to search, motivation to search and perceived
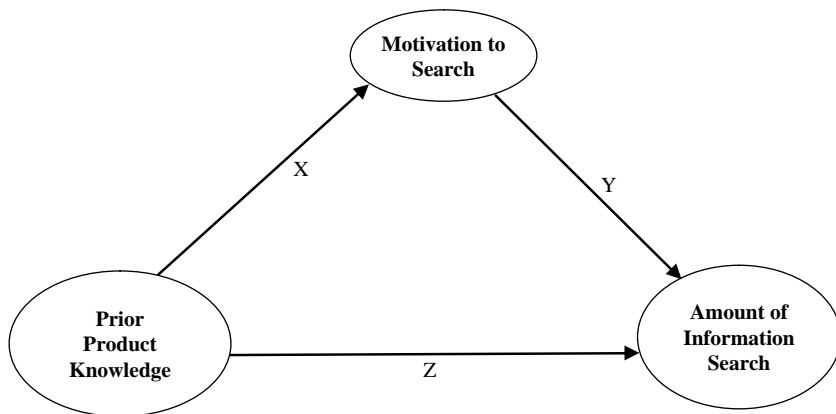

Figure 4.
Model results

ability to search, motivation to search and perceived value of additional information
were found to be significant.

The model shows an acceptable fit [X^2 (271, 487) $=$ 640.252, $p <$ 0.00, X^2/df $=$ 2.36,
GFI $=$ 0.9, CFI $=$ 0.95, TLI $=$ 0.94, IFI $=$ 0.95, RMSEA $=$ 0.05, $p =$ 0.17] (Byrne,
2001; Hair *et al.*, 1998; Hoyle and Panter, 1995). Thus, the model showed an overall
acceptable fit (on χ^2, relative χ^2, GFI, CFI, TLI and RMSEA) and had no Heywood cases.

Testing for mediation
Amount of information search was hypothesized to have positive relationship with
motivation to search. It was further hypothesized that motivation to search mediates
the relationship between amount of information search and prior product knowledge.
For testing these hypotheses a linear regression model was run because the sample size
was too small to estimate a structure equation model (Byrne, 2001; Jiang *et al.*, 2011).
A summated score was computed for unidimensional scales of prior product
knowledge and motivation to search.

Results show that the motivation to search positively impacts the amount of search,
thereby providing support for *H8*. Baron and Kenny (1986) approach was used for
testing *H1*, wherein mediation can be assessed by using a sequence of independent
regression equations to measure the various paths as follows:

- variations in levels of the independent variable significantly account for
variations in the presumed mediator (i.e. path X);
- variations in the mediator significantly account for variations in the dependent
variable (i.e. path Y); and
- when paths Y and X are controlled, a previously significant relation between the
independent and dependent variable is no longer significant, with the strongest
demonstration of mediation occurring when path Z is zero (Figure 5).

Following this approach the amount of information search was regressed with prior
product knowledge, i.e. test path Z (refer model 1 in Table III) and path Z was found to
be positive and significant. Amount of information search was also regressed with
motivation to search (path Y) and path Y was also found to be significant and positive
(refer model 2 in Table III). Similarly, when perceived motivation to search was
regressed with prior product knowledge, i.e. test path X (refer model 3 in Table III), the
path was also found to be significant. However, when amount of information search
was regressed with both motivation to search and prior product knowledge,
the coefficient between prior product knowledge and amount of information search
(i.e. path Z) became insignificant (refer models 4 and 5 in Table III) thereby
supporting *H2*.

Analysis of hypothesis
Hypothesis 1a and 1b
The relationship of prior product knowledge to motivation to search is mediated by
perceived ability to search.

The relationship of prior product knowledge to motivation to search is mediated by
perceived value of additional information.
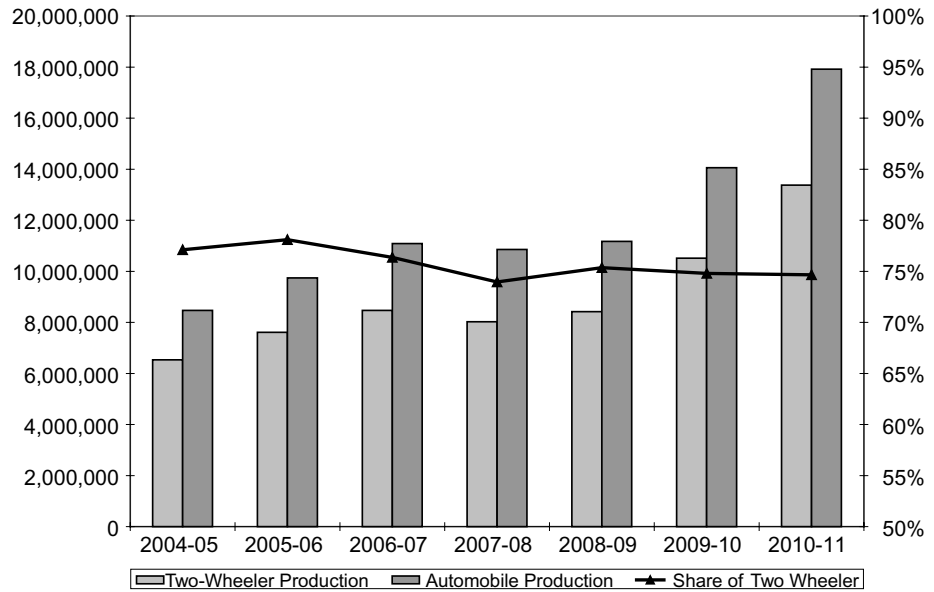
Figure 5.
Mediation model

This hypothesis postulates that the effect of prior product knowledge to motivation to search is mediated by perceived ability to search and perceived value of additional information. We test this hypothesis by introducing a direct effect path from prior product knowledge to motivation to search in addition to the mediated paths (mediated through perceived ability to search). The results show that the direct path is insignificant thereby showing complete mediation. The results suggest that prior product knowledge does not directly impacts motivation to search but influence perceived ability to search which further influence motivation to search.

These results are in agreement with Vroom's theory which suggests that antecedents of motivation are VIE (Vroom, 1964). Hence, any variable which influences motivation should influence through these antecedents.

Hypothesis 2

The relationship of prior product knowledge to information search is mediated by motivation to search.

H1 postulated that motivation to search is a more proximal variable to prior product knowledge than amount of information search. The regression results show that the hypothesis is not rejected. Thus, one can infer that measuring motivation to search is more appealing because motivation to search is more proximal to other variables. This view is well documented in motivation theory literature for example, Mitchell (1982) argues that, "[...] if one wants to assess the changes of motivation or influences of interventions on motivation, then one must measure motivation and its contribution to behavior [...]". This also enables us to propose a framework of information search which is more parsimonious and is theoretically grounded in the theories of motivations.

Hypothesis 3

There is a positive relationship between the perceived ability to search and the motivation to search of consumer during pre-purchase information search process.

In *H3*, it was postulated that perceived ability to search is positively related to motivation to search. The results of the SEM analysis did not reject this hypothesis. Motivation to search is found to be significantly predicted by perceived ability to search ($\beta = 0.44$, $p < 0.00$).

Though, the relationship between these two constructs has not been empirically tested in consumer information search literature but these results are consistent with the results done in related fields. For example, expectancy theory has also shown that expectancy is positively correlated to information search (Eerde and Thierry, 1996). In information search literature also Duncan and Olshavsky (1982) show that the consumer's belief in her ability to judge is positively related to information search. Putrevu and Ratchford (1997) also show that perceived ability to judge is positively related to information search.

Thus, the result show that perceived ability to search increases the self confidence of consumer in collecting the information available from various sources thereby has positive relationship with motivation to search. Hence, one can infer that higher the perceived ability to search of the consumer higher would be her motivation to invest in information search.

Hypothesis 4

Prior product knowledge is positively related to the perceived ability to search.

In *H4*, it was postulated that consumers who have high prior product knowledge have higher perceived ability to search. This hypothesis was also not rejected by the data analysis. The relationship between prior product knowledge and perceived ability to search was found significant ($\beta = 0.55$, $p < 0.00$). Results indicate that as customer's knowledge about the product category increases her confidence in her ability to collect information from various sources also increases.

This result is consistent with the studies in the related fields where researchers have found that higher familiarity with the context increases the self efficacy for example, Torkzadeh *et al.* (1999) found that computer training increased computer related self efficacy. Also, Celsi and Olson (1988) and Bettman and Park (1980) have argued that lack of prior knowledge structures inhibit the low knowledge customer's ability to process information.

Hypothesis 5

The relationship between perceived value of additional information and motivation to search is positive.

This hypothesis postulates that higher perceived value of additional information is related to higher motivation to search and vice-versa. The data analysis did not reject this hypothesis ($\beta = 0.22$, $p < 0.00$) thereby suggesting that as the perceived value of information increases there is an increase in the motivation to do more information search. The perceived value of information as measured is a composite

measure of perceived importance of purchase decision and the probability that the information search would help in providing information that would help in improving the decision. Thus, this hypothesis suggests that whenever the customer believes that the "relevant" information is available in the market, the motivation to involve in information search activity is higher.

This result is consistent with the Vroom's (1964) theory of motivation, which suggests that higher the instrumentality/valence higher would be the motivation. There is an indirect support for this relation in information search literature also where researchers have shown that customers continue to search for information till the marginal utility of search turns to zero (Stigler, 1961; Ratchford and Srinivasan, 1993, p. 1148; Srinivasan and Ratchford, 1991, p. 869).

Hypothesis 6

The relationship between perceived value of additional information and prior product knowledge is negative.

This hypothesis postulates that as the knowledge about product category increases the perceived value of information, which can be collected from different sources decreases. This hypothesis was not supported by the data analysis ($\beta = 0.23$, $p < 0.00$). Results indicate that there is a positive relationship between prior product knowledge and perceived value of information. This suggests that as the knowledge about product category increases the perceived value of additional information also increases. A detailed discussion on the possible reasons for these results is discussed in next section.

Hypothesis 7

Motivation to search is positively related to amount of information search.

This hypothesis postulates that motivation positively impact actual behavior. This hypothesis cannot be rejected based on analysis results ($\beta = 0.65$, $p < 0.05$). This view is supported in motivation literature also where researchers argues that motivation in itself cannot explain 100 percent variance in behavior and it interacts with other variables to result into performance (Mitchell, 1982).

Discussion

All hypothesis proposed in the study were supported by the data except *H6* (refer Table IV for summary of results). This hypothesis postulated that as the prior knowledge about the product category increases the perceived value of additional information decreases.

Models	Dependent	Independent	β	*t*- value	Pr> |t|
Model 1	Amt of search	Prior product knowledge	0.74	2.01	0.05
Model 2	Amt of search	Motivation to search	0.87	3.27	0.00
Model 3	Motivation to search	Prior product knowledge	0.46	3.00	0.00
Model 4	Amt of search	Motivation to search	0.76	2.7	0.00
		Prior product knowledge	0.38	1.02	0.31

Table IV.
Mediation results

For *H6*, the empirical analysis indicated that there exists a positive relationship between prior product knowledge and perceived value of additional information. This reversal of the hypothesized effects may have happened because of the following reasons: Moreau *et al*. (2001) show that consumers who are indeed (objectively) knowledgeable about the product category (experts) compared to others (novices) tend to rate their comprehension lower than the novices. Also Wood and Lynch (2002) find that consumers tend to explore more, when she perceives significant novelty for a product in which she has a high prior product knowledge. This extended exploration may be caused by a need for a deeper understanding of the perceived shrinkage in category comprehension due to a proliferation of novelty in the product category.

It seems plausible that such a relationship may indeed exist in rapidly evolving markets. In these markets, the consumer might be driven to value additional information to a larger extent because the product market itself undergoes reasonably rapid changes. As stated earlier, the motorcycle category in India has grown at a CAGR of 10 percent since 2004-2005 and many new models have been introduced nationally. This, in the context of the consumer durable sector in India, is a relatively high rate of product proliferation. Furthermore, there have been new sub-categories defined and a host of new features added to the product (e.g. disc brakes, four-stroke engines to comply with stricter emission norms, self-staring engines, high engine capacity, etc.). This suggests a possibility that consumers with relatively high category knowledge consider some of the product introductions and modifications as reasonably novel and thereby leading them to more information search.

Comparison with existing models (nested models)

This research also compared the proposed model with two different conceptual models: model 1 in which prior product knowledge directly impacts motivation of search, model 2 where the relationship between prior product knowledge and motivation to search is mediated by perceived value of additional information.

With these conceptualizations, an attempt was made to compare the proposed model with other existing models in the literature (by using approximate proxies for the variables that do not have one to one correspondence). For example, motivation to search was used as a proxy for amount of information search and perceived value of additional information was used as a proxy for perceived benefit net of perceived cost of search. This way, model 2 in Table V closely approximated to Srinivasan and Ratchford (1991).

Table V shows that our conceptualization of model had lower χ^2, AIC and BIC as compared to other nested models. This indicated a superior fit of the proposed model over other conceptualizations in the extant literature. Moreover, expected cross validation index (ECVI) also shows that the proposed model had better cross validation possibility as compared to other nested models (Table VI) (Browne and Cudeck, 1989).

Conclusion

This study concludes that the relationship between prior product knowledge and amount of information search is mediated by motivation to search. This clearly establishes the need to study motivation to search as an antecedent to amount of information search. The study further finds that relationship between prior product knowledge and motivation to search is mediated by perceived ability to search and perceived value of additional

	Hypotheses	Path coefficients	Significance	Results
H1(a)	The relationship of prior product knowledge to motivation to search is mediated by perceived ability to search	Direct path is not significant		Supported
H1(b)	The relationship of prior product knowledge to motivation to search is mediated by perceived value of additional information	Direct path is not significant		Supported
H2	The relationship of prior product knowledge to information search is mediated by motivation to search	Direct path is not significant		Supported
H3	There is a positive relationship between the perceived ability to search and the motivation to search of consumer during pre-purchase information search process	0.44	0	Supported
H4	Product knowledge has a positive effect on the perceived ability to search	0.55	0	Supported
H5	The relationship between perceived value of additional information and motivation to search is positive	0.22	0	Supported
H6	The relationship between perceived value of additional information and prior product knowledge is negative	0.23	0	Not supported
H7	Motivation to search is positively related to amount of information search	0.65	0.05	Supported

Table V.
Summary of hypothesis

Fit measure	Proposed model	Model 1	Model 2
Discrepancy	2,492.016	2,666.27	2,653.97
Degrees of freedom	1,214	1,216	1,216
P	0.00	0.00	0.00
Number of parameters	112	110	110
χ^2 difference (our model $-$ other models)		174.258	161.956
p value		0.00	0.00
Discrepancy/df	2.053	2.193	2.183
GFI	0.83	0.817	0.818
Akaike information criterion (AIC)	2,716.016	2,886.27	2,873.97
Browne-Cudeck criterion	2,742.855	2,912.63	2,900.33
Bayes information criterion	3,625.466	3,779.48	3,767.18
Consistent AIC	3,297.102	3,456.98	3,444.68
ECVI	5.589	5.939	5.914
ECVI lower bound	5.302	5.64	5.615
ECVI upper bound	5.89	6.254	6.228
MECVI	5.644	5.993	5.968

Table VI.
Nested model comparison

information thereby uncovering the process by which prior knowledge influences the motivation to search. The model is tested in context of motorcycle purchase in Indian market. This product category forms the largest purchase category within automotive sector and has seen lot of new product introductions in past few years.

The study contributes in four different ways. First, the study introduces and establishes relationship between prior product knowledge and motivation to search through two mediators: perceived ability to search and perceived value

of additional information. In the process expectancy theory is invoked to introduce new variables and hypothesize relationships between these variables. The model also incorporates the essence of the existing information search literature frameworks, i.e. the cost-benefit framework by modeling perceived value of additional information.

Second, the study introduces a motivational measure of search in the literature and shows that the motivational measure is indeed the proximal measure to other antecedent constructs compared to a behavioral measure of search. Perceived ability to search and perceived value of additional information are shown as important mediators between prior product knowledge and motivation to search.

Third, psychometric properties of the scales measuring prior product knowledge, perceived ability to search and motivation to search were developed and tested. These scales were constructed for the purpose of this study and their convergent and discriminant validities were tested within the nomological space of the model.

And finally, the model was tested with real consumer data actively involved in the search process in the context of an important emerging market. In comparison to the extant survey literature, where university student data in passive survey environment is used to validate theoretical models, the contribution of this research may be more construed as more generalizable.

The findings have direct implications for practicing managers. Understanding why some customers engage in more information search as compared to others can help managers and marketers develop marketing communications more effectively. The findings suggest that perceived ability to search and perceived value of additional information are two important levers that managers could use for achieving desired results. Furthermore, perceived ability to search is an important mediator, which completely mediates the relationship between prior product knowledge and motivation to search. These findings also provide strong indications about the need to simplify the search process for consumers especially in the context when novelty is predominantly marketed. For example, a new market entrant with the desire to enhance the customer search process (to increase the probability of inclusion of her brand in the consideration set), should invest in supplementing the consumer's perceived ability to search since abilities are stronger predictors of motivation to search. On the other hand established brands may want to communicate messages imploring consumers not to shop around anymore, since it is simply not worth the effort. The findings of this research are also important from educational training of firms. The results illustrate the information search process of consumer and what impacts it (positively/negatively) thereby helping to identify the optimal levers to work with from organization perspective.

The results of research have relevance from societal stand point from two perspectives – policy makers' and individual consumer perspective. The paper draws form the motivation theories to develop and test the framework of information search behaivour. Results show that perceived ability and value of information are critical antecedents of motivation to search. From a policy maker perspective, it is important to have optimal utilization of available resources. The results show that policy maker should invest and facilitate endeavors that help in improving the perceived ability of consumers so that they are able to actively engage in the information search process and are benefited by it.

These findings are also important from an individual customer perspective. As an individual customer, the results highlight the importance of investment

in developing knowledge around product category before getting engaged in active search for information.

Above all, the paper helps in extending documented knowledge of an important aspect of consumer behaviour, namely the heterogeneity in their information search behaviour prior to making purchases. It therefore makes a significant contribution to the existing body of knowledge in this area.

Limitation and future research

The limitations of this study emanates from the less than expected response rate in the second stage call back data collection. The usable sample size in the second stage was 73 respondents. Although, the response rate is similar to the ones reported in the literature, this made the SEM estimation of the full blown model not viable. The full-blown model estimation might have given efficient parameters (unbiased estimate of variance); however, the parameter estimates of the current model are consistent and unbiased.

Few issues deserve the attention of future researchers as a result of the findings and limitations of this study. Directional support for *H6* was not found, however it may be hypothesized that *H6* would have been supported had the model been estimated using data from more mature markets and categories such as the ones in the USA. The reversal of the hypothesized directionality of *H6* suggests that there is an opportunity to refine the framework developed in this study by incorporating the concept of *novelty*. The results of this study indicate that there might be a moderation of some "novelty effect" between prior product knowledge and perceived value of additional information.

Another aspect of search could in understanding the relative importance of perceived ability and perceived value of additional information in influencing motivation to search. This research shows that the path coefficient of perceived ability to search was stronger than perceived value of additional information. But there is an opportunity to systematically test the relationships and compare the influence of these two constructs on motivation. Besides, future research can also test the model by incorporating other constructs in the information search literature like costs of search, involvement and uncertainty-avoidance.

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Appendix 1

Author, year, publication	Measure of product knowledge	Measure of IS	Hypothesized relation with IS	Actual relationship to IS	Product category	Methodology	No. of subjects
Swan (1969), *JMR*	Subjective confidence in choice	Number of information sought	Negative	Negative (IS first increased then decreased)	Four new brands of shirts	Experimental (2 (continuity)* 2(decision obj))	80
Newman and Staelin (1971), *JMR*	Purchase experience and brand related experience	Total time taken	Negative	Positive for zero and one year of experience and negative for more years of experience	Cars and household appliances	Survey	652 (217 car and 435 others)
Jacoby *et al.* (1978), *JMR*	Brands recalled; brands purchased last year, frequency of purchasing and consumption and qty. purchased in one go	Depth, sequence and content using information display board	Negative	Positive	Cold breakfast cereal	Behavioral simulation	60
Anderson *et al.* (1979), *JMR*	Number of purchases	Subjective	Negative	Negative	Autos	Survey	431
Bettman and Park (1980), *JCR*	Level of prior usage or search of information (three levels: low, moderate and high)	Amount and type of information sought and kind of processing used	Inverted U (less search by consumers who have low/high knowledge and more search by moderate knowledge consumers)	Inverted U	Microwave oven	Verbal protocol	62 (23 low, 16 moderate, 23 high)
Moore and Pride (1980), *JCR*	Subjective	Amount of information sought	Negative	Most important explanatory of IS negative	Bread	Survey	120

(continued)

Table AI.
Summary of
literature review

Author, year, publication	Measure of product knowledge	Measure of IS	Hypothesized relation with IS	Actual relationship to IS	Product category	Methodology	No. of subjects
Punj and Staelin (1983), *JCR*	Two dimensions of PK: usable prior knowledge (UPK) and prior memory structure (PMS)	Time spent in collecting information and amount of information sought	PMS ≡ > (+) UPK ≡ > (−)	PMS ≡ > ns but + UPK ≡ > (−) (No support for inverted U relation, correlation between RI and AC was 0.3)	Cars	Survey	1,056
Johnson and Russo (1984), *JCR*	Subjective	Recall of information	Inverted U for choice and positive for judgment	Inverted U for choice and positive for judgment	New compact cars	Experimental (Real brands)	55
Brucks and Schurr (1985), *JCR*	Subjective and objective and intended usage situation		1.PK ≡ > variability of search (+) 2. PK ≡ > Amount of search on inappropriate alternatives (−) 3. PK ≡ > Number of attributes examined (+/−/U)	Objective knowledge is positively related to IS	Sewing machine	Computer simulation	32
Beatty and Smith (1987), *JCR*	Subjective		Negative	Negative	TV, VCR, computer	Survey	351
Selnes and Troye (1989), *JEP*	Objective		Positive	Positive	Newly launched portable cassette decks	Experimental	83
Chao and Gupta (1995), *IMR*	Subjective	Mean of total time taken time taken in consulting different sources	Negative	No relation (negative but not significant)	Cars	Survey	1,008

(continued)

Table AI.

Author, year, publication	Measure of product knowledge	Measure of IS	Hypothesized relation with IS	Actual relationship to IS	Product category	Methodology	No. of subjects
Moorthy et al. (1997), JCR	Difference between PK and expertise PK: subjective knowledge expertise:	Un-weighted index of total information search	Inverted U with PK; relative brand uncertainty (RBU); individual brand uncertainty (IBU) and search cost; number of attributes considered; number of brands considered; amount of search varies with experience	Inverted U RBU (linear 1.85;squ −0.09); IBU (linear 0.69); cost (linear −0.65; squ 0.02); number of brands considered (linear −0.24); number of attributes considered (linear 0.32); search effort (linear 5.27;squ −0.21);	Cars	Longitudinal survey of in process consumers	117 (66 in search mode and 51 already purchased)
Putrevu and Ratchford (1997), JR	Subjective		Positive/Negative	Positive (sig. at 93 percent)	Grocery	Survey	500
Sundaram and Taylor (1998), ACR	Subjective		Negative	Positive	In-home shopping of computer and audio equipment	Survey	531
Pratt (1998), ACR	Subjective		Negative to perceived risk, negative to size of evoked set and positive to benefits	Positive to risk	Travel destination	Survey	287
Lee et al. (1999), IBR	Objective and subjective		Negative	Negative	Personal computer (Laptop)	Experimental (fictitious brands)	60
Doh (2001), ACR			Negative to cost and positive to benefit	Negative to cost and positive to benefit	Personal computer	Survey	254

Table AI.

Appendix 2

	n	Mean	SD	Item total corr	α	EFA loading	Source of adapted items
Prior product knowledge items							
I consider myself knowledgeable about motorcycles	185	4.57	1.52	0.64	0.85	0.71	Park and Mothersbaugh (1994)
I am more familiar with motorcycles as compared to a common man	182	4.15	1.68	0.65	0.85	0.74	
I know about all features of motorcycles	182	4.21	1.6	0.82	0.84	0.89	Mitchell and Dacin (1996)
I know the importance of different features of motorcycles	185	4.58	1.6	0.72	0.85	0.81	
I know how to compare features of different motorcycles	185	4.42	1.51	0.75	0.84	0.83	Srinivasan and Ratchford (1991)
I fully understand different aspects (technical, aesthetic, performance, etc.) of motorcycles	185	3.95	1.78	0.78	0.84	0.87	Generated through inductive approach
I know pretty much about motorcycles	183	4.13	1.64	0.78	0.84	0.85	Flynn and Goldsmith (1996)
Motivation to search items							
I will put in a lot of effort to get additional information before I decide on which motorcycle to purchase	185	5.36	1.55	0.69	0.92	0.77	Srinivasan and Ratchford (1991)
I will put in extra effort to get additional information before I decide on which motorcycle to purchase	185	5.05	1.5	0.78	0.92	0.85	
I will try and get maximum information even if it delays my purchase of motorcycle	185	4.84	1.64	0.82	0.91	0.87	Generated through inductive approach
I will not give up searching till I am convinced that I have collected all possible information	184	4.65	1.55	0.83	0.91	0.88	
I will not give up searching for information till I exhaust all possible sources	185	4.39	1.57	0.76	0.92	0.82	Lufi and Cohen (1987)
I will use all ways and means to get all available information from different sources before I decide on which motorcycle to purchase	185	4.64	1.67	0.78	0.92	0.86	Schwarzer and Jerusalem (1995)
I will try and get information from different sources even if they are difficult to access (for example, from far off dealer, annual magazine, etc.)	184	4.18	1.58	0.65	0.93	0.72	
Perceived ability to search items							

(continued)

Table AII.
Items used to measure different constructs along with source and reliability measures

	n	Mean	SD	Item total corr	α	EFA loading	Source of adapted items
I am confident that I know of all sources from where one can get information on motorcycles	182	4.25	1.52	0.61	0.9	0.83	Bearden (2001)
I am confident that I have the required skills to search for information from different sources	182	4.53	1.37	0.77	0.88	0.78	
I am confident that I can search for information from all possible sources	182	4.88	1.25	0.65	0.89	0.74	
I am confident that I know what are the right questions to ask for getting information on motorcycles	181	4.73	1.43	0.69	0.89	0.77	
I am confident that I can get all possible information on motorcycles from various sources	181	4.86	1.34	0.69	0.89	0.77	Schwarzer and Jerusalem (1995)
I am confident that I can handle any situation that might arise during the search for information	182	4.88	1.24	0.71	0.89	0.75	
I am confident that I have more ability to search for information on motorcycle as compared to my friends	182	4.53	1.33	0.68	0.89	0.69	Ryan (1982)
Perceived value of additional information items [a]							
I will not take the final decision till I am certain that I purchase the best motorcycle available in the market	1,182	3.55	1.77	0.67	0.8	0.86	Cox et al. (1983) and inductive approach
I will not take the final decision till I am certain that I am getting exactly what I want	1,182	3.77	1.7	0.75	0.78	0.8	
I will not take the final decision till I am certain that I am making the right purchase decision	1,181	3.21	1.69	0.66	0.8	0.8	
I will not take the final decision till I am certain that I will be satisfied with my purchase decision after having bought the motorcycle	1,181	3.78	1.77	0.64	0.81	0.64	
	n	*Mean*	*SD*	*Source of adapted items*			
Amount of information search items							
Overall how many days did you spend in searching for additional information from various sources before buying this motorcycle	66	23	18.8	Chao and Gupta (1995)			

Note: [a]The same set of items with different instructions were used to measure valence and instrumentality