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**A MODEL OF CONSUMER EXTERNAL PRICE SEARCH BEHAVIOR
IN AN ELECTRONIC MARKETPLACE (WORLD-WIDE-WEB)**

By

James A. Ramos

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

**Mass Media Ph.D. Program
Departments of Advertising, Journalism, and Telecommunication**

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ABSTRACT

A MODEL OF CONSUMER EXTERNAL PRICE SEARCH BEHAVIOR IN AN ELECTRONIC MARKETPLACE (WORLD-WIDE-WEB)

By

James A. Ramos

This dissertation proposes and tests a causal model of the factors influencing consumer external price search behavior in an electronic marketplace using an inclusive theoretical perspective that incorporates both traditionally and online search determinants. Drawing on the framework of consumer information search proposed by Schmidt and Spreng (1996), the present model brings empirical verification to a broad theoretical approach that integrates search costs economics, motivational theory, and information processing theory.

Select items from preexisting scales were adapted to the context of price search and internet shopping to form the basis for the construction of the survey research instrument. A pilot study using 127 student subjects showed scales to have acceptable reliability. The main study employed a convenience sample of 587 students who had made at least one purchase through the WWW in the three months preceding survey participation. Maximum Likelihood estimation in LISREL 8.5 was used to analyze the covariance matrix of observed variables in tests of the measurement model, structural model, and overall model fit. Estimation of the proposed model adhered to the assumptions of the general LISREL model.

Following testing and respecification, the model indicated that motivation was the strongest predictor of online price search. The role of motivation was greatest when the subjects perceived that prices varied considerably between WWW sellers and were

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highly involved with the internet as a task-aiding tool. The effect of motivation was strongly decreased when the costs associated with online price search were high. Costs were decreased for individuals knowledgeable about online search and increased when shopping time was limited.

The structural model accounted for approximately one third of the variance in online price search. This figure exceeds the amount of variance accounted for in earlier price search research that exclusively used the costs vs. benefits framework, and is within the range of the variance accounted for in prior price search research conducted in the context of grocery shopping.

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ACKNOWLEDGEMENTS

It was my greatest fortune, over the long journey of my education, to have had a number of extraordinary teachers fill my mind with stimulating ideas and endless possibilities. They all have contributed, in part, to my successful completion of this research and ultimately my doctorate. I thank them all for their care of me.

I owe particular thanks to the four individuals who formed my dissertation committee. My Chairperson, Prof. Charles Salmon, in the subtlest manner, always challenged me to think in broader terms, to search for deeper answers, and to do better research. Prof Richard Spreng's advise during the development and execution of this research was invaluable. Prof. Stephen Lacy was of particular aide with methodology. Prof. Charles "Chip" Steinfield helped me to see and understand the economic roots of my theoretical objectives. Gentlemen, I thank you all.

For her stern and uncompromising standards that gave me my earliest appreciations of order and discipline I thank Sister Loretta Ann Flynn of the St. John Vianney School. I thank the faculty and staff of Fordham Preparatory School, especially the Rev. Mr. Alfred J. Mehmel, Jr., Rev. Russell J. Sloun, S.J., and Rev. Pierce A. Brennan, S.J., for instilling a drive to excel and a special appreciation for meticulous attention to details.

This degree is an accomplishment for my parents as much as it is for me. Having simultaneously raised a family and attended college, Miguel and Aida Ramos remain models of perseverance for me, and I thank them for this and many years of sacrifice for

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my education. My sister Denise has been my strongest ally and friend, and I thank God for her presence in my life and her contributions to my sanity. I thank my brother Louis for being real. My brother Anthony, like me, struggles with life, and I pray, that he also will succeed over his personal trials. Finally, I thank my aunt, Anna Velazquez, for being there for both my family and me.

I also am especially blessed to have a wide spectrum of friends, who, over the years, have offered countless words of encouragement and gestures of support. Joseph Harding has served as a voice of reason in my head. He has brought needed laughter into my life, and directed me toward countless serious thoughts. I am so fortunate to have had his ear and understanding, and I am thankful for his continued friendship. Jerry Lanoue has orchestrated many a pick-me-up sessions and lent me many words of encouragement, a friendship has never sounded better. Mark Klajman hosted many weekends of stress relieving fun in Toronto. Andrew Mimnaugh, and his mother Veronica, have been loving friends through this long process. Andrew kept me company though many unmotivated mornings, and reminded me often that I could finish the work I began. Andy Lee and Susan Chang, my officemates, acted as my screens against unwanted calls and as my academic comrades. I will miss them. Rosanna Garcia showed me that a dissertation is both hard and rewarding work. Iris Andriessen, Mimi Kim, and Yany Gregoire offered help and laughter through structural modeling statistics camp. Joseph Cintron kept the weekends filled with interesting detours that made the work of the week all that much more bearable. Jason Brewer was always a firm friend. I thank them all for their contribution to my successful completion of this research. Finally, no one has made my

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time in Lansing more unforgettable than Doug Christensen. I thank him for opening my eyes to the simple pleasures of Michigan.

I thank Stephen Fuhrmann for living with me through the completion of my comprehensives and the conceptualization of this research. He was the source of much joy and helped me to imagine a happier life when I was finished with this work.

No one has supported my endeavors in graduate education more than Gwenyth Jackaway. In fact, on more occasions than I can count, Gwenyth has been there to help me through mental challenges. The patience she showed with me at the earliest stages of my graduate work undoubtedly qualifies her for canonization. She has been my dearest friend. Though I simply say thank you here Gwenyth, please know that I have more gratitude than might ever be expressed in words.

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Chapter 1

INTRODUCTION

Online Price Search

Since its rapid diffusion, the world-wide-web (WWW), the internet's graphic interface, has come to serve as a vast electronic marketplace, linking the general public and private firms to numerous sellers of a wide range of products and services. By instantaneously connecting consumers to a multitude of sellers, the WWW has the ability to maximize access to product information while minimizing the costs of acquiring this information (Bakos, 1991; 1997). It is this ability, some researchers argue, that will drive consumer participation in this new electronic marketplace (Alba et al., 1997; Keeney, 1999).

Recent figures appear to confirm this proposition. Several large WWW surveys have shown that online shoppers have a strong tendency toward conducting prepurchase information search with a particular focus on comparison price shopping. For example, in its WWW User Survey (10th wave/4th Quarter 1998) the Graphic, Visualization, and Usability Center (GVU) at Georgia Institute of Technology found that 61% of WWW users reported searching several times a month for information about different products they intended to purchase on or off the WWW (GVU, 1998). The top reasons users searched the WWW included obtaining detailed product information (92%), comparing price (80%), and checking on product availability (76%).

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Source: JUP

Another example is a 1998 survey of 5,000 regular WWW shoppers by market research firm Jupiter Communication (Steinberg, 2000; Wilder, 1998). The survey found that 78% of WWW purchases occurred after the shopper had visited at least two seller sites, and 46% of WWW purchases occurred after the shopper had visited between three and five seller sites (Steinberg, 2000). Table 1.1 provides a breakdown of the number of WWW merchant sites visited before making a purchase. Though the Jupiter survey did not expressly investigate WWW purchasers' motivations for engaging in extended search, price comparison may have been a driving force, since over three-fourths (77%) of respondents reported that they had already decided on the exact product they wanted to purchase before using the WWW to search multiple seller sites.

Table 1.1

Number of World-Wide-Web Seller Sites Visited by Intended Purchasers Before Purchase

<u>Number of WWW seller sites visited before purchase</u>	<u>% of intended purchasers</u>	<u>% of intended purchasers visiting 2+ WWW seller sites before purchasing</u>	<u>% of intended purchasers visiting 3+ WWW seller sites before purchasing</u>
One	22%	--	--
Two	25%	25%	--
Three to five	46%	46%	46%
Six or more	7%	7%	7%
Total	100%	78%	53%

Source: Jupiter Communication (Steinberg, 2000)

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A more recent example is a survey of 3,000 WWW consumers commissioned by eBates, a retail portal, and conducted by Harris Interactive in June 2000. In this survey, 16% of participants clustered into a group the authors labeled “hooked, online, and single” and 20% of participants were labeled “hunter-gathers” (Whelan, 2001). A drive toward price search and a propensity to purchase from the low price leader, regardless of previous knowledge or experience with that seller, characterized members of both groups, which together constituted slightly more than one-third of participants. Members of the “hunter gatherers” cluster differed from the “hooked, online, and single” group in that they were older in age, newer to WWW shopping, and even more sensitive to price.

Value of Further Investigation

A broader understanding of the factors influencing online consumers’ propensity toward price search behavior would be of value to researchers of electronic commerce, marketing, and consumer behavior for three reasons. First, there is a dearth of research examining online price search. Second, there is a need to assess the online applicability of determinants known to influence consumer external information search in non-electronic markets. Third, there is a need for more expansive theory on consumer online search.

Dearth of Online Price Search Research

There is conspicuous lack of research that has investigated consumer online price search. This dearth of online price search research exists despite apparent evidence that price search is a common behavior among a considerable portion of online consumers (GVU, 1998; Steinberg, 2000; Whelan, 2001; Wilder, 1998) and clear interest among scholars in understanding consumer behavior in computer-mediated shopping

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environments (Alba et al., 1997; Deighton, 1997; Hoffman & Novak, 1996; Lohse, Bellman, & Johnson, 2000; Peterson, Balasubramanian, & Bronnenberg, 1997). A single study has examined online price search, looking at consumer choice behavior when faced with WWW sellers offering marginally different prices (Smith & Brynjolfsson, 2001). This study, however, focused on consumers' choice behavior given familiar/unfamiliar sellers post online price search. Further empirical research is needed to develop understanding of the factors influencing the amount online price search itself.

While there is a dearth of research specifically concerning consumer online price search, there is literature examining information search in computer-mediated markets that can be adapted to aide in the development of online price search knowledge. A number of studies have investigated the effects of reduced buyer search costs on consumer choice behavior in computer mediated shopping environments (Hoque & Lohse, 1999; Lynch & Ariely, 2000; Ward & Lee, 2000), and some research has examined the internet as a consumer information source (Ratchford, Talukdar, & Lee, 2001; Ward & Morganosky, 2000). There even has been some study of the factors influencing the amount of consumer online information search, though it has been restricted to the theoretical level without empirical testing. For example, Hodgkinson, Kiel, & McColl-Kennedy (2000) have proposed a diagrammatic approach to understanding consumers' online search, applying the "wayfinding" spatial orientation perspective from geography to human-computer studies. Another example is the work of Lukosius, Hyman, & Stratemeyer (2001), who have augmented a theoretical model of consumer external information search proposed by Schmidt and Spreng (1996), adding constructs they believe are relevant in a computer-mediated shopping environment.

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Online Applicability of Traditional Determinants

Research investigating online price search also would be of value because it presents an opportunity to empirically verify if numerous factors found to influence consumer search in non-electronic markets are applicable to an electronic marketplace, and if so, to what extent. Further, research might uncover determinants unique to an electronic shopping environment that influence consumer online price search. Both traditional and unique determinants deserve the attention of researchers. Yet almost no research has empirically verified the applicability of traditional information search determinants to electronic shopping environments or investigated the existence of unique situational factors. The Sundaram and Taylor (1998) study of “in-home shopping situations” is the single exception. This research, however, did not exclusively assess consumers online information search. The study’s focus, rather, is on the external search efforts of purchasers who used home-based shopping formats, namely mail order, telephone, or the WWW.

In addition, future attempts to create frameworks within which to understand electronic market consumer behavior in broad terms will necessitate empirical research on the determinants of online information search, particularly given online shoppers’ tendency toward price search. Consumer external search is acknowledged throughout the marketing and consumer behavior literature as possessing a significant role in the purchasing decision process. This is exemplified in the fact that external search is incorporated into several of the leading consumer buying behavior models (Andreasen, 1965; Bettman, 1979; Engel, Blackwell, & Kollat, 1978; Engel, Kollat, & Blackwell, 1968, 1973; Howard, 1977; Nicosia, 1966).

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Expanding Theoretical Perspective

A broader understanding of online price search would be of value because one theoretical approach, search costs economics, currently dominates research on consumer online search (Bakos, 1991, 1997; Hoque & Lohse, 1999; Lynch & Ariely, 2000; Ward & Lee, 2000). This approach has proven to be promising, yet inadequate, at fully explaining the online search phenomenon. Understanding of online search would benefit greatly from a combination of this approach with the extensive literature on consumer search from the fields of marketing and consumer behavior.

Smith, Bailey, and Brynjolfsson (2000), through a literature review, investigated predictions, based on search cost economics, of online consumer behavior and its effects on electronic market structure. They found that price dispersion on the WWW was no lower than in conventional markets. This suggests that predictions of electronic buyer behavior and market dynamics (e.g., price wars, profit erosions, and increased consumer welfare (Bakos, 1991, 1997)) are inadequate, when based solely on search costs economics, and that there remain incentives for retailer to participate in electronic marketplaces (Alba et al., 1997).

There are three major reasons for the inadequacy of search cost economics to fully explain the online search phenomenon. First, the theory assumes consumers are completely rational and optimizing shoppers. Yet there is broad recognition in the marketing and consumer behavior literature that consumers are not purely goal-oriented value-maximizing entities (Babin, Darden, & Griffin, 1994; Parsons, 2002). In fact, individuals have been shown to shop as a result of functional motives, non-functional

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motives, and a mix of functional and non-functional motives (Westbrook & Black, 1985) that result in both hedonic and utilitarian outcomes (Babin et al., 1994).

Second, the theory's application to internet shopping generally has taken a technologically determinist perspective (Chandler, 2001). It is predicated on the potential of the WWW to facilitate specific human behaviors (i.e., search and comparison) based on lower search costs. But because consumers place different values on the benefits and costs of search, it is unrealistic for one to expect all consumers to engage in extended search behavior.

Third, search cost economics is an incomplete perspective because the theory as it has been applied to electronic marketplaces (Bakos, 1991, 1997) also holds that consumers can become aware of all possible vendors at minimal costs. In reality, the WWW is a vast marketplace, gaining full knowledge of which would require any buyer non-trivial allocations of time resources.

An interdisciplinary perspective benefiting from the extensive literature discussing the psychological aspects of consumer/vendor exchanges (i.e., marketing and consumer behavior) might bring a more complete understanding of electronic market consumers' price search behavior and may help to explain some of the empirical findings that are inconsistent with the theory. For example, Smith et al. (2000), proposed several reasons for why they found price dispersion on the WWW to be no lower than in conventional markets. One reason was that internet shoppers often will turn to the vendors of whom they are aware, because there remain costs to search and compare on the WWW, however minimal they appear compared to the costs of search in non-electronic markets.

Study Purpose

The price search behavior of consumers in an electronic market, thus, appears to be an area especially ripe for empirical investigation, as well as further theoretical explication. To contribute research in this area, this dissertation proposes and tests a causal model of the factors influencing consumer external price search behavior in an electronic marketplace, using an inclusive theoretical perspective that incorporates both traditionally non-electronic and uniquely online search determinants. This study focuses specifically on price search because of its prominence in the search behavior of online consumers. The proposed model will be operationalized and validated in the context of the WWW as it is currently the most pervasive consumer electronic marketplace.

The use of a causal model is viewed as an opportunity to assess the applicability of traditional determinants of consumer search to an electronic shopping environment and to test constructs believed to be uniquely salient to consumers' online search for lower prices. The prime advantage of estimating a causal model lies in this method's ability to show simultaneously the structural relationship of different constructs on consumer electronic marketplace price search while also demonstrating the influence of these constructs on each other (MacKenzie, 2001). The theoretical model of consumer external information search proposed by Schmidt and Spreng (1996) was employed as a framework within which to specify the relationship between these traditional and unique constructs. In its specific adaptation of the mediating variable structure proposed by Schmidt and Spreng, the present model will empirically verify a broad theoretical perspective on the online price search phenomena that combines search costs economics with both motivational and information processing theory.

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Organization of Subsequent Chapters

Chapter 2 reviews the consumer search literature to present a comprehensive theoretical background before specification of the proposed model. Chapter 3 discusses the methods used to operationalize and test of the proposed model. Chapter 4 presents results of the pilot study used to test the research instrument. Chapter 5 presents the empirical results of model's estimation. Chapter 6, the final chapter, recaps the study and its findings, and draws conclusions. The dissertation ends with an assessment of the study's contributions and shortcomings, and with directed calls for further research.

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Chapter 2

LITERATURE REVIEW

Introduction

Given the model's origins in consumer search theory, the first part of this chapter discusses the development of different theoretical perspectives on consumer external information search and determinants of search that derive from these approaches. The second section examines models that have attempted to bring synthesis between these different theoretical perspectives on and determinants of information search. Based on these theoretically unifying efforts, the proposed online price search model is then specified in section three.

Theoretical Foundations of Information Search Research

Introduction

In the broadest terms, consumer information search has been studied from the perspectives of both economics and marketing. The economics perspective has centered on a costs vs. benefits framework, while the marketing perspective has focused on the development of consumer behavior models.

Economics Approach

The application of economic theory to the study of consumer search is rooted in the costs vs. benefits framework that was pioneered by Nobel Laureate George Stigler (1961). Stigler revolutionized economics when he challenged the assumption that buyers

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act with perfect knowledge of the marketplace, knowing all sellers and all seller offerings. He instead proposed that there were economics to information, in that buyers vary in how much information they possess because they place different values on the costs and benefits of search for information about the marketplace, weighing the two against each other.

Though Stigler's (1961) model has been amended (Butters, 1977; Rothschild, 1974; Salop & Stiglitz, 1977; Stiglitz, 1979; Wilde & Schwartz, 1979), and many of the model's original dimensions have been modified (Kohn & Shavell, 1974; Ratchford, 1982; Telser, 1973; Weitzman, 1979), its basic structure is still discernable. The model examines search for the lowest price under conditions of price dispersion in the marketplace. At its root, the model holds that a buyer acting to optimize his or her search engages and continues search only so long as the expected marginal return of one unit of search exceeds the expected marginal cost of one unit of search.

The economics of information approach (Stigler, 1961) has been criticized because it is not possible to empirically verify many of its propositions (Miller, 1993). The central contribution of this approach to the information search literature is the proposition that the costs of search a buyer incurs are related negatively to the amount of search that that buyer will conduct, *ceteris paribus*. Stated positively, consumers with low search costs will conduct more search than consumers with high search costs, all else being equal.

As expressed in this proposition, the costs vs. benefits framework has been tested as a stand-alone mechanism to explain consumer external information search. In this context, it has received limited empirical verification with weak support at best (Goldman

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& Johansson, 1978; Urbany, 1986). This may be explained by noting that on its own, as a basic mechanism, the proposition presents a simple and parsimonious structure. Yet while possessing an obvious intuitive appeal, this simple framework lacks the ability to fully explain a process as sophisticated as consumer external information search. The costs vs. benefits framework, however, is often acknowledged in the information search literature of marketing, as it presents an excellent context within which to explain other psychological elements that contribute to the amount of consumer external information search. One will notice, therefore, its consistently prominent position in the development of marketing research pertaining to information search (Srinivasan, 1990).

Marketing Approach

Consumer external information search serves a function in a larger consumer behavior process. Because of this, theoretical perspectives on consumer behavior have significantly influenced research into external information search. A general understanding of the marketing approach to the study of search, thus, may be gained from examining the theoretical development of leading consumer behavior models that have incorporated information search into the frameworks. The role of information search, as directed by the predominant theoretical approach of these models, therefore, is emphasized in the following discussion.

It should be noted that while each successive viewpoint on the consumer behavior process is built upon one dominant theoretical approach, each model also is influenced by factors rooted in the theoretical perspectives of earlier models. In this way, it will be shown how successive researchers have built a fuller understanding of consumer behavior, and external search in the process, using a dominant theoretical framework

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supplemented by earlier theoretical perspectives. One also will note that even in the earliest of these research pieces, and throughout their development, the limited information processing ability of consumers is recognized as an influencer of information search and choice behavior, until finally it emerges as the dominant theoretical perspective.

To give a short overview, early researchers conceptualized shopping as problem solving (Bauer, 1967; Howard & Sheth, 1969). From this early perspective motivation was the driving force behind information search (Srinivasan, 1990) with prepurchase uncertainty reduction being the consumer's goal (Newman, 1977). Later researchers would continue to acknowledge problem recognition and motivation as key components in the consumer decision process (Engel et al., 1978), but would give greater recognition to the role of information processing ability (Bettman, 1979; Engel et al., 1978).

To begin the more detailed discussion, Bauer (1967) proposed that consumer behavior be understood as risk taking, "...in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which are likely to be unpleasant" (Bauer, 1967, p. 24). To reduce their perceived risk, consumers develop strategies that enable them to make choices with a relative sense of confidence, particularly when there is deficient information. The amount of external information search and the degree of perceived risk reduction, thus, may be expected to correlate highly. Mitigating this relationship, however, are consumers' risk alleviation strategies, which including: relying on brand loyalty, seeking opinion leaders, and adopting social norms. Though not expressly stated, the author's assumption that consumers create strategies to deal with the enormity of pre-decision

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information, what might otherwise be understood as heuristics, hints at the limited processing capabilities of consumers, and how this mediates external information search.

Howard and Sheth (1969) built an integrated model of the purchasing decision process based on learning theory. In their model, consumers move along a learning curve that is divided into sequential segments, ranging from extensive problem solving behavior, to limited problem-solving behavior, and finally to routinized response behavior. The authors proposed that it is the need of consumers to simplify their environment that motivates them to problem solve. Problem solving occurs through learning. Learning comes as a result of consumers being in similar buying situations, repeating purchasing decisions, and acquiring new information. As consumer learning increases they move along the curve. In other words, consumers, motivated by a need to simplify their environment, attempt to make purchasing decisions routine through a learning process that occurs as a result of previous experience in the shopping situation and with the product. Information search decreases as consumers learn about products and their preferences towards particular brands (i.e., move along the learning curve). Thus, they have less need to acquire new information. Overt search in this model also is affected by several constructs, which include: stimulus ambiguity, confidence, attitude, and motives.

The Howard-Sheth model (1969) is another instance where assumptions about motivations, in this case having to do with environment/choice simplification, hint, however unknowingly, at the limited processing capacity of consumers, and how this restricted ability leads to streamlined decision behavior to manage stimulus-response. In line with a trend in consumer behavior research to view the consumer as a limited

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information processor, Howard (1977) would later revise the basic Howard-Sheth model (1969) to take memory (i.e., the information processing mechanism) into account.

Engel, Blackwell and Kollat (Engel et al., 1968, 1973) proposed a model (EKB) of the consumer decision process that begins with a problem recognition stage and moves sequentially through information search, alternative evaluations, choice, and outcomes. Once again, motivation was the driving force of the model's approach with problem solving as the specific goal for consumers to engage in external information search. Beliefs and attitudes, derived from product brand evaluations, also were said to affect the information search process. A later version of the model (Engel et al., 1978) included information processing in its design. Information search then could occur externally through stimuli or internally through active memory (i.e., exposure, attention, and reception).

Acknowledging the role of motivation, researchers of information search have devoted considerable attention to involvement and its ability to affect information search. In simplest terms, involvement has to do with pertinence and relevance (for reviews see, Johnson & Eagly, 1990; McQuarrie & Munson, 1992; Mittal & Lee, 1989). The greater a consumer's involvement with a purchasing decision, it is supposed, the greater will be his or her motivation to search for the product that best achieves his or her goals (Beatty, Homer, & Kahle, 1988; Beatty & Smith, 1987; Mittal, 1989; Salmon, 1986; Smith & Bristor, 1994).

Bettman (1979) built a pioneering model of consumer choice based specifically on information processing theory. The model is predicated on two major assumptions. First, consumers are viewed as limited in their ability to process information. The basic

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effect of depicting consumers as limited capacity processors is that they are assumed to develop heuristics that allow them to manage complicated circumstances, so as not to require more processing capacity than is available. The second major assumption is that consumers are goal oriented. Achieving the larger shopping goal(s), goal(s) at each stage of the decision process, and sub-goals that arise during the decision process motivates consumer behavior. One should note how Bettman, though advocating information processing as the central phenomenon in the route to decision, still acknowledges and includes the role of motivation as a guiding factor in his model, and in doing so builds on the preceding theoretical approaches.

Consumers navigate the choice process through a goal hierarchy function that prioritizes these goals at each stage of the model. The stages of the model are attention, information acquisition and evaluation, decision processing, and consumption and learning processes. In the information acquisition and evaluation stage, search occurs both internally (i.e., memory) and externally. A complete internal search is not necessary before an individual may decide to initiate an external search, and consumers may return to internal search as they acquire new pieces of information. In this way, internal search and external search are an intertwined process. Total search continues until an individual perceives that he or she possesses sufficient information to make a decision.

The information processing approach to the study of external information search has led researchers to explore the influence of memory in the relationship between internal and external search. Research in this vein has considered prior knowledge, familiarity, and experience as related determinants of external search (Brucks, 1985; Fiske, Luebbehusen, Miyazaki, & Urbany, 1994; Johnson & Russo, 1984; Lee, Herr,

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Kardes, & Kim, 1999; Punj & Staelin, 1983; Rao & Sieben, 1992; Urbany, 1986). Other determinants of external search that have derived from the information processing approach include prior beliefs (Duncan & Olshavsky, 1982) and expertise (Alba & Hutchinson, 1987; Punj & Srinivasan, 1989).

Of these determinants, prior knowledge has been examined extensively in the literature. Early research showed conflicting data between consumers low and high in prior knowledge. Later research demonstrated an inverted “U” shape relationship between prior knowledge and the amount of information search. In an effort to address these results, recent conceptualizations of prior knowledge have proposed that knowledge be understood as two distinct constructs: objective knowledge and subjective knowledge (Brucks, 1985; Park, Mothersbaugh, & Feick, 1994; Spreng & Olshavsky, 1989).

Comprehensive Frameworks Explaining Information Search

The models of information search and consumer behavior discussed above lent theoretical direction for research into determinants of the amount of consumer external information search. From these theoretical approaches, as well as other non-theoretically based perspectives, researchers studying consumer information search over the past four decades have demonstrated a relationship between information search and more than 40 determinants, the major and most relevant of which were detailed in the preceding section (for reviews see, Beatty & Smith, 1987; Bettman, 1979; Guo, 2001; Miller, 1993; Moore & Lehmann, 1980; Newman, 1977).

Despite this wide-ranging literature, consumer information search remains an area filled with unanswered questions and theoretical contradictions. The difficulties researchers have encountered attempting to operationalize search and create valid

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measures to represent theoretically based determinants have contributed to the existence of these unsettled issues (Newman & Lockeman, 1975; Urbany, Dickson, & Wilkie, 1989). Yet beyond these challenges, and notwithstanding an otherwise broad literature, there is a conspicuous lack of comprehensive frameworks within which researchers have attempted to explain the relationship of the different hypothesized determinants as they work concomitantly in the information search process. In fact, so much of the research on the determinants of consumer information search has focused on bivariate relationships, which have not proven robust when tested simultaneously, that any complete understanding of the search process has eluded our knowledge (see Duncan and Olshavsky, 1982, p. 32 for a discussion of this issue). This deficiency has been described as a pressing research need (Wilkie & Dickson, 1991).

A limited number of researchers have attempted to build broader based and more comprehensive frameworks within which consumer information search might be understood more fully through the application of covariance structural analysis (Joreskog, 1973; Joreskog & Sorbom, 1981). The advantage of this method lies in its ability to examine simultaneously the relationships among determinant constructs and reveal both direct and indirect paths of association (MacKenzie, 2001). Research employing this structural modeling approach has significantly contributed to our understanding of external information search (Blodgett, Hill, & Stone, 1995; Maute & Forrester, 1991; Punj & Staelin, 1983; Srinivasan & Ratchford, 1991; Sundaram & Taylor, 1998). This research has gone beyond earlier studies that merely measured bivariate relationships between a number of different determinants and search. It has demonstrated the affect determinants have on each other in relation to search. This has enabled the bringing

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together of disparate yet related ideas on the determinants of consumer external search to create broader understanding.

Still broader perspectives on consumer search have been proposed in research that offers theoretically integrated approaches (Moorthy, Ratchford, & Talukdar, 1997; Schmidt & Spreng, 1996). Frameworks in this vein not only incorporate multiple determinants of consumer search (e.g., involvement or knowledge), as the studies noted above have done, but also integrate constructs representing the major theoretical perspectives on the study of search (e.g., motivation or ability).

Moorthy, Ratchford, and Talukdar (1997) propose a framework that is intended expressly to bring together the economic and psychological approaches to create a more complete understanding of external information search. In this model, the authors view consumers as rational and adaptive decision makers faced with a brand choice. Consumers develop search strategies by weighing the costs against the benefits of search. “The benefit of search is driven by how a consumer perceives the uncertainty in her choice environment (problem framing), the importance she gives to the product category (what is traditionally referred to in the behavior literature as “involvement”), and her risk aversion” (Moorthy et al., 1997, p. 264). This framework highlights the role of problem framing, which the authors believe is the key to explaining why highly involved consumers with low search cost typically conduct little search. They find that the need to search develops only when the consumer does not possess a perception of which brand is best, what the authors term relative brand uncertainty.

Schmidt and Spreng (1996) propose the most extensive theoretical model of external information search. The advantage of the Schmidt and Spreng model, presented

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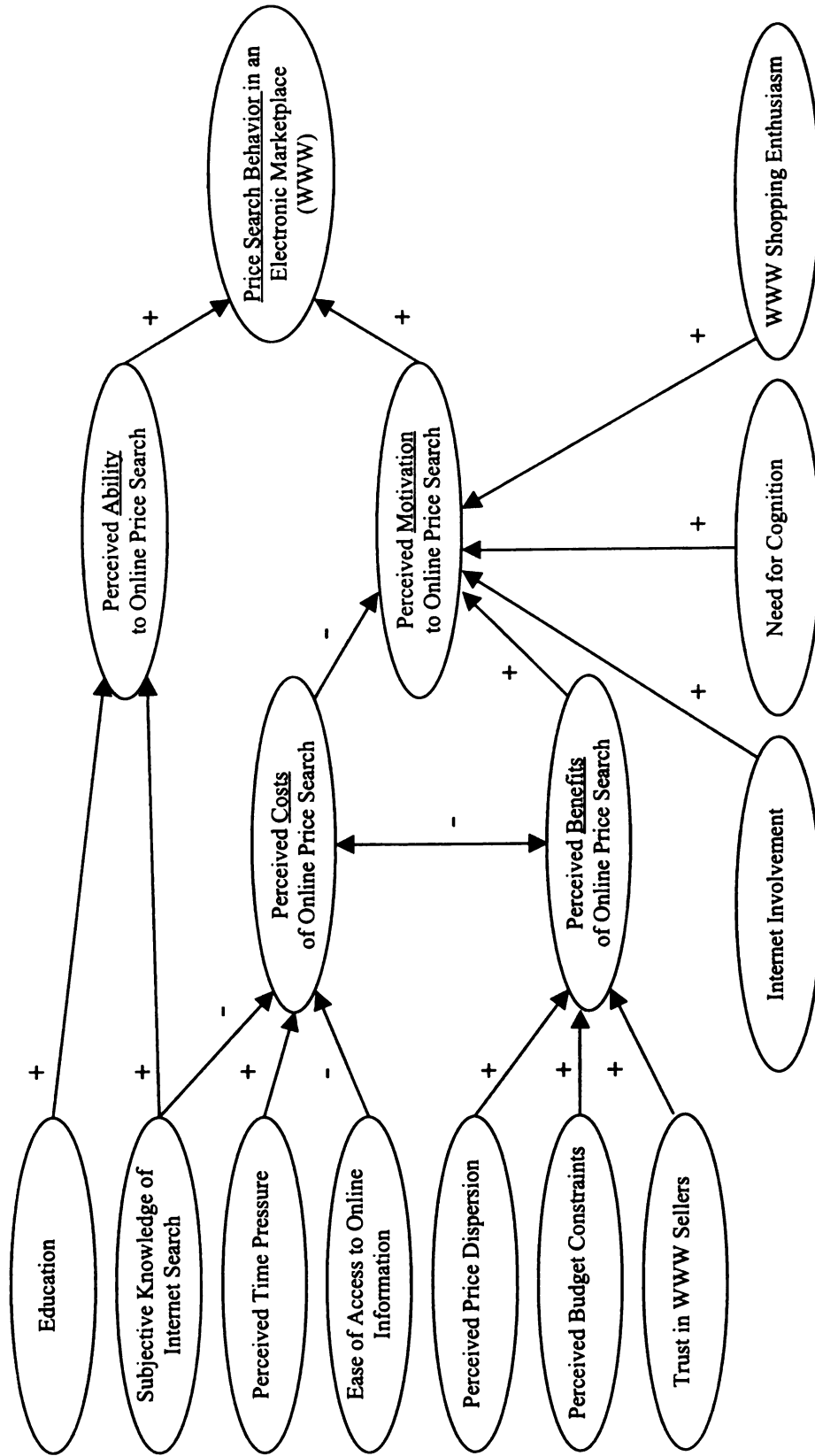
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in Figure 2.1, is that it incorporates nearly 20 determinants of search and proposes that these determinants affect search through one of four mediating psychological constructs. The mediating constructs that directly affect search are perceived ability to search and motivation to search, based on the information processing literature (Bettman & Park, 1980) with additional support from the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986). The two other mediating constructs are perceived benefits of search and perceived costs of search, borrowed from the economics approach. The determinants mediated through these four constructs derive from the theoretical perspectives of cognitive psychology based in information processing, of social psychology based on motivational research, and of economics based on the costs vs. benefits framework. These determinants include, for example, knowledge, risk, and involvement.

The four mediating variable structure of the Schmidt and Spreng model (1996), in effect, unifies the three major theoretical approaches examining consumer information search discussed previously. In addition, its broad inclusion of determinants of search presents a framework within which to specify the causal relationship of individual, social, and economic constructs shown to affect the amount of consumer external search. For these reasons, the model of consumer price search behavior in an electronic marketplace proposed in this study, which seeks to empirically verify a broad understanding of the online price search phenomenon, will be based on this mediating variable structure.

Figure 2.2
Proposed Model of Consumer External Price Search Behavior in an Electronic Marketplace (WWW)



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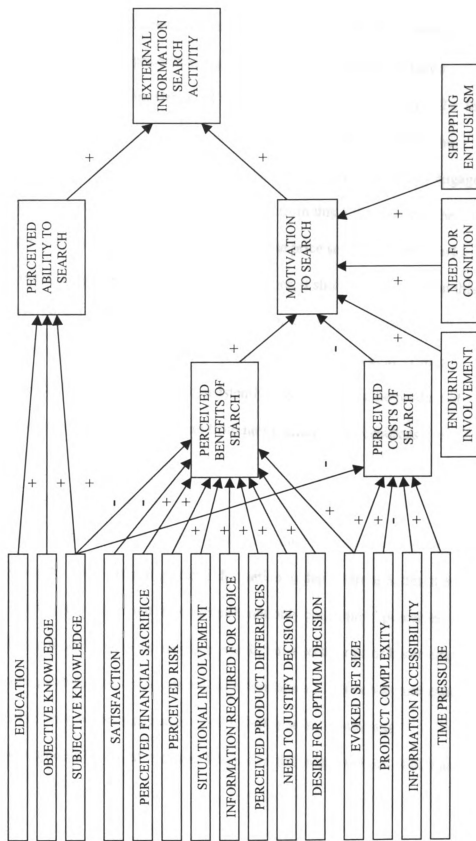
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Model Specification

Building on the above discussion, this study proposes a structural equation model, presented in Figure 2.2. The model is composed of 14 determinant constructs believed to influence price search in electronic marketplaces. The structure of the model is such that 10 variables are hypothesized to influence online price search through four mediating variables. Each line in Figure 2.2 represents a relationship between constructs. Arrowheads at the end(s) of each line indicate the direction of the relationship(s). Lines also have been labeled to show the hypothesized sign of their path coefficient (i.e., positive or negative). Each line corresponds to a hypothesis that will be detailed, following the literature and reasoning that supports it. The proposed model relies heavily on the Schmidt and Spreng model (1996) with regards to its four mediating variables structure. Therefore, only moderate modifications have been made to the original reasoning explaining the relationships between these four mediating variables and online price search behavior. One should note that the proposed model examines general price search, and thus does not explore external price search for any specific product class (e.g., new automobiles or digital cameras).

Figure 2.1

Schmidt and Spreng (1996) Theoretical Model of Consumer External Information Search



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Online Price Search Behavior

Electronic marketplace price search is defined as the degree of effort a buyer exerts to acquire and compare the price offerings of sellers in a computer mediated shopping environment (adapted from Urbany, Dickson, & Kalapurakal, 1996, p. 92). In this way, online price search is conceptualized in a broad manner that recognizes the behavioral aspect of search and the conscious psychological process a buyer may engage before deciding to comparison price shop. One will note from this definition that the proposed model particularly concerns the amount of online price search an individual conducts prior to making a purchase on the WWW. Further, it should be noted from this definition that the proposed model specifically examines external price search, which, while having been conceptualized in many ways (Bettman, 1979; Engel et al., 1968; Howard & Sheth, 1969; Nicosia, 1966), has consistently been viewed as the product of information seeking, gathering, and processing from non-memory based sources (Srinivasan, 1987).

Perceived Ability to Online Price Search

Ability to price search online is defined as an individual's perceived cognitive capability of searching for and processing price information. (adapted from Schmidt & Spreng, 1996). This definition is meant to encompass not only consumers' perceived cognitive processing aptitude toward online price search, but also their prior knowledge of methods for online price search and of sources of information. This conceptualization is consistent with MacInnis, Moorman, and Jaworski (1991), who, in studying consumers' ability to process brand information from advertisements, viewed ability as

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pertaining to a consumer's skill in interpreting information, while noting the important role of prior knowledge in processing proficiency.

A number of researchers have linked cognitive processing ability with external information search behavior. Bettman and Park (1980) in explaining the results of an experiment that manipulated prior knowledge and information search theorized that group differences were the result of individuals' varying levels of information processing ability. In a study of the external search behavior of television purchasers, Duncan and Olshavsky (1982) found that consumers with greater perceived confidence in their ability to evaluate product and brand information, what they termed "ability to judge", conducted more search. Based on this evidence, and consistent with Schmidt and Spreng (1996), the following is hypothesized.

H1: Perceived ability to price search on the WWW will be positively related to online price search behavior.

Two antecedent variables are believed to influence consumers' perceived ability to online price search. These are consumers' educational level and their subjective knowledge of internet search.

Education. Numerous studies have found an association between higher levels of education and increased amounts of consumer information search (Claxton, Fry, & Portis, 1974; Katona & Mueller, 1955; Kiel & Layton, 1981; Schaninger & Sciglimpaglia, 1981; Udell, 1966). While methodological differences have produced varying levels of association, the positive relationship between education and search in these studies is

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consistent. In addition, other research has shown that households with members possessing higher levels of education search with greater efficiency (Michael, 1972). These studies suggest that individuals with more education will have an increased ability to find, recognize, and process pertinent data in an information task like price search.

H2: Higher levels of education will be positively related to perceived ability to price search on the WWW.

Subjective knowledge of internet search. Subjective knowledge typically is conceptualized as an individual's perceived knowledge of a particular product class resulting from his or her experience with that category of products (Alba & Hutchinson, 1987; Brucks, 1985; Spreng & Olshavsky, 1989). For the purposes of this research, subjective knowledge is adapted to assess an individual's perceived knowledge of a specific task resulting from his or her experience with that task (i.e. internet search). Therefore, subjective knowledge of internet search is defined as an individual's assessment of his or her proficiency at utilizing the WWW to perform information acquisition tasks.

Subjective knowledge is the result of experience and involves confidence (Schmidt & Spreng, 1996). Knowledge is generated through experience as consumers engage in product usage. Usage triggers a learning process (i.e., a knowledge acquisition process) whereby the user moves from a state of familiarity to expertise (Alba & Hutchinson, 1987). For the purposes of this research, product usage is exchanged for task performance. From this perspective, one may conceptualize the knowledge

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acquisition process as one in which individuals, through task performance, develop task related knowledge structures (i.e., skills) that lead to increase cognitive ability to conduct that task. Confidence is also a significant factor because in the process of reporting their subjective knowledge, individuals are not only gauging the adequacy of their knowledge level, but are also indicating their self-confidence in that knowledge level (Brucks, 1985). Consumers who considered themselves knowledgeable shoppers perceive greater confidence in their ability to evaluate product and brand information (Duncan & Olshavsky, 1982). Subjective knowledge, thus, is most accurately a measure of an individual's confidence in what he or she believes they know. It is hypothesized, therefore, that subjective knowledge of internet search and perceived ability to online price search should have a positive association.

H3: Subjective knowledge of internet search will be positively related to perceived ability to price search on the WWW.

Perceived Motivation to Online Price Search

Motivation to online price search is defined as an individual's perceived desire to exert effort gathering and processing price information in an electronic marketplace, including both the direction and the intensity of the effort (adapted from Schmidt & Spreng, 1996). The direction of the motivation refers to the different types of information a consumer might consider before exerting effort to gather and process price information. The intensity of the motivation refers to the varying level of an individual's drive toward goal fulfillment.

Goal orientation is a central component in this definition of motivation. This is consistent with Park and Mittal (1985), who view motivation, in terms of consumer involvement, as “goal directed arousal”. Bettman (1979) also purports a goal-oriented perspective to motivation. In his theory of consumer choice, Bettman highlights the role of motivation in goal fulfillment, noting that, “choices are made to achieve certain purposes, or accomplish some goals” (Bettman, 1979, p. 18). From Bettman’s perspective motivation influences behavior in (1) that its intensity affects actions (e.g., how much time is allocated to complete a specific task) and (2) that it directs particular choices over others.

In the proposed model, motivation to online price search is hypothesized to have a direct positive affect on online price search behavior, while also acting as a mediating variable for a number of distinct constructs, which are believed to contribute to motivation’s direction and its intensity. Schmidt and Spreng (1996) note research that suggests motivation to search be viewed as a sub-goal within the context of a specific consumer behavior episode (Olshavsky, 1985; Spreng & Olshavsky, 1989).

H4: Perceived motivation to price search on the WWW will be positively related to online price search behavior.

This model proposes that motivation to online price search is influenced by a number of distinct constructs, which contribute to its direction and its intensity: internet involvement, need for cognition (NFC), WWW shopping enthusiasm, benefits of online price search, and costs of online price search.

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Internet involvement. Internet involvement is a construct first proposed by Salam (1998) to assess the varying levels of value consumers place on the internet in their lives. Salam believes that this value level is a crucial component in understanding online consumer behavior because the extent of an individual's use of the internet is a deliberate act that at a base level is motivated by an individual's belief that the medium will be of aide in achieving goals or desired states. He argues that through an understanding of internet involvement researchers will be able to begin assessing the affect of the medium itself on individuals' behavior in relation to electronic commerce.

Salam (1998) defines internet involvement as, "an unobservable state of motivation of a person regarding the Internet or World Wide Web and is his or her perceived relevance related to the Internet based on inherent needs, values, interests, goals and objectives" (p. 45). Central to Salam's concept of internet involvement is perceived personal relevance (Barki & Hartwick, 1989; Petty & Cacioppo, 1981; Zaichkowsky, 1985). The internet becomes personally relevant to a consumer to the degree it functions as an instrument involved in executing his or her objectives or achieving his or her goals. One should expect an individual to have feelings of greater personal relevance with the internet (i.e., higher internet involvement) the more features of the WWW become an integral part of processes to execute objectives or achieve goals (e.g., checking the weather, paying bills, or shopping). It is reasoned that consumers with high internet involvement recognize the WWW as a multi-purpose tool that facilitates shopping tasks, like price search. Therefore it is hypothesized that internet involvement will be positively associated with motivation to online price search.

H5: Internet involvement will be positively related to perceived motivation to price search on the WWW.

Need for cognition. Cacioppo and Petty define need for cognition (NFC) as "...a tendency for an individual to engage in and enjoy thinking" (Cacioppo & Petty, 1982, p. 116). NFC has been shown to be a factor in information acquisition in non-electronic markets (Inman, McAlister, & Hoyer, 1990; Verplanken, Hazenberg, & Palenewen, 1992). Jones and Vijayasarathy (1998), studying differences in the opinions of subjects using a print vs. a WWW version of a catalog, found that high NFC subjects placed a greater emphasis on using information in their choices and preferred both print and online catalog shopping. The authors note that this implies high NFC individuals should possess more positive attitudes toward in-home shopping media because of their information richness. This research suggests that NFC is a motivational antecedent of external information search, and will have a positive association to consumers' motivation to online price search.

H6: Need for cognition will be positively related to perceived motivation to price search on the WWW.

WWW shopping enthusiasm. WWW shopping enthusiasm is defined as the enjoyment an individual feels for the task of collecting and processing online information about products (adapted from Schmidt & Spreng, 1996). Consumers are not purely goal-oriented value-maximizing entities (Babin et al., 1994; Parsons, 2002). Individuals have

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been shown to shop as a result of functional motives, non-functional motives, and a mix of functional and non-functional motives (Westbrook & Black, 1985) that result in both hedonic and utilitarian outcomes (Babin et al., 1994). Shopping enthusiasts are characterized as consumers motivated by hedonic values, like escape or increased arousal (Babin et al., 1994). Product purchase for this group is incidental in the shopping process because they enjoy the experience of shopping. There is evidence suggesting that shopping enthusiasts seek lower priced goods as an outcome (Babin et al., 1994; Darke & Freedman, 1995). In addition WWW shopping enthusiasts have been shown to seek lower priced goods as an outcome of their online browsing behavior (Wolfenbarger & Gilly, 2001). Based on this research it is hypothesized that WWW shopping enthusiasts, consumers who are high in experiential/hedonic motivation when they shop on the WWW, will also possess greater motivation to online price search.

H7: WWW shopping enthusiasm will be positively related to perceived motivation to price search on the WWW.

Perceived Costs of Online Price Search

Perceived costs of online price search are defined as a consumer's subjective assessment of the monetary expenditure, time sacrifice, physical effort, and psychological sacrifice that he or she expends searching for price information on the WWW (adapted from Schmidt & Spreng, 1996). Studies have linked higher search costs with decreases in consumer search (Punj & Staelin, 1983; Srinivasan, 1986). Schmidt and Spreng (1996) theorized that the perceived costs of information search affect search activity

through the motivation to search construct, reasoning that as consumers perceive their search costs to be increasing they will possess less motivation to search (Bettman, 1979; Stigler, 1961). Likewise it is hypothesized in the proposed model that the relationship between perceived search costs and online price search behavior is mediated through the motivation construct.

H8: Perceived costs of price search on the WWW will be negatively related to perceived motivation to price search on the WWW.

A number of distinct constructs are hypothesized to influence costs of online price search: subjective knowledge of internet search, perceived time constraints, and ease of access to online information.

Subjective knowledge of internet search. A negative relationship is expected to exist between subjective knowledge of internet search and the perceived costs of price search. This is because experience has been shown to develop a consumer's knowledge base, allowing the individual to draw upon that information in similar situations, and thus freeing cognitive ability to be directed toward task processing (Alba & Hutchinson, 1987). Since individuals highly experienced in online search presumably would possess a level of familiarity with the task, and thus consider themselves high in subjective knowledge of online search, it is anticipated that they will execute online price search with reduced cognitive effort, lowering their search costs. For example, Ward and Lee (2000) found that less experienced WWW users to be less proficient at online

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information search, with (1) lower search success rates, (2) less time spent searching, and (3) shorter time before search was terminated. They reasoned that this lack of online search proficiency was the result of users' search being more costly, verses the search costs of more experienced (more search proficient) users.

H9: Subjective knowledge of internet search will be negatively related to perceived costs of price search on the WWW.

Time pressure. Time pressure refers to a consumer's perception of the amount of the time he or she has available to make purchasing decisions. Despite mixed empirical evidence (Beatty & Smith, 1987; Blodgett et al., 1995; Claxton et al., 1974; Katona & Mueller, 1955; Moore & Lehmann, 1980; Newman & Staelin, 1972; Newman & Staelin, 1971; Putrevu & Ratchford, 1997; Wilkie & Dickson, 1991), it is believed that time pressure to purchase will be an important factor weighed against the costs of search when consumers are deciding to engage in online price search. The extent to which a consumer is motivated to search for a lower price depends upon the net gain that he or she expects to achieve from price search (Ratchford, 1982; Stigler, 1961). To achieve this gain a consumer considers the costs of search, since search it is not a costless activity, even in an electronic marketplace where search costs are greatly reduced. Time is a central factor in this consideration of costs to search because time is a limited resource that represents opportunity for the consumer (i.e., opportunity costs of time). Once allocated to search, time cannot be spent in other activities that might generate value in other ways for the consumer. Time is often conceptualized in this manner, that is, as a resource a consumer

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expends as part of the cost of the search, the value of which is determined by its perceived availability. Therefore, when a consumer shopping on the WWW perceives a high degree of time pressure, it is expected he or she will experience higher costs of online price search.

H10: Perceived time pressure will be positively related to perceived costs of price search on the WWW.

Ease of access to online information. Ease of access to online information is defined as the extent to which a consumer seeking information on the WWW perceives it to be available with minimal delay. Ease of access as discussed here is a matter related to consumer perceptions of the time it takes to load WWW pages. Bettman (1979) notes that information's accessibility, as much as its availability, needs to be considered as an important environmental factor affecting consumer external search. Studies from organizational communications indicate that the perceived accessibility to information sources is positively associated with the use of those sources (Culnan, 1983; O'Reilly, 1982). Sundaram and Taylor (1998) propose a structural model of external information search for "in-home shopping situations" in which they found ease of access to sources of information positively affected search. In terms of the WWW and specifically perceived delay accessing information, Rose, Lees, and Meuter (2001) found that increasing the download time for a WWW page resulted in users prematurely aborting the loading page with greater frequency. The authors also found that as attitudes toward page-loading delay worsened, the likelihood increased of users prematurely aborting the loading pages.

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It is proposed that consumers will view WWW page downloading time as part of the costs of online price search, and that delays are expected to increase the perceived costs of this search. It is expected that consumers who experience less delay loading WWW pages (i.e., high ease of access to information) will conduct more online price search because they will realize the decreased costs of price search.

H11: Ease of access to online information will be negatively related to perceived costs of price search on the WWW.

Perceived Benefits of Online Price Search

Search in this model is viewed as a process whose intended result is a better buy (Ratchford & Srinivasan, 1993), which, given the proposed model's focuses on price search, makes the better buy necessarily one at a lower price. There are financial benefits to search (Ratchford & Srinivasan, 1993), however online consumers have been shown to purchase from sellers who are not the low price leaders of their search (Smith & Brynjolfsson, 2001). The perceived ability of an online seller to facilitate and complete the buyer-seller exchange appears to be a key factor in online consumer's purchasing decision. A conceptualization of the perceived benefits of online price search, therefore, should not be limited to the monetary return of search. Rather, it also should acknowledge the less apparent role of the buyer's perceived confidence in a seller's credibility. Perceived benefits of online price search, therefore, is defined as a consumer's perceived utility gain potential and exchange self-confidence. The utility gained in this case would be monetary (i.e., amount saved). The exchange self-

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confidence would be a matter of a consumer's belief that the utility gain can be obtained from a particular online seller. One should note that this definition is multi-dimensional for the purpose of explaining the theoretical position of benefits of online price search in the proposed model. Its operationalization, however, may be uni-dimensional, since consumers are unlikely to consciously acknowledge price search as having benefits beyond potential monetary saving. This is consistent with other conceptualizations of benefits to search (Srinivasan, 1987; Srinivasan & Ratchford, 1991). A number of researchers have found direct positive associations between perceived benefits to search and degree of search (Duncan & Olshavsky, 1982; Srinivasan & Ratchford, 1991; Sundaram & Taylor, 1998). Consistent with the Schmidt and Spreng model (1996), it is hypothesized that the relationship between perceived benefits of online price search and online price search behavior is mediated through the motivation construct.

H12: Perceived benefits of price search on the WWW will be positively related to perceived motivation to price search on the WWW.

This model proposes that benefits of online price search is influenced by a number of distinct constructs: perceived costs of online price search, perceived price dispersion, perceived budget constraints, and trust in WWW sellers. The following is a discussion of each construct and its link to the benefits construct.

Benefits vs. costs of online price search. As noted previously, the economics of information approach is rooted in the costs vs. benefits framework (Stigler, 1961). This framework is often incorporated into marketing and consumer behavior studies of

information search (Goldman & Johansson, 1978; Ratchford, 1982; Srinivasan, 1990; Srinivasan & Ratchford, 1991; Urbany, 1986). According to the framework a buyer engages and continues search only so long as the expected marginal return of one unit of search exceeds the expected marginal cost of one unit of search. Therefore benefits of online price search and costs of online price search are expected to have an inverse relationship.

H13: Perceived costs of price search on the WWW will be negatively related to perceived benefits of price search on the WWW.

Perceived price dispersion. Perceived price dispersion is a consumer's subjective assessment of the variance of prices in an electronic marketplace. According to traditional search research (Duncan & Olshavsky, 1982; Goldman & Johansson, 1978; Urbany, 1986; Zimmermann & Geistfeld, 1984) buyers estimate the variance of available prices in a market (i.e., perceived price dispersion) to assess the potential financial return from search effort. Consumers then weigh this estimate against the costs of search to determine if they should engage in search, and if so, to what degree. In reality, consumers typically possess limited information about actual prices, even for frequently purchased products like grocery items/package goods (Goldman, 1977; Urbany, Dickson, & Sawyer, 2000; Wakefield & Inman, 1993). Goldman and Johansson (1978) note that consumers, given this common state of imperfect price knowledge, likely develop rough price approximations and use these in calculating if their search will yield returns with value in excess of the effort (e.g., Nystrom, Tamsons, & Thams, 1975). Thus consumers

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will engage in more search when they perceive significant price differences because they believe potential monetary gains exist in a market.

With exception (Urbany et al., 1996), support for this part of the classic information economics theory can be regarded as weak (Claxton et al., 1974; Duncan & Olshavsky, 1982; Goldman & Johansson, 1978). However, it has been suggested that these results would benefit from perspectives that integrate non-economic based factors in the consumer decisions process (Urbany, 1986). Given the proposed model's expansive theoretical perspective and its focus on price, it is believed perceived price dispersion will possess a positive relationship to perceived benefits of online search.

H14: Perceived price dispersion will be positively related to perceived benefits of price search on the WWW.

Perceived budget constraints. Perceived budget constraints are a consumer's subjective assessment of his or her general financial state. Consumers who view their financial state as weak are believed to benefit more from search, and therefore are expected to price search more often. When an item(s) being purchased represents a large expenditure in relation to a buyer's budget the buyer will search more for lower prices, because there exists the potential for greater relative savings (Stigler, 1961). The relationship between size of expenditure, typically measured as purchase price, and search behavior has been examined in a number of studies (Bucklin, 1966; Dommermuth, 1965; Dommermuth & Cundiff, 1967; Katona & Mueller, 1955; Kiel & Layton, 1981; Newman & Staelin, 1972; Udell, 1966). Urbany et al. (1996) note however that while

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budget constraints' effects on price search can be measured using the size of the expenditure, other factors (e.g., household size) cause expenditures to vary across households. Likewise Schmidt and Spreng (1996) believe price alone is a particularly flawed antecedent measure of search benefits. A more critical examination, in their view, would account for the relativity of price given a consumer's financial constraints. Following Urbany et al. (1996), rather than focus on the size of the expenditure (i.e., price), the perceived budget constraints construct in the proposed model is meant to assess consumers' general perceptions of monetary constraints. It is thus reasoned that consumers using the WWW who perceive their monetary resources as constrained possess greater incentive to search online for lower prices, valuing the potential for decreased expenditure as a benefit of search.

H15: Perceived budget constraints will be positively related to perceived benefits of price search on the WWW.

Trust in WWW sellers. Trust has been noted as an "order qualifier" for purchase decisions (Doney & Cannon, 1997). In other words, a consumer must trust a seller before he or she places an order. Trust is the buyer's expectation that the seller can be relied upon to fulfill their part of the exchange and that the seller will not exploit the buyer's vulnerability (Geyskens, Steenkamp, & Kumar, 1996). Research suggests that lower prices alone are insufficient to persuade some consumers to trust unknown WWW sellers (Van den Poel & Leunis, 1999; Whelan, 2001). Even in those cases where online consumers conduct price search, buyers do not always purchase from the low price

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leader, and they often use brand as a proxy for retailer credibility (Smith & Brynjolfsson, 2001).

It is clear that trust in WWW sellers is still an issue, even for those consumers who have overcome their initial fears of transaction and privacy risk to become online shoppers. Trust in WWW sellers appears to vary in individuals, and this variance appears to affect consumers' online choice behavior. Based on the previous mentioned research, one should expect that consumers with high levels of trust in WWW sellers will be more likely to patronize a broader spectrum of online sellers. It is reasoned that these high trust consumers will also perceive the benefits of online price search to be high, because they are inclined to purchase from a broader spectrum of sellers and therefore more often realize actual savings.

H16: Trust in WWW sellers will be positively related to perceived benefits of price search on the WWW.

Structural Equations

A system of five structural equations emerges from the preceding model specification, each based on one of the five endogenous variables in the proposed model. These endogenous variables are (1) price search behavior in an electronic marketplace, (2) perceived ability to online price search, (3) perceived motivation to online price search, (4) perceived benefits of online price search, and (5) perceived costs of online price search. The following five equations represent the system of structural equations comprising the proposed model of consumer external price search behavior in an

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electronic marketplace. The signs enclosed within brackets denote the expected sign of the relationship. All constructs in the proposed model are treated as latent variables.

- 1) Price Search in an Electronic Marketplace = f (perceived ability to online price search (+),
perceived motivation to online price search (+))
- 2) Perceived Ability to Online Price Search = f (education (+),
subjective knowledge of internet search (+))
- 3) Perceived Motivation to Online Price Search = f (internet involvement (+),
need for cognition (+),
WWW shopping enthusiasm (+),
perceived benefits of online price search (+),
perceived costs of online price search (—))
- 4) Perceived Benefits of Online Price Search = f (perceived price dispersion (+),
perceived budget constraints (+),
trust in WWW sellers (+))
- 5) Perceived Costs of Online Price Search = f (perceived benefits of online price search (—),
subjective knowledge of internet search (—),
perceived time pressure (+),
ease of access to online information (—))

Chapter 3

METHODS

Introduction

This chapter presents the methods used for data collection and analysis. It also outlines the sampling procedures employed and the development of the research instrument. The survey method, involving a convenience sample of students from a large Midwestern university, was used for data collection. Data collection occurred in two phases: (1) data were collected specifically to pilot test the research instrument; (2) data were collected for estimation and analysis of the full causal model. Results of both phases of the data collection are presented in subsequent chapters.

Data Collection Procedures

Data were collected for the pilot study in early February 2003. Students from two upper level marketing undergraduate courses were recruited for the pilot, which was administered after class time. Students received class credit in exchange for their voluntary participation. A total of 127 qualified students completed the survey. A participant was considered qualified if he or she had made at least one purchase through the WWW in the three months preceding questionnaire administration.

Data for the main study were to be collected using a survey that participants accessed via the WWW. Technical issues developing the WWW version, however, delayed its deployment. In the meantime, surveys were begun to be collected in paper in

March 2003. Within the month, a sufficient number of qualified surveys (N=728) were collected in paper form to test the causal model and establish statistical power (MacCallum, Browne, & Sugawara, 1996). With no need for further data, the decision was made to abandon plans to administer the survey via the WWW. This decision also was believed to be advantageous to the data's integrity, since it was observed during the pilot that, unless a proctor was present, participants tended to give the survey cursory treatment.

To recruit participants for the main study, professors in a College of Communication and a Department of Romance Languages were first contacted to request access to the various sections of their classes. A standard protocol was established whereby the researcher arrived five minutes prior to the end of a class. The researcher was presented to the students at the end of class time. The researcher then introduced the study and explained its purpose to the class. Students also were made aware of the monetary incentive for participation in the form of a raffle for a \$100 cash prize. In addition, nearly all professors offered some form of extra credit for participation. Afterwards, students were asked for their voluntary participation to complete the survey. Students who chose not to participate in the study were asked to leave the classroom before surveys were distributed. As with the pilot, a qualified participant had to have made at least one purchase through the WWW in the three months preceding questionnaire administration. This process produced 728 qualified surveys.

Since this study employed a convenience sample, it should be acknowledged that this is, in actuality, a non-probability study. The results, therefore, are limited in that they truly cannot be generalized across the whole of the WWW shopping population.

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However, the study's results and the conclusion drawn from these results retain suggestive, if not directive, value to further develop online price search knowledge.

Participants

A convenience sample of students from a large Midwestern university was used for both the pilot study and the main study. The pilot sample of 127 qualified students contained slightly more females (54%) than males (46%). The average age of participants was 20 years old, with 90% ranging in age from 20 to 23. Most participants (71%) were in their second or third year of undergraduate education. The majority of participants (62%) reported being employed, with 53% earning under \$10,000 per year, and 19% earning between \$10,000 and \$20,000. All participants had purchased at least one item through the WWW in the three months preceding the survey administration, with 26% having made their last purchase in the two weeks preceding the survey, 19% in the 4 weeks preceding, and 19% in the 6 weeks preceding.

In the main study, the vast majority of participants came from classes in a College of Communication, particularly a Department of Advertising. In total, 728 qualified students completed the questionnaire. After data screening, 587 surveys were retained as valid. Of the sample obtained from these 587 surveys, 72% of participants were undergraduates and 18% were graduate students. The ratio of females to males was 70%/30%, and 20 was the average age of participants. A considerable proportion (65%) reported being employed, with the vast majority (85%) earning less than \$10,000 per year.

Members of this sample overwhelmingly owned their own computer (97%), accessed the WWW daily (93%), searched the WWW for information daily (61%), and

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conducted their WWW shopping from their home computer (95%). The majority (50%) also reported making at least one WWW purchase every three months. Spending in this period is typically (72%) under \$200 in total. While all participants had made at least one purchase through the WWW in the three months preceding the survey to qualify for the study, 70% had made their last purchase in the 8 weeks preceding, 44% had made their last purchase in the 4 weeks preceding, and 23% had made their last purchase in the 2 weeks preceding. Almost half of the sample (49%) indicated that they had compared prices online prior to their last WWW purchase. On average, members of this group compared 4 prices before making their purchase. The majority of participants made their last WWW purchase for themselves (65%). These purchases typically were for clothing and accessories (26%), airline tickets (14%), books (12%), or event tickets (10%). While half of participants (50%) reported having made their last WWW purchase from a seller they had bought from before, the other half (50%) purchased from a seller whom they had previously never used.

Measurement

This section discusses the operationalization of each construct and explicates the development of the scale items used for their measurement. Since almost all items were modified from preexisting scales for applicability to the context of WWW shopping and/or online price search, the entire research instrument was pilot tested. The pilot questionnaire contained 90 items, 61 of which pertained to the measurement of the 15 constructs in the proposed model. Semantic differential type items were used to measure three constructs. The remaining 12 constructs were measured using statements about which survey participant indicated their level of agreement on a 7 point Likert type scale.

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The pilot research instrument is presented in Appendix A. Results of the pilot study and subsequent revisions to the research instrument are reported in the next chapter.

Two points should be noted about the development of these measures. First, all of the constructs in the proposed model were considered latent unobservable variables. The indicators, therefore, define the domain of the construct they measure. Second, whenever possible, indicators were modified from preexisting scale items. The use of preexisting scales was based on their conceptual link to the construct's operational parameters. In almost all cases, select items were used from preexisting scales. With the exception of education, all constructs were measured using multiple indicators.

Ability to Online Price Search

Ability to price search online is defined as an individual's perceived cognitive capability of searching for and processing price information. It pertains to individuals' cognitive structures (i.e., skills) and is manifested in their confidence in their ability to locate lower prices when shopping on the WWW. Ability to online price search was measured using multiple items asking consumers to rate their confidence in their ability to locate lower prices when shopping on the WWW. Items for this construct were modified from Urbany, Bearden, Kaicker, and Smith-deBorrero (1997). In addition, original items were created.

Table 3.1

Ability to Online Price Search

Pilot statement
Please describe your ability to search for lower prices when shopping on the world-wide-web:
1. Low vs. High
2. Inadequate vs. Superior
3. Weak vs. Strong
4. Incapable vs. Capable
5. Not confident in my ability vs. Confident in my ability
6. Uncomfortable with my ability vs. Comfortable with my ability

Benefits of Online Price Search

Benefits of online price search are a consumer's perceived utility gain and exchange self-confidence resulting from a search for a WWW seller with the lowest price. Conceptualization of the benefits of online price search is not limited to monetary return. However, the construct's operationalization focuses exclusively on the financial return expected from search, since consumers are unlikely to consciously acknowledge price search as having benefits beyond potential monetary saving. Benefits of online price search were measured using select items from the search benefits scale developed by Srinivasan and Ratchford (1991).

Table 3.2

Benefits of Online Price Search

Pilot statement
1. By searching around on the world-wide-web for price information, I am certain of making the best buy.
2. It doesn't pay to shop around before buying on the world-wide-web. (R)
3. Shopping around at more than one web site helps me to find the lowest price.
4. When shopping on the world-wide-web, there is too much to lose by being ignorant about prices.
5. By rushing into a purchase when shopping on the world-wide-web, one is bound to miss a good deal.

Costs of Online Price Search

Costs of online price search are a consumer's subjective assessment of the monetary expenditure, time sacrifice, physical effort, and psychological sacrifice that he or she expends searching for price information on the WWW. It is a measure of the loss in time and money a consumer expects to incur as a result of online price search and an assessment of the sacrifice in psychological energy and physical effort he or she expects to exert in the process. The items used to measure perceived costs of online price search focus on the perception of time and effort sacrificed to price search online. With the exception of one indicator, adapted from Donthu and Gilliland (1996), all items are original.

Table 3.3

Costs of Online Price Search

Pilot statement
1. When shopping on the world-wide-web, it feels like a chore to search for lower prices.
2. When shopping on the world-wide-web, I feel it is a large sacrifice of time to search for lower prices.
3. When shopping on the world-wide-web, I usually don't have the patience to search for lower prices.
4. When shopping on the world-wide-web, it takes too much effort to find lower prices.
5. When shopping on the world-wide-web, I hate spending time to gather information on products.

Ease of Access to Online Information

Ease of access to online information is the extent to which a consumer seeking information on the WWW perceives it to be available with minimal delay. The focus of this construct is on a consumer's attitude toward the typical amount of time it takes for WWW pages to load on the computer he or she usually uses to shop on the WWW. Ease of access to online information was measured using an original scale.

Table 3.4

Ease of Access to Online Information

Pilot statement
<p>Please think about the location from where you do most of your shopping on the world-wide-web when answering the following. The speed at which web pages load from this location is:</p> <ol style="list-style-type: none"> 1. Intolerable vs. Tolerable 2. Unsatisfactory vs. Satisfactory 3. Slow vs. Fast

Education

Education refers to the level of formal higher education (e.g., undergraduate or graduate) an individual has completed. Since this study uses college level students as subjects, this measure asked participants their level in years (e.g., 14 for sophomore or 15 for junior).

Table 3.5

Education

Pilot statement
<ol style="list-style-type: none"> 1. Please indicate the number of years of formal education you have completed. <div> <div>13 : 14 : 15 : 16 : 17 : 18 : ≥19</div> <div>Undergraduate Graduate</div> </div>

Internet Involvement

Internet involvement is an unobservable state of motivation of a person regarding the WWW and is his or her perceived relevance related to the Internet based on inherent needs, values, interests, goals and objectives. It is an assessment of an individual's use of the WWW in relation to his or her experience with its task aiding and goal fulfillment ability. Salam (1998), who originally developed this construct, based his scale of internet involvement on the personal involvement inventory (PII) scale developed by Zaichkowsky (1985). This study modified select items from the abbreviated PII scale developed by Zaichkowsky (1994).

Table 3.6

Internet Involvement

Pilot statement
To me the world-wide-web is:
1. Unimportant vs. Important
2. Mean nothing to me vs. Means a lot to me
3. Irrelevant vs. Relevant
4. Worthless vs. Valuable
5. Not needed vs. Needed

Motivation to Online Price Search

Motivation to online price search is as an individual's perceived desire to exert effort gathering and processing price information in an electronic marketplace, including both the direction and the intensity of the effort. It is characterized by an individual's

goal orientation, which in this case is locating a desired product at a lower price using the WWW. Therefore it is viewed as a measure of an individual's perceived motivation to search the WWW, with location of a lower price being the principal goal. Perceived motivation to online price search was measured using original items and select items adapted from the Holbrook (1986) scale of motivation to engage in activities.

Table 3.7

Motivation to Online Search

Pilot statement
1. It is important for me to get the best price when shopping on the world-wide-web.
2. It really doesn't occur to me to search for lower prices when shopping on the world-wide-web. (R)
3. I am motivated to search for lower prices when shopping on the world-wide-web.
4. I am enthusiastic about searching for lower prices when shopping on the world-wide-web.
5. I feel driven to find the best price, when shopping on the world-wide-web.
6. I really want to find the best prices, when shopping on the world-wide-web.

Need for Cognition

Need for Cognition is the tendency of an individual to engage in and enjoy thinking. This measure focuses on an individual's preference toward general thinking. Therefore, need for cognition (NFC) was measured using items from the abridged NFC scale developed by Cacioppo, Petty, and Kao (1984) that deal with thinking in general.

Table 3.8

Need for Cognition

Pilot statement
1. The notion of thinking abstractly is appealing to me.
2. Thinking is not my idea of fun. (R)
3. I prefer my life to be filled with puzzles that I must solve.
4. I only think as hard as I have to. (R)
5. Learning new ways to think doesn't excite me too much. (R)

Online Price Search

Consumer external price search behavior in an electronic marketplace is the degree of effort a buyer exerts to acquire and compare the price offerings of sellers in a computer mediated shopping environment. This construct was measured using the number of online prices compared prior to last WWW purchase, recalled estimates of typical WWW price search behavior, and overall attitude toward online price search. Typical WWW price search behavior and attitude toward WWW price search in general were measured using select items from scales of comparison shopping (Hawes & Lumpkin, 1984; J. E. Urbany et al., 1996) and price consciousness (Lichtenstein, Ridgway, & Netemeyer, 1993).

Table 3.9

Online Price Search

Pilot statement
1. How many prices did you compare on the web before making your last purchase on the world-wide-web?
2. When shopping on the world-wide-web, "Never buy the first one you look at" is a good motto.
3. When shopping on the world-wide-web, I am willing to go to extra effort to find lower prices.
4. I make it a rule to visit more than one web retailer or use a shop-bot to compare prices before I buy on the world-wide-web.
5. I would never shop at more than one web site just to find low prices before I buy on the world-wide-web. (R)
6. When shopping on the world-wide-web, I often compare the prices at more than one web retailer before deciding where to buy from.

Perceived Budget Constraints

Perceived budget constraints are a consumer's assessment of his or her general financial state. It refers to a consumer's perception of having sufficient monetary funds to satisfy his or her needs or wants. The budget constraints construct was measured using the budget constraints scale of Urbany et al. (1996).

Table 3.10

Perceived Budget Constraints

Pilot statement
1. I frequently have problems staying within my budget.
2. My budget is always tight.
3. I often have to spend more money than I have available.

Perceived Price Dispersion

Perceived price dispersion is a consumer's assessment of the variance of prices in an electronic marketplace (i.e., the WWW). It is a measure of a consumer's belief that WWW sellers' prices for similar products vary considerably. Perceived price dispersion was measured using select items from the price dispersion scale of Urbany et al. (1996).

Table 3.11

Perceived Price Dispersion

Pilot statement	
1.	Some web sites have prices that are much lower than others.
2.	Prices of individual items may vary between web sites, but overall, there isn't much difference in the prices between web sites. (R)
3.	The price of individual items often varies a lot between web sites.

Perceived Time Pressure

Time pressure refers to a consumer's perception of the amount of the time he or she has available to make WWW purchasing decisions. It measures a consumer's belief that his or her shopping on the WWW generally is rushed due to a lack of time. Time pressure was measured using the time pressure scale developed by Putrevu and Ratchford (1997).

Table 3.12

Perceived Time Pressure

Pilot statement
1. When I shop on the world-wide-web, I find myself pressed for time.
2. When I shop on the world-wide-web, I have more than enough time to complete my shopping. (R)
3. When I shop on the world-wide-web, I finish my shopping fast because I have other things to do.

Subjective Knowledge of Internet Search

Subjective knowledge of internet search is an individual's assessment of his or her proficiency at utilizing the WWW to perform information acquisition tasks. It is a measure of an individual's confidence in his or her ability to locate information using the WWW. Subjective knowledge of internet search was measured using select items adapted from the Flynn and Goldsmith (1999) scale of subjective knowledge.

Table 3.13

Subjective Knowledge of Internet Search

Pilot statement
1. I feel very knowledgeable about searching for information on the world-wide-web.
2. Among my circle of friends, I'm one of the "experts" on searching for information on the world-wide-web.
3. I know how to search for information on the world-wide-web.
4. I know more about searching for information on the world-wide-web than most people.

Trust in WWW Sellers

Trust in WWW sellers is the buyer's expectation that the seller can be relied upon to fulfill his or her part of the exchange and that the seller will not exploit the buyer's vulnerability. Trust is regarded as a risk reliever. Therefore, this is a measure of the degree of a consumer's desire to avoid assuming unnecessary risk in conducting a purchase through the WWW. Trust in WWW sellers was measured using items concerning risk aversion from Donthu and Gilliland (1996) and Moorthy et al. (1997).

Table 3.14

Trust in WWW Sellers

Pilot statement
1. I would buy from a web site I never heard of before.
2. I am not concerned about a potential financial loss when buying from a web retailer I never heard of before,.
3. I don't consider it risky to buy from a web site I have never heard of before.

WWW Shopping Enthusiasm

WWW shopping enthusiasm is the enjoyment an individual feels for the task of collecting and processing online information about products. Shopping enthusiasts are characterized as consumers motivated by hedonic values, like escape or increased arousal (Babin et al., 1994), and measure of this construct focus on these values. WWW shopping was measured using adapted items from the hedonic portion of the Babin et al. (1994) scale assessing hedonic and utilitarian shopping values.

Table 3.15

WWW Shopping Enthusiasm

Pilot statement
1. Shopping on the world-wide-web feels like an escape.
2. Compared to other things I could do, the time spent shopping on the world-wide-web is truly enjoyable.
3. I enjoy shopping on the world-wide-web for its own sake, not just for the items I may purchase.

Data Analysis Strategy

The pilot study was used to assess the validity and reliability of the indicators and scales used to represent the constructs of interest. Confirmatory factor analysis, using the LISREL 8.5 statistical software package, was used to determine the validity of the scale items used to measure each construct. Scale reliability was assessed using Cronbach Alpha reliability coefficient and principal components analysis figures produced in the SPSS 11.0 statistical software package. Discriminant validity was assessed through an examination of the correlations between latent variables. Scale items that compromised the reliability of their respective scales were noted for possible elimination. Participants also were asked to comment on the questionnaire. These comments were used to refine the design of the research instrument to ensure instructions were clear, questions were understandable, and participants had a general ease with the survey. Since the pilot study employed a student sample from the same university as the sample used for the main study testing the full causal model, it was expected that there was a fair degree of external validity related to the pilot and the main study's sample population. Results of the pilot study are reported in the next chapter.

The two-step approach to model building was employed for the main study (Anderson & Gerbing, 1988; James, Mulaik, & Brett, 1982). This process emphasizes the analysis of the measurement model before examination of the structural model. In this way the fit of the observed variables to the latent variables is assessed independently and prior to estimating the fit of the latent variables on themselves. Pioneers in the development of structural equation modeling and creators of the LISREL statistical software program, Joreskog and Sorbom (1993, p. 113) describe the value of this two-step approach in stating:

The testing of the structural model, i.e., the testing of the initially specified theory, may be meaningless unless it is first established that the measurement model holds. If the chosen indicators for a construct do not measure that construct, the specified theory must be modified before it can be tested. Therefore, the measurement model should be tested before the structural relationships are tested.

To analyze the measurement model, as in the pilot study, scale reliability was assessed using Cronbach Alpha reliability coefficient and principal components analysis, and discriminant validity was assessed through an examination of the correlations between latent variables. Maximum Likelihood estimation in the LISREL 8.5 statistical program was used to fit the observed covariance matrix against the predicted covariance matrix in analysis of the measurement model, structural model, and overall fit indices.

Chapter 4

PILOT STUDY RESULTS

This chapter discusses the results of the pilot study used to establish the validity of the items and the reliability of the scales measuring the latent variables in the proposed model. It also presents revisions to the research instrument that were the product of this preliminary investigation.

The ranges of all items were checked for improper input and univariate outliers. Rare instances of missing data were addressed by mean substitution. The results of tests for measurement validity and reliability are summarized in Tables 4.1 through 4.14. Each table contains (1) the statements for the pilot tested scales, (2) the single factor loadings of each item, (3) the total correlation for each item, and (4) the Cronbach Alpha reliability coefficient for each scale. The symbol (R) following any statement denotes a reverse worded scale item. Table 4.15 is a correlation matrix of the latent variable used to determine discriminant validity.

Of the 61 items used to measure the 15 latent variables in the proposed model, five items had unacceptably poor single item factor loadings ($< .50$) and unsatisfactory item-total correlations ($< .50$). These five indicators were: item 5 of the online price search scale, items 1 and 3 of the need for cognition scale, item 2 of the benefits of online price search scale, and item 2 of the perceived price dispersion scale. The Cronbach Alpha reliability values of all scales were above the conventionally recommended 0.6.

Most scales appeared to be unidimensional, measuring only one construct. To cross validate this conclusion, a principal components analysis was conducted on each scale. With the exception of the need for cognition scale, a single component was extracted from each scale, confirming the unidimensionality of all other scales.

A pattern was found between the five low loading items. Three of the five items were reverse worded statements. The other two items were part of a five-item scale measuring need for cognition, of which the other three items were reverse worded. It was then perhaps not surprising that, when the need for cognition scale was subjected to a principal components analysis, these two items loaded onto one factor, while the other three (reverse worded) items loaded onto another factor.

An examination of the latent variable correlation matrix to determine discriminant validity, presented in Table 6.15, found that, while the signs of the hypothesized relationships between constructs were in predicted directions, the correlations between a number of latent variables were high ($r > .40$).

Given the strong theoretical association between some of these constructs, a certain degree of correlation may be expected. It is reasonable to suppose, for example, that involvement with, knowledge of, and a facility with the WWW are interrelated concepts that explain the correlations between ease of access to online information and internet involvement ($r = .40$), internet involvement and subjective knowledge of internet search ($r = .52$), and subjective knowledge of internet search and WWW shopping enthusiasm ($r = .48$). Likewise, subjective knowledge of internet search and ability to online price search ($r = .55$) are both constructs related to aspects of online search. Perceived price dispersion and benefits of online price search ($r = .65$) both tap into

individuals' perception of potential savings that can be realized in an electronic marketplace. Both perceived time pressure and costs of online price search ($r=.60$) deal with time as a resource, the lack of time in the former construct and the value of time being a large part of the latter construct. Irrespective of these strong theoretical links, the existence of these high correlations is less than optimal.

Because five of the 15 constructs in the proposed model act as mediating variables and deal with theoretically different aspects of price search (i.e., ability, motivation, costs, benefits, and price search behavior), particular attention was focused on the relationships between these constructs. While strong correlations existed between all of these constructs, exceptionally high correlations were found between online price search and motivation to online price search ($r=.84$), between online price search and benefits of online price search ($r=.85$), and between benefits of online price search and motivation to online price search ($r=.95$). These exceptionally high correlations were expected to have considerable affect on the estimation of the structural model, since they indicated extremely strong linear dependency between benefits, motivation and price search.

It also should be noted that prior to administering the pilot survey there was concern that the questionnaire's length would affect responses because considerable time would be required to complete the survey. However, this did not appear to be an issue. Students completed the lengthy questionnaire in approximately ten minutes. The speed with which students completed the questionnaire shifted concern away the length of the survey, and placed attention on the amount of attention participants may have given to each question and the effects this treatment had on the results of the of the pilot study.

For example, the low factor loadings in the tests of indicator validity were all related to reverse worded statements. This pattern suggests that in general participants did not recognize the reverse wording of items. The speed with which the surveys were completed could explain these results. Thus, the five items were retained, despite their low factor loadings.

An examination of between item-correlation matrices for each scale showed high inter-item correlations. A visual check of surveys revealed a consistent pattern of near identical responses between related items. This pattern suggests that the scale items are either highly redundant and/or that participants' responses were biased through a priming effect coupled with a generally quick treatment of the surveys. Given multiple participants' written comments regarding repetitive questions and the speed with which participants generally completed the survey, it is suspected that this pattern in responses is the product of both influences to a certain degree, and that each acted to confound the other. Since no means are available for partitioning of these effects, it was concluded that both should be accepted as plausible explanations for the results.

Likewise, it was difficult to conclude definitively if the high correlations among the benefits, motivation and price search constructs were the product of gross redundancy between their respective indicators or the result of respondents not giving adequate consideration to the differences between scale items. These results also might suggest that the differences in the five price search constructs, which appear appropriate on a theoretical level, may, in actuality, have relationships of extreme subtle nuance. If that is the case, a measurement method requiring individuals to consciously differentiate between these five aspects (i.e., survey) may be inappropriate. An examination

comparing and contrasting the indicators for these constructs lead to the conclusion that they appear, on the surface, sufficiently different and that particular attention should be focused on the relationship between the price search constructs in the main study's analysis of the measurement model.

Research Instrument Revisions

In the revised version of the research instrument, used for the main study, the items measuring the latent variables were completely randomized, since it was believed that participants' generally brief treatment of the pilot questionnaire influenced the results of the pilot study. This means no scale item was preceded or followed by a question related to the same construct, and all efforts were made to separate questions from related constructs. In this manner, participants were encouraged to exert more effortful cognitive consideration of the questionnaire. One should note that because six of the 15 constructs dealt with some aspect of online search, five having to do with facets of online price search specifically, a considerable proportion of the scale items were by their nature search oriented. These items, therefore, were almost always separated by only one non-search statement. To ensure all construct indicators were included in this randomization process, new scales were constructed for the three constructs measured with semantic differential type items (i.e., ease of access to online information, ability to online price search, and internet involvement).

To address redundancy issues, and thereby, it was hoped, deal with extreme construct correlations, a review of item wording was initiated, and refinements were made where appropriate. Where possible, scales were overestimated to ensure that they contained a sufficient number of items to withstand a process of item elimination, while

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maintaining their ability to reliably estimate their respective construct. Therefore, in a number of cases, items were added to scales. Appendix B presents tables with construct scales used in the pilot and revisions that resulted from this modification process. Appendix C presents the revised research instrument used in the main study, including a key noting the construct relationship of each item. The following chapter discusses results of the main study to estimate and assess the full model.

Table 4.1

Ability to Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
Please describe your ability to search for lower prices when shopping on the world-wide-web:			
1. Low vs. High	.83	.76	
2. Inadequate vs. Superior	.92	.86	
3. Weak vs. Strong	.93	.88	
4. Incapable vs. Capable	.84	.84	
5. Not confident in my ability vs. Confident in my ability	.83	.84	
6. Uncomfortable with my ability vs. Comfortable with my ability	.79	.80	
Six items			.94

Table 4.2

Benefits of Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. By searching around on the world-wide-web for price information, I am certain of making the best buy.	.54	.48	
2. It doesn't pay to shop around before buying on the world-wide-web. (R)	.32	.28	
3. Shopping around at more than one web site helps me to find the lowest price.	.58	.52	
4. When shopping on the world-wide-web, there is too much to lose by being ignorant about prices.	.69	.53	
5. By rushing into a purchase when shopping on the world-wide-web, one is bound to miss a good deal.	.78	.60	
Five items			.79

Table 4.3

Costs of Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When shopping on the world-wide-web, it feels like a chore to search for lower prices.	.80	.75	
2. When shopping on the world-wide-web, I feel it is a large sacrifice of time to search for lower prices.	.76	.72	
3. When shopping on the world-wide-web, I usually don't have the patience to search for lower prices.	.83	.78	
4. When shopping on the world-wide-web, it takes too much effort to find lower prices.	.90	.85	
5. When shopping on the world-wide-web, I hate spending time to gather information on products.	.72	.65	
Five items			.90

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Table 4.4

Ease of Access to Online Information

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
The speed at which web pages load from this location is:			
1. Intolerable vs. Tolerable	.86	.82	
2. Unsatisfactory vs. Satisfactory	.92	.86	
3. Slow vs. Fast	.90	.85	
Three items			.92

Table 4.5

Internet Involvement

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
To me the world-wide-web is:			
1. Unimportant vs. Important	.79	.65	
2. Means nothing to me vs. Means a lot to me	.70	.53	
3. Irrelevant vs. Relevant	.77	.62	
4. Worthless vs. Valuable	.54	.57	
5. Not needed vs. Needed	.55	.56	
Five items			.85

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Table 4.6

Motivation to Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. It is important for me to get the best price when shopping on the world-wide-web.	.85	.84	
2. It really doesn't occur to me to search for lower prices when shopping on the world-wide-web. (R)	.58	.58	
3. I am motivated to search for lower prices when shopping on the world-wide-web.	.86	.83	
4. I am enthusiastic about searching for lower prices when shopping on the world-wide-web.	.90	.83	
5. I feel driven to find the best price, when shopping on the world-wide-web.	.95	.89	
6. I really want to find the best prices, when shopping on the world-wide-web.	.85	.83	
Six items			.93

Table 4.7

Need for Cognition

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. The notion of thinking abstractly is appealing to me.	.47	.44	
2. Thinking is not my idea of fun. (R)	.70	.54	
3. I prefer my life to be filled with puzzles that I must solve.	.31	.31	
4. I only think as hard as I have to. (R)	.60	.45	
5. Learning new ways to think doesn't excite me too much. (R)	.75	.57	
Five items			.70

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Table 4.8

Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. How many prices did you compare on the web before making your last purchase on the world-wide-web?	0.51	.49	
2. When shopping on the world-wide-web, "Never buy the first one you look at" is a good motto.	0.74	.61	
3. When shopping on the world-wide-web, I am willing to go to extra effort to find lower prices.	0.70	.60	
4. I make it a rule to visit more than one web retailer or use a shop-bot to compare prices before I buy on the world-wide-web.	0.83	.60	
5. I would never shop at more than one web site just to find low prices before I buy on the world-wide-web. (R)	0.27	.23	
6. When shopping on the world-wide-web, I often compare the prices at more than one web retailer before deciding where to buy from.	0.87	.79	
Six items			.81

Table 4.9

Perceived Budget Constraints

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. I frequently have problems staying within my budget.	.76	.62	
2. My budget is always tight.	.47	.42	
3. I often have to spend more money than I have available.	.90	.67	
Three items			.74

Table 4.10

Perceived Price Dispersion

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. Some web sites have prices that are much lower than others.	.82	.65	
2. Prices of individual items may vary between web sites, but overall, there isn't much difference in the prices between web sites. (R)	.35	.30	
3. The price of individual items often varies a lot between web sites.	.75	.45	
Three items			.65

Table 4.11

Perceived Time Pressure

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When I shop on the world-wide-web, I find myself pressed for time.	.68	.51	
2. When I shop on the world-wide-web, I have more than enough time to complete my shopping. (R)	.77	.55	
3. When I shop on the world-wide-web, I finish my shopping fast because I have other things to do.	.48	.40	
Three items			.67

Table 4.12

Subjective Knowledge of Internet Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. I feel very knowledgeable about searching for information on the world-wide-web,	.81	.71	
2. Among my circle of friends, I'm one of the "experts" on searching for information on the world-wide-web.	.76	.72	
3. I know how to search for information on the world-wide-web.	.81	.72	
4. I know more about searching for information on the world-wide-web than most people.	.76	.70	
Four items			.87

Table 4.13

Trust in WWW Sellers

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. I would buy from a web site I never heard of before.	.52	.46	
2. I am not concerned about a potential financial loss when buying from a web retailer I never heard of before.	.60	.51	
3. I don't consider it risky to buy from a web site I have never heard of before.	.95	.66	
Three items			.72

Table 4.14

WWW Shopping Enthusiasm

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. Shopping on the world-wide-web feels like an escape.	.82	.76	
2. Compared to other things I could do, the time spent shopping on the world-wide-web is truly enjoyable.	.89	.82	
3. I enjoy shopping on the world-wide-web for its own sake, not just for the items I may purchase.	.87	.80	
Three items			.89

Table 4.15

Pilot Study Correlations Between Latent Variables

Latent Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Ability to Online Price Search	1.00													
2 Benefits of Online Price Search	0.52	1.00												
3 Costs of Online Price Search	-0.45	-0.63	1.00											
4 Ease of Access to Online Information	0.48	0.15	-0.11	1.00										
5 Internet Involvement	0.49	0.14	-0.16	0.40	1.00									
6 Motivation to Online Price Search	0.55	0.95	-0.62	0.11	0.12	1.00								
7 Need for Cognition	0.06	-0.08	-0.01	-0.02	0.18	-0.01	1.00							
8 Online Price Search	0.49	0.85	-0.60	0.05	0.15	0.84	-0.06	1.00						
9 Perceived Budget Constraints	0.01	0.15	0.20	0.07	-0.04	-0.03	-0.11	-0.17	1.00					
10 Perceived Price Dispersion	0.22	0.65	-0.27	0.13	0.17	0.43	-0.07	0.44	-0.04	1.00				
11 Perceived Time Pressure	-0.36	-0.36	0.60	-0.29	-0.23	-0.33	-0.25	-0.38	0.04	-0.08	1.00			
12 Subjective Knowledge of Search	0.55	0.54	-0.26	0.31	0.52	0.36	0.28	0.24	0.14	0.20	-0.41	1.00		
13 Trust in WWW Sellers	0.26	0.06	-0.22	0.12	0.14	0.01	-0.14	0.03	0.22	-0.12	-0.33	0.16	1.00	
14 Web Shopping Enthusiasm	0.26	0.31	-0.09	0.13	0.29	0.34	0.18	0.06	0.23	0.17	-0.16	0.48	0.04	1.00

Chapter 5

MAIN STUDY RESULTS

Introduction

This chapter first discusses the screening of the data. It then presents an assessment of the measurement model. Results of this analysis indicated the necessity to reconsider the proposed model's measurement and specification before proceeding to its full estimation. After model revisions, estimation procedures are outlined. Following this discussion, assessment is made of the overall model fit and structural model. Directed modifications to the model and corresponding improvements achieved are then presented.

Data Screening

In total, 728 surveys were gathered from qualified participants for the main study. The response values of all reversed worded items were reversed to facilitate interpretation. The ranges of all variable values were examined for inaccurate data entry, allowing for the location and correction of the few instances where this error existed. Rare instances of missing data were dealt with through mean substitution.

In an analysis for univariate normality, the skewness and kurtosis of each latent variable were translated into z-scores, with significant values indicating distribution issues. This procedure, however, is sensitive to large sample sizes (e.g., > 500). A visual inspection for skewness and kurtosis was then initiated using histograms and distributions

curves. There were clear indications that a number of variables required transformation. Transformations were performed where needed. The actual size of variables' skewness and kurtosis after transformation, as close to zero as possible, acted as the arbiter of normal distribution.

The transformation process appeared to correct instances of univariate outliers. Multivariate outliers were detected using Mahalanobis distance. In total, 86 cases containing multivariate outliers were discovered through this process. These cases were eliminated from the analysis because of regression's sensitivity to outliers, and the expected effects these outliers would bring to the estimation of the sample covariance matrix. Because multivariate outliers tend to mask other multivariate outliers, this procedure was repeated three more times: 33, 16, and six outliers were discovered in the second, third, and fourth procedures respectively. These outliers also were removed from the final data set. Statistical power was not compromised as a result of these procedures, since 587 cases remained for full estimation of the proposed model (MacCallum et al., 1996).

Measurement Model Assessment

Assessment of the measurement part of the model is principally concerned with the relationships between the latent variables and their indicators to ensure valid and reliable measurement. Results of tests for indicator and scale validity and reliability are summarized in Tables 5.1 through 5.14. Each table contains (1) the item statement, (2) the single factor loadings of each item, (3) the total correlation for each item, and (4) the Cronbach Alpha reliability coefficient for each scale. The symbol (R) following any

statement denotes a reverse worded item. Table 5.15 shows the correlation matrix of the latent variables used to assess discriminant validity.

The single factor loadings for each item and their respective error variances were all significant as indicated by t-values in excess of 1.96 in absolute terms. The Cronbach Alpha reliability values of all scales were above the recommended 0.6. Ten items, however, had generally weak single factor loadings ($< .60$) and unsatisfactory item-total correlations ($< .50$). With the exception of item one of the perceived price dispersion scale, these items were eliminated from their respective scales. The single exception was made because retaining item number one of the perceived price dispersion scale ($\lambda = .58$) allowed for the scale to remain just identified without compromising its reliability. Unlike the pilot, no discernable pattern was found between items with low factor loadings.

Principal components analyses found all scales, except those of need for cognition and perceived budget constraints, to be unidimensional. The removal of items discussed above corrected for these issues. It should be noted that as a result of this item elimination process the perceived budget constraints scale was reduced to a single item measure. Perceived budget constraints' item number one was selected as its single indicator, since its wording most accurately captured the construct and it contained considerable variance.

An examination of the latent variable correlation matrix, Table 5.15, found that, with one exception, the signs of all hypothesized relationships were in predicted directions. Although a positive association between perceived budget constraints and

benefits of online price search had been hypothesized, the results indicated a negative relationship between these two constructs.

Addressing discriminant validity, the correlations between a number of latent variables were found to be high ($r > .40$). As discussed in the results of the pilot study, some strong associations were expected given the close theoretical relationship between certain constructs. For example, 97% of survey participants reported owning a computer, 93% said that they accessed the WWW daily, and 61% noted that they searched the WWW for information daily. It then was of little surprise to find strong correlations between internet involvement and subjective knowledge of internet search, since both constructs deal with individuals living a wired lifestyle. Given this study's focus on consumer search for the lowest price, it was likewise not surprising to see the strong association between the participants' perception of price dispersion on the WWW and their sense of the benefits and motivations to engage in online price search behavior.

Because the five endogenous latent variables in the proposed model deal specifically with theoretically different aspects of price search (i.e., ability, motivation, costs, benefits, and price search behavior), particular attention was focused on the relationships between these constructs. Correlations between the endogenous constructs were found to be considerably high ($r > .60$). However, unacceptably high correlations were found between online price search and motivation to online price search ($r = .99$), between online price search and benefits of online price search ($r = .93$), and between benefits of online price search and motivation to online price search ($r = .93$). These relationships clearly indicated multicollinearity between the scales and implied that the constructs are so closely linked that participants did not discern their differences. Given

their extreme values, these correlations were expected to have considerable affect on the estimation of the structural model to the point of precluding the generation of reliable parameter estimates. The model, therefore, was revised to address this issue through a combination of scale adjustment and model respecification as discussed in the following section.

Table 5.1

Ability to Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When it comes to searching for lower prices on the world-wide-web, I am an expert.	.789	.754	
2. Searching for lower prices on the world-wide-web is something I can do with great ease.	.763	.730	
3. When it comes to searching for lower prices on the world-wide-web, I am better at it than most people.	.797	.757	
4. When I shop on the world-wide-web, I have superior techniques for locating lower prices.	.834	.792	
5. I am extremely effective at locating lower prices when I search for them on the world-wide-web.	.862	.816	
6. I am very confident in my ability to search for lower prices on the world-wide-web.	.812	.769	
Six items			.919

Table 5.2

Benefits of Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When shopping on the world-wide-web, I am certain of making the best buy by searching around for price information.	.742	.664	
2. Shopping around at more than one web site helps me to find the lowest price.	.759	.686	
3. Before buying on the world-wide-web, a person can save a lot of money if they compare prices from different websites.	.746	.666	
4. When shopping on the world-wide-web, there is too much to lose by being ignorant about prices.	.588	.550	
5. It pays to shop around before buying on the world-wide-web.	.783	.686	
6. When shopping on the world-wide-web, one is bound to miss a good deal by rushing into a purchase.	.632	.584	
7. Before buying on the world-wide-web, there are definite benefits to comparing the prices at different websites.	.876	.766	
Seven items			.889

Table 5.3

Costs of Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When shopping on the world-wide-web, it feels like a chore to search for lower prices.	.610	.575	
2. When shopping on the world-wide-web, I feel it is a large sacrifice of time to search for lower prices.	.765	.691	
3. When shopping on the world-wide-web, I usually don't have the patience to search for lower prices.	.832	.635	
4. When shopping on the world-wide-web, it takes too much effort to find lower prices.	.831	.648	
5. When shopping on the world-wide-web, I hate spending time to gather information on products.	.601	.509	
Five items			.849

Table 5.4

Ease of Access to Online Information

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. The speed at which web pages load on the computer where I do most of my web shopping is tolerable.	.806	.741	
2. I am completely satisfied with the speed at which web pages load on the computer where I do most of my web shopping.	.878	.787	
3. Web pages load quickly on the computer where I do most of my web shopping.	.833	.760	
Three items			.876

Table 5.5

Internet Involvement

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. The world-wide-web plays an extremely important role in my life.	.718	.612	
2. It means a lot to me to have daily access to the world-wide-web.	.884	.753	
3. The world-wide-web is a very valuable tool in my life.	.843	.694	
4. The world-wide-web is a relevant part of my daily life.	.726	.567	
5. I need the world-wide-web.	.805	.732	
6. The day isn't complete unless I have used the world-wide-web.	.624	.690	
7. Daily access to the world-wide-web is something I could not live without.	.719	.671	
8. I feel like I use the world-wide-web for everything.	.648	.623	
Eight items			.910

Table 5.6

Motivation to Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When I shop on the world-wide-web, it is important for me to get the best price.	.772	.735	
2. When I shop on the world-wide-web, it really doesn't occur to me to search for lower prices. (R)	.753	.712	
3. When I shop on the world-wide-web, I am motivated to search for lower prices.	.909	.862	
4. When I shop on the world-wide-web, I am enthusiastic about searching for lower prices.	.778	.753	
5. When I shop on the world-wide-web, I feel driven to find the best price.	.887	.843	
6. When I shop on the world-wide-web, I really want to find the best prices.	.852	.811	
Six items			.927

Table 5.7

Need for Cognition

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. The notion of thinking abstractly is appealing to me.	.356	.341	
2. Thinking is not my idea of fun. (R)	.725	.546	
3. I prefer my life to be filled with puzzles that I must solve.	.294	.324	
4. I only think as hard as I have to. (R)	.728	.490	
5. Learning new ways to think doesn't excite me too much. (R)	.754	.554	
6. I would rather do something that requires little thought than something that is sure to challenge my thinking. (R)	.794	.615	
7. It's enough for me that something gets the job done: I don't care how or why it works. (R)	.532	.396	
Seven items			.794

Table 5.8

Online Price Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. How many prices did you compare on the web before making your last purchase on the world-wide-web?	.660	.637	
2. When shopping on the world-wide-web, "Never buy the first one you look at" is a good motto.	.620	.599	
3. When shopping on the world-wide-web, I am willing to go to extra effort to find lower prices.	.782	.750	
4. Before I buy on the world-wide-web, I make it a rule to compare the prices of different web sites.	.883	.840	
5. When I shop on the world-wide-web, I often compare the prices between web site before deciding whom to buy from.	.885	.839	
6. I would not buy anything on the world-wide-web without first comparing the price at another web site.	.883	.843	
Six items			.906

Table 5.9

Perceived Budget Constraints

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. I frequently have problems only spending what I am suppose to for the week.	.376	.480	
2. My spending budget is usually tight.	.539	.192	
3. I often feel I have to spend more money than I have available.	.393	.506	
4. I don't usually feel like I have enough money to spend during the week.	.939	.473	
Four items			.652

Table 5.10

Perceived Price Dispersion

Statement	Factor Loadings	Item-total Correlation	Cronbach Alpha
1. No matter what I am shopping for on the world-wide-web, I believe that some web site is selling it at a much lower price than others.	.517	.458	
2. When shopping on the world-wide-web, one should expect the price of an item to really differ between web sites.	.819	.625	
3. For almost any item one can purchase on the world-wide-web, the price often varies a lot between web sites.	.786	.610	
Three items			.743

Table 5.11

Perceived Time Pressure

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. When I shop on the world-wide-web, I find myself pressed for time.	.812	.723	
2. When I shop on the world-wide-web, I have more than enough time to complete my shopping. (R)	.541	.481	
3. When I shop on the world-wide-web, I finish my shopping fast because I have other things to do.	.522	.411	
4. When I shop on the world-wide-web, I am in a hurry.	.777	.652	
5. When I shop on the world-wide-web, I only have a limited amount of time to finish my shopping.	.828	.646	
Five items			.820

Table 5.12

Subjective Knowledge of Internet Search

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. I feel very knowledgeable about searching for information on the world-wide-web.	.731	.622	
2. Among my circle of friends, I'm one of the "experts" on searching for information on the world-wide-web.	.795	.715	
3. Search for information on the world-wide-web is something I know how to do really well.	.806	.696	
4. I know more about searching for information on the world-wide-web than most people.	.834	.768	
Four items			.870

Table 5.13

Trust in WWW Sellers

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. If I have never heard of a web site, I will not buy from it. (R)	.638	.647	
2. When buying from a web site I have never heard of before, I am concerned about a potential financial loss. (R)	.718	.563	
3. I consider it risky to buy from a web site I have never heard of before. (R)	.905	.760	
4. When buying on the world-wise-web, I need to have heard of the web site before I purchase anything. (R)	.775	.734	
Four items			.842

Table 5.14

WWW Shopping Enthusiasm

Statement	Factor loadings	Item-total Correlation	Cronbach Alpha
1. Shopping on the world-wide-web feels like an escape.	.719	.582	
2. Compared to other things I could do, the time spent shopping on the world-wide-web is truly enjoyable.	.753	.632	
3. I enjoy shopping on the world-wide-web for its own sake, not just for the items I may purchase.	.628	.541	
4. While I shop on the world-wide-web, I am able to forget my problems.	.686	.591	
Four items			.789

Table 5.15

Full Model Correlations Between Latent Constructs

Latent Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Ability to Online Price Search	1.00														
2 Benefits of Online Price Search	0.72	1.00													
3 Costs of Online Price Search	-0.63	-0.69	1.00												
4 Ease of Access to Online Information	0.25	0.21	-0.20	1.00											
5 Education	0.07	0.01	-0.01	-0.19	1.00										
6 Internet Involvement	0.29	0.27	-0.08	0.35	-0.02	1.00									
7 Motivation to Online Price Search	0.78	0.93	-0.76	0.16	0.07	0.22	1.00								
8 Need for Cognition	0.04	0.20	-0.35	0.17	0.04	0.05	0.14	1.00							
9 Online Price Search	0.74	0.93	-0.75	0.18	0.06	0.22	0.99	0.19	1.00						
10 Perceived Budget Constraints	-0.09	-0.11	0.22	-0.11	0.11	0.11	-0.15	-0.11	-0.17	1.00					
11 Perceived Price Dispersion	0.54	0.62	-0.28	0.01	0.11	0.14	0.58	-0.02	0.60	0.00	1.00				
12 Perceived Time Pressure	-0.24	-0.21	0.55	-0.24	0.13	-0.02	-0.19	-0.28	-0.19	0.19	0.03	1.00			
13 Subjective Knowledge of Search	0.75	0.35	-0.25	0.29	0.06	0.41	0.32	0.11	0.32	0.05	0.33	-0.17	1.00		
14 Trust in WWW Sellers	0.08	0.00	-0.18	0.05	0.00	-0.06	0.01	0.00	-0.01	-0.06	-0.07	-0.24	-0.01	1.00	
15 Web Shopping Enthusiasm	0.39	0.16	-0.04	0.05	0.00	0.42	0.21	-0.22	0.15	0.23	0.32	-0.07	0.46	-0.03	1.00

Model Revision

Results of the analysis for discriminant validity indicated the necessity to reconsider the proposed model's measurement and specification before proceeding to its full estimation. Revision of the proposed model focused on the relationships between benefits, motivation, and price search, because it was the exceptionally high correlations among these constructs that compromised reliable model estimation. Revision to the proposed model consisted of both scale adjustment and model respecification.

Scale Adjustment

The largest and most detrimental correlation was between the scales measuring online price search, the principal dependant variable of the model, and motivation to online price search ($r = .99$). Correlations between the individual items measuring these constructs also were generally high ($r > .50$). Item number one and number two of the online price search scale possessed the smallest correlations with items of the motivation scale. Item one specifically asked participants about the number of prices they compared online prior to their last WWW purchase. Item two asked about participants' general tendency toward online price search. While it was hoped that using a combination of behavior and tendency items would generate a more robust measure of search, it was the goal of the study ultimately to understand behavior. It was decided, therefore, to use only item number one as the measure of online price search. The correlation between online price search and motivation was dramatically reduced as a result of this procedure ($r = .61$).

Price Search Behavior in an Electronic Marketplace was defined as the degree of effort buyers exert to acquire and compare the price offerings of sellers in a computer

mediated shopping environment. This broad conceptualization of online price search, however, no longer appeared appropriate, given the removal of tendency indicators from its measurement. Price Search Behavior in an Electronic Marketplace, therefore, was redefined as the degree of price comparison conducted by buyers prior to purchasing in a computer mediated shopping environment. This more narrow conceptualization of online price search, and its operationalization as the number of prices an individual compared online immediately before making his or her last WWW purchase, was consistent with a number of past studies that viewed external price search as the number of stores a buyer visited to compare prices (Carlson & Gieseke, 1983; Kujala & Johnson, 1993; Urbany, 1986; Urbany et al., 2000). Additionally, this conceptualization maintained the study's core focus on the amount of price search behavior and it, in fact, addressed concerns that the previous conceptualization and operationalization of the construct were not pure behavioral assessments.

It should be noted that measuring online price search with a single indicator, while acceptable, was restricting, in that it precluded the estimation of error. It required the presumption that the measure was error free (i.e., the error variance was fixed at 0.0). The reliability of this measure, therefore, was completely dependant upon participant's memory of price search prior to their last WWW purchase. There was a degree of confidence in using this single indicator, since participants' memories were primed in preliminary questions asking them to recall the exact item they last purchased on the WWW and when it was purchased. Additionally, while all participants were qualified as having made at least one purchase on the WWW in the three month preceding the survey,

70% made their last WWW purchase in the 8 weeks preceding the survey, 44% in the 4 weeks preceding, and 23% in the 2 weeks preceding.

Model Respecification

An exceptionally high correlation also was found between the benefits and motivation scales ($r = .93$). Correlations between the individual items of these scales also were generally high ($r > .40$). The conceptualization and operationalization of these constructs were reexamined to discern the probable cause of these results.

Consistent with Ratchford and Srinivasan (1993), search in this study was viewed as a process whose intended result was a better buy. Since this research focused on price search, the better buy was necessarily one at a perceived lower price. The construct, therefore, was operationalized as unidimensional to recognize finding the lowest/best price as the principal benefit of price search. This was consistent with other search research (Srinivasan, 1987; Srinivasan & Ratchford, 1991). As in the research of Park and Mittal (1985) and Bettman (1979), goal orientation was the central component in this study's conceptualization of motivation to search. Given this study's primary interest in price search, this construct was operationalized to capture the intensity of an individual's motivation toward the particular goal fulfillment of finding the lowest/best price. Thus, in comparing the items measuring these two constructs (c.f., Table 5.2 vs. Table 5.6), one will note that both scales viewed the location of the lowest/best price as the desired/undesired outcome. These operationalizations appeared completely appropriate when one considers this study's specific focus on price search, as opposed to a more general investigation of information search, which possesses benefits and motivations that extend beyond a financial orientation.

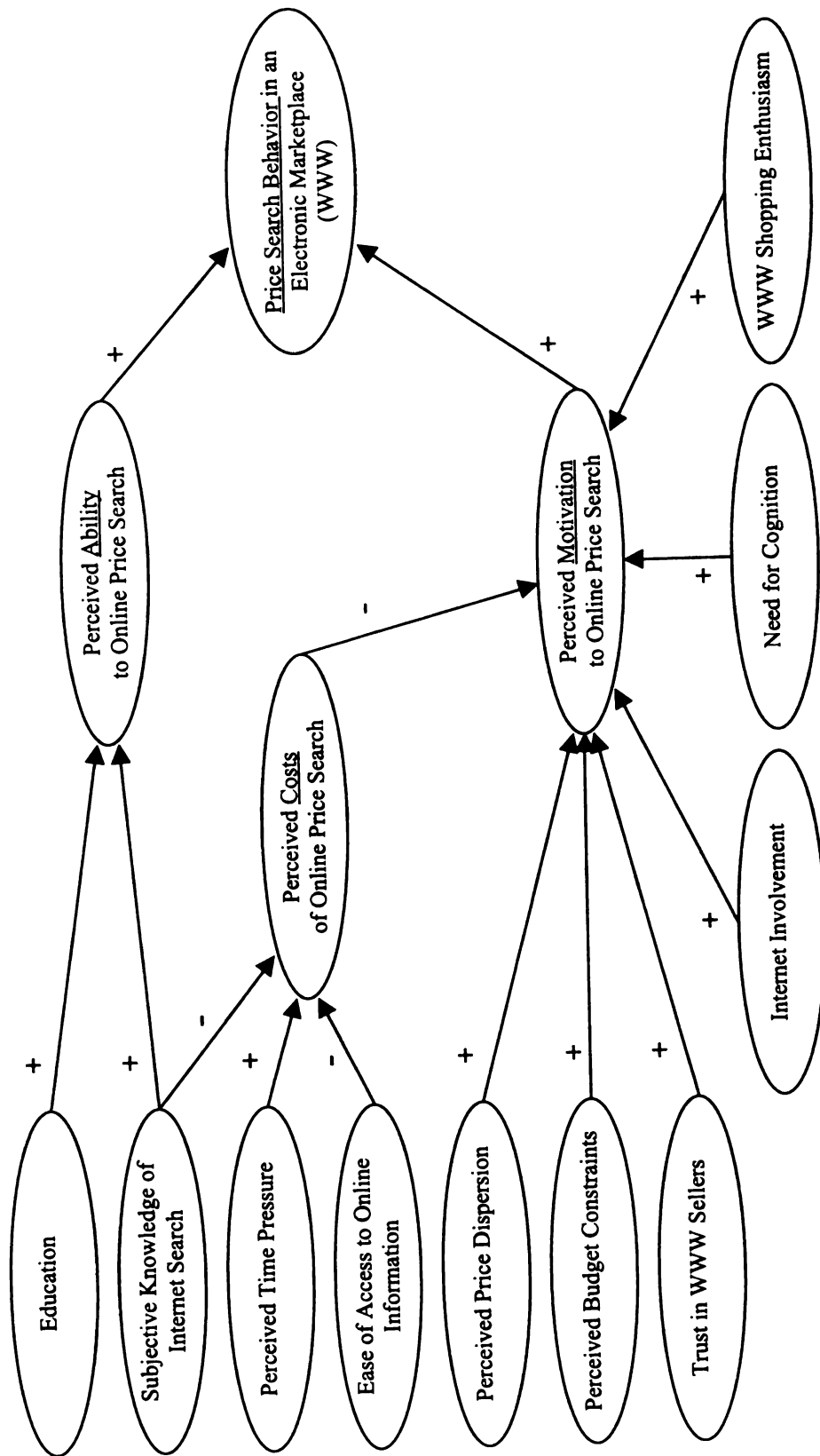
Though not a relationship hypothesized *a priori*, it was an intriguing finding that, when dealing with price search specifically, as opposed to information search in general, the financial savings participants viewed as the benefit of price search was so strongly related to their motivation to engage in price search. Certainly few would argue that in general consumers are motivated to engage in behavior that does not yield benefits. In the particular case of price search, where both reaping benefits and fulfilling goals (i.e., motivation) are rooted in the same product and predicated on achieving the same outcome (i.e., finding the lowest price), it appeared redundant to view the benefits of and motivation to conduct this type of search as separate constructs. The motivation construct, therefore, was reconceptualized as inherently including benefits of online price search as an implicit element of its composition.

The proposed model, shown in Figure 2.2, thus, was respecified to reflect this new conceptualization of motivation to online price search. The respecified proposed model is presented in Figure 5.1. One will note the absence of the benefits construct as it now was considered part of the motivation construct. Accordingly, the determinant variables associated with benefits (i.e., Perceived Price Dispersion, Perceived Budget Constraints, and Trust in WWW Sellers) were redirected as influencers of motivation.

Model Estimation

Before assessment of the overall model fit and the structural model, the following outlines the specifics of the model's estimation. The revised causal model, presented in Figure 5.1, was tested in its entirety. LISREL 8.5 statistical software package was used for estimation. The covariance matrix of the observed variables was used as the input matrix. Maximum Likelihood was used as the method of estimation.

Figure 5.1
Revised Model of Consumer External Price Search Behavior in an Electronic Marketplace (WWW)



The model's input coding was free of any specifications intended to resolve operational difficulties, and it adhered to the assumptions of the general LISREL model. In terms of input specification, 18 observed dependent variables were used to measure the four endogenous latent variables and 35 observed independent variables were used to measure the ten exogenous latent variables.

The measurement model for the dependent variables (LAMBDA-Y) and independent variables (LAMBDA-X) were specified as full and fixed matrices. The matrices assessing the relationships between the endogenous latent variables (BETA) and between the exogenous latent variables and the endogenous latent variables (GAMMA) also were specified as full and fixed. The covariance matrix of endogenous latent variables (PHI) was specified as diagonal and free. The matrices of the error variance for the indicators of the endogenous latent variables (THETA EPSILON), for the indicators of the exogenous latent variables (THETA DELTA), and for the disturbance terms of the endogenous latent variables (PSI) were specified as diagonal. In this manner, these error terms were estimated as mutually uncorrelated, which is minimally assumed for the specification of a LISREL model.

For identification purposes one indicator of each latent variable acted as the reference indicator (i.e., set to unity at 1.0). Additionally, the latent variables measured with a single indicator (i.e., online price search behavior, perceived budget constraints, and education) were assumed to be error free (error variance fixed to 0.0). The reliability of the online price search measure was discussed in the preceding section. The reliability of the education measure was thought to be very high. There were, however, no

indications related to the reliability of the perceived budget constraint measure. Any assumptions about its reliability, therefore, are arbitrary.

Overall Fit Assessment

The degree to which the model as a whole is consistent with the empirical data is assessed in an examination of the model's overall fit. Overall fit indices are summarized in Table 5.16. A diagrammatic representation of the empirical estimation of the model is presented in Figure 5.2.

Table 5.16

Model Overall Fit Indices

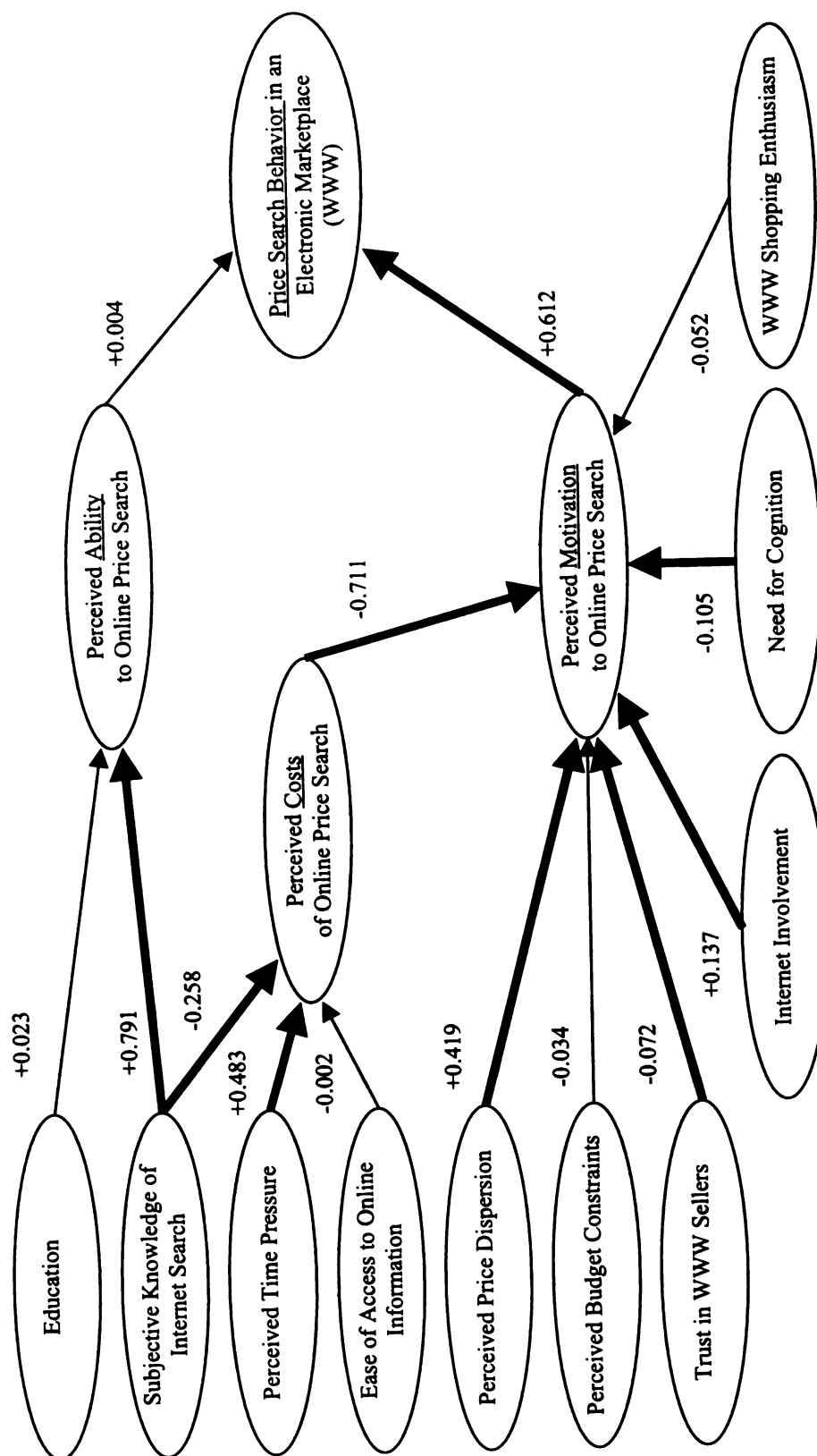
Fit index	Value
Degrees of Freedom (<i>df</i>)	1269
Chi-square (χ^2)	3876.246
Root Mean Square Error of Approximation (RMSEA)	0.059
Normed Fit Index (NFI)	0.935
Non-Normed Fit Index (NNFI)	0.953
Comparative Fit Index (CFI)	0.957
Root Mean Square Residual (RMR)	0.101
Standardized Root Mean Square Residual (SRMR)	0.085

The chi-square for the model was high and significant, $\chi^2 (df = 1269, N = 587) = 3876.246, p = 0.0$. Based on these values, the model would have been rejected. The chi-square statistic, however, is known to be sensitive to large sample sizes, and its basic assumption that a model can fit perfectly to a data set makes it an unrealistic test. Thus, the probability result of this test statistic was not unexpected, and the model was retained.

The overall fit of a model, alternatively, was assessed using more pragmatic goodness of fit statistics. One of the common tests used is the root mean square error of approximation (RMSEA). Considered one of the most revealing metrics of overall model fit, RMSEA takes the error of approximation in the population into consideration, and tests the model against a model with optimally chosen parameters. Values less than 0.05 indicate a good model fit, while values between 0.05 and 0.08 indicate reasonable model fit. The model had a RMSEA of 0.059. The model was determined to have reasonable fit to the data according to this metric.

A number of test statistics compare the model against a naïve base model, usually referred to as the independence model, which assumes that each indicator is error free and not correlated to any other indicator. The normed fit index (NFI), non-normed fit index (NNFI), and comparative fit index belong to this group. Values in excess of .90 indicate an acceptable model fit to the data. The model possessed a NFI of 0.935, a NNFI of 0.953, and a CFI of 0.957. These values were very encouraging indicators that the model overall fit the data well.

Figure 5.2
Empirically Tested Structural Model of Consumer External Price Search Behavior in an Electronic Marketplace (WWW)
 (1) Values are standardized regression estimates
 (2) Thick lines indicate statistically significant path (alpha = 0.05)



The root mean square residual (RMR) assesses the average residual value obtained from the fitting of the sample covariance matrix to the matrix of the proposed model. However, these residuals are relative to the sizes of the observed variances and covariance, and therefore they are better represented when based on the correlation matrix through the standardized root mean square residual (standardized RMR). Optimally these values should be small (i.e., $< .05$). The model's root mean square residual (RMR) was 0.101, and its standardized RMR was 0.085. These values were less than optimal. They were considered, however, within an acceptable distance of zero. Thus, it was concluded that the model had a just reasonable fit to the data according to these fit indices.

Given the values of these indices, the model as a whole was not rejected. These figures, however, indicated that there were areas of the model within which less than optimal specification existed. A detailed analysis of the results of the structural model was used to bring these areas of discrepancy into sharper relief.

Structural Model Assessment and Hypothesis Testing

Assessment of the structural part of the model focuses on the direction and strength of the links between the model's latent variables, both exogenous and endogenous. This analysis principally is concerned with the extent to which the empirical data support or refute the theoretically specified (i.e., hypothesized) relationships between the latent variables and the amount of variance accounted for in the model's structural components (i.e., endogenous variables). A diagrammatic representation of the empirical results is presented in Figure 5.2. The results of the structural model are shown in Table 5.17. The notation used for the equations in Table

5.17 is outlined in Table 5.18. Table 5.19 presents a summary of the hypothesized vs. observed relationships among the latent variables. The squared multiple correlations for the structural equations are presented in Table 5.20.

Seven of the 14 structural relationships hypothesized were supported. In addition, two other hypothesized relationships were statistically significant, however, they were not in the predicted direction. The seven hypothesized structural links with empirical support were: search knowledge on ability, motivation on search, internet involvement on motivation, costs on motivation, search knowledge on costs, time pressure on costs, and price dispersion on motivation. Both need for cognition and trust in WWW sellers had been hypothesized to have a positive influence on motivation to online price search, however, they were found to have negative affects.

Ability had no significant effect on online price search ($\beta = 0.004$). Hypothesis one, therefore, was not supported. Similarly, Srinivasan (1987) in an early articulation of his model of external information search for automobiles found that ability to search did not have a significant direct link to search. He did find, however, that ability had an indirect relationship to search through benefits. Though no indirect relationship between ability and price search was specified in the proposed model, an examination of modification indices indicates that a positive relationship may exist through the motivation construct, within which benefits has been incorporated.

Table 5.17

Structural Model Results

Ability to Online Price Search

$$\eta_1 = +0.023 \xi_2 \quad +0.791 \xi_8 \\ (0.739) \quad (18.485)^*$$

Costs of Online Price Search

$$\eta_2 = -0.002 \xi_1 \quad +0.483 \xi_7 \quad -0.258 \xi_8 \\ (-0.056) \quad (10.521)^* \quad (-5.950)^*$$

Motivation to Online Price Search

$$\eta_3 = -0.711 \eta_2 \quad +0.137 \xi_3 \quad -0.105 \xi_4 \quad -0.034 \xi_5 \\ (-19.09)^* \quad (4.129)^* \quad (-3.216)^* \quad (-1.197) \\ +0.419 \xi_6 \quad -0.072 \xi_9 \quad -0.052 \xi_{10} \\ (10.997)^* \quad (-2.421)^* \quad (-1.279)$$

Online Price Search Behavior

$$\eta_4 = +0.004 \eta_1 \quad +0.621 \eta_3 \\ (0.096) \quad (15.905)^*$$

* Significant (alpha = .05)

Note: The coefficients in the equations shown are standardized regression estimates and the values in parenthesis are corresponding t-values.

Table 5.18

Latent Variable Notation

Latent Variable	Notation
Endogenous	
Ability to Online Price Search	η_1
Costs of Online Price Search	η_2
Motivation to Online Price Search	η_3
Online Price Search Behavior	η_4
Exogenous	
Ease of Access to Online Information	ξ_1
Education	ξ_2
Internet Involvement	ξ_3
Need for Cognition	ξ_4
Perceived Budget Constraints	ξ_5
Perceived Price Dispersion	ξ_6
Perceived Time Pressure	ξ_7
Subjective Knowledge of Internet Search	ξ_8
Trust in WWW Sellers	ξ_9
WWW Shopping Enthusiasm	ξ_{10}

Table 5.19

Hypothesized Relationships and Empirical Findings

H#	Effect of		Hypothesized Sign	Observed Sign	Standardized Regression Coefficient	Significance (alpha < 0.05)
	Construct 1 on	Construct 2				
H1	Ability	Price Search	Positive	Positive	0.004	Not Sig.
H2	Education	Ability	Positive	Positive	0.023	Not Sig.
H3	Subjective Knowledge of Internet Search	Ability	Positive	Positive	0.791	Significant
H4	Motivation	Price Search	Positive	Positive	0.612	Significant
H5	Internet Involvement	Motivation	Positive	Positive	0.137	Significant
H6	Need for Cognition	Motivation	Positive	Negative	-0.105	Significant
H7	WWW Shopping Enthusiasm	Motivation	Positive	Negative	-0.052	Not Sig.
H8	Costs	Motivation	Negative	Negative	-0.711	Significant
H9	Subjective Knowledge of Internet Search	Costs	Negative	Negative	-0.258	Significant
H10	Time Pressure	Costs	Positive	Positive	0.483	Significant
H11	Ease of Access to Online Information	Costs	Negative	Negative	-0.002	Not Sig.
H14	Perceived Price Dispersion	Motivation	Positive	Positive	0.419	Significant
H15	Perceived Budget Constraints	Motivation	Positive	Negative	-0.034	Not Sig.
H16	Trust in Sellers	Motivation	Positive	Negative	-0.072	Significant

Note:

Table is based on the revised proposed model presented in Figure 5.1.

Hypothesis 12 and 13 were eliminated as a result of model revisions.

Hypothesis 14, 15, and 16 were revised to affect motivation.

Table 5.20

Squared Multiple Correlations for Structural Equations

Endogenous latent variable	Squared multiple correlation (R^2) for structural equation
Ability to Online Price Search	0.628
Costs of Online Price Search	0.349
Motivation to Online Price Search	0.743
Online Price Search	0.376

Hypothesis two was not supported. Level of education did not have a significant influence on individuals' perceived ability to online price search ($\beta = 0.023$), due perhaps to the particular sample employed. However, hypothesis three was supported. The effect of subjective knowledge of internet search on perceived ability to online price search was significant, positive, and strong ($\beta = 0.791$). Individuals knowledgeable about information search on the WWW appear to view online price search as an easy application of their prior search experience to this particular type of search task. The strength of this relationship was also evident in the considerable amount of ability's variance explained for by the structural model ($R^2 = 0.628$).

Hypothesis four was supported. Motivation to online price search was found to have a significant positive affect on online price search behavior ($\beta = 0.612$). As specified, motivation was the sole significant determinant variable to have a direct affect on online price search, and the strength of this relationship was considerable. Seven

constructs were hypothesized to affect motivation to online price search, and five of these links were significant. The structural model accounted for nearly three fourths of the variance in motivation to online price search ($R^2 = 0.743$). The antecedent latent variables of motivation clearly have strong explanatory power.

Internet involvement had a significant positive link with motivation to online price search ($\beta = 0.137$). Hypothesis five, therefore, was supported. Individuals highly involved with the internet view the WWW as an important part of their lives, helping them to accomplish objectives and achieve goals. Through involvement with the medium, individuals recognize the WWW as a tool that facilitates tasks, and they view price search as one of the many tasks that are made easier. In this regard, price search is not a matter of something that they know how to do well, but something that they know can be done easier.

Hypothesis six was not supported. Need for cognition (NFC) had a significant negative effect on motivation to online price search ($\beta = -.105$), though this relationship had been hypothesized to be positive. Individuals high in NFC showed a tendency to acquire more information in experimental search tasks (Verplanken et al., 1992). It appears, however, that there is not a direct translation to the specific acquisition of price information in an electronic marketplace. The use of a severely reduced form of the classic NFC scale may have contributed to this finding.

Hypothesis seven was not supported. Though hypothesized to have a positive effect, WWW shopping enthusiasm did not show a significant link to motivation to online price search ($\beta = -0.052$). It is perhaps not surprising that WWW shopping enthusiasm had such a weak negative effect on motivation to online price search.

Finding lower prices, at best, can be only a side benefit for hedonic shoppers, who by definition primarily are seeking escape and distraction in their consumer behavior.

Costs of online price search had a significant negative influence on motivation to online price search ($\beta = -0.711$). Hypothesis eight, therefore, was supported.

Individuals' motivation to search for lower prices appears to be reduced considerably when the costs associated with online search are high. High search costs clearly act as a disincentive to online search through severely decreased motivation.

Hypothesis nine was supported. Subjective knowledge of internet search had a significant negative effect on perceived costs of online price search ($\beta = -0.258$).

Individuals who believe themselves to be highly knowledgeable about internet search see searching on the WWW as a task familiar to them. They believe that they can engage in and complete online price search with reduced effort and time, because of their task knowledge, and they, therefore, perceive fewer costs associated with this type of search task.

Time is a particularly strong influencer of individual's perception of the costs associated with online price search. Perceived time pressure had a significant positive effect on costs of online price search ($\beta = 0.483$). Hypothesis ten, therefore, was supported. When time is limited, the costs of online price search increases. In such instances, individuals' value of time, a limited commodity, tends to outweigh their perception of potential gain in savings from online price search.

Hypothesis 11 was not supported. It was hypothesized that the increased speed with which individuals access the WWW would reduce their perception of the costs associated with online price search. Ease of access to online information, however, did

not show a significant link to costs of online price search ($\beta = -0.002$). Access speed and search costs may not be related as originally reasoned from the research of Rose, Lees, and Meuter (2001).

Just over one-third of the variance in costs of online price search was accounted for in its structural model ($R^2 = 0.349$). This is an encouraging finding, though it appears that the latent variables not specified to have a direct link and/or other factors not specified in the model make significant contributions to the perception of online search costs.

Hypothesis 12 and 13 were eliminated as a result of the reconceptualization of the motivation construct to include benefits as an inherent part of its composition. For the same reason, Hypothesis 14, 15, and 16, initially specified to affect benefits, were revised to influence motivation.

Hypothesis 14 was supported. Perceived price dispersion had a significant positive effect on motivation to online price search ($\beta = 0.419$). The belief that prices in the online shopping environment vary considerably from seller to seller appears to act as a strong incentive for individuals to search for lower prices. The expectation of savings is a driver for online buyers' motivation to compare the prices of WWW sellers.

Hypothesis 15 was not supported. Perceived budget constraints did not show a significant link to motivation to online price search ($\beta = -0.034$). Budget constraints may not have acted as a motivator for the student sample used for the study, 80% of which reported having some type of employment.

Trust in WWW sellers was hypothesized to have a positive effect on motivation to online price search. A significant relatively weak negative link was found instead

($\beta = -0.072$). Hypothesis 16, therefore, was not supported. Buyers who conduct online price search have shown a preference to purchase from branded WWW sellers, rather than sellers they know not to be the low price leader (Smith & Brynjolfsson, 2001). It is, perhaps, this same buyer trepidation that accounts for this finding. High transaction trust individuals may be biased toward familiar online sellers, which in turn accounts for their high trust. One might expect, therefore, diminished motivation to compare WWW sellers on any number of characteristics, including price. Ultimately, online transaction trust's strongest and most relevant influence on online consumer behavior may have less to do with search and more to do with choice behavior (Smith & Brynjolfsson, 2001).

Just over one-third of the variance in online price search behavior was accounted for in its structural model ($R^2 = 0.376$). This is a very acceptable finding. It exceeds the amount of variance accounted for in earlier price search research that exclusively used the costs vs. benefits framework ($R^2 = 0.140$) (Goldman & Johansson, 1978). It also exceeds the amount of variance accounted for in research that specifically examined price search for durables ($R^2 = 0.152$) (Zimmermann & Geistfeld, 1984). In addition, it is within the range of the variance accounted for in price search research conducted in the context of grocery shopping (R^2 from 0.120 to 0.520) (Berne, Mugica, Pedraja, & Rivera, 2001; Carlson & Gieseke, 1983; Lichtenstein et al., 1993; Putrevu & Ratchford, 1997; Urbany et al., 1996).

Yet, despite the strong link of motivation on search ($\beta = 0.612$), it cannot be concluded that motivation is the single principal factor driving online price search behavior, since just over 60% of its variance remains unexplained. It appears then that there are other factors influencing online price search, either not specified to affect search

directly and/or not specified in the model. For example, modification indices indicate that perceived costs of online price search may possess some direct explanatory power.

Model Modifications

Based on the assessment of the over model fit, the causal model should not be rejected. However, the preceding detailed examination of the structural model revealed that the model's specification was less than optimal. Through modifications improvements were sought in the model's overall fit and the amount of variance accounted for in the model's structural components.

Modifications

Three modifications were made to the measurement model. Modification indices, ranging from 36.304 to 109.712, suggested that three items were related strongly to other latent variables. Therefore, item three of the costs scale, item two of the motivation scale, and item three of the ability scale were eliminated from the analysis. The removal of these items did not compromise the reliability of their respective scales.

A number of modifications were made to the structural model. The path from ability to online price search behavior was eliminated because it was not found to be significant. A relationship between ability and search, however, still was believed to exist, given the substantive theory and testing of this relationship (Bettman, 1979; Bettman & Park, 1980; Duncan & Olshavsky, 1982). A modification index of 48.263 indicated that specifying a path between ability and motivation would improve model fit. Ability then would have then an indirect effect on search though motivation. This was consistent with the Srinivasan (1987) model of information search for automobiles, in which ability was shown to have an indirect affect on search though benefits, which in

the current model has been incorporated into the motivation construct. Therefore, a path was freed from ability to motivation with the expectation of a positive relationship.

An exceptionally high modification index (226.412) also suggested that a path should be specified from ability to costs. Given that individuals high in ability have a sense of how to price search, they were expected to perceive fewer costs associated with this type of search. Thus, a negative relationship was expected.

Specifying a path from ability to costs, however, would produce an improper estimate ($\beta > 1.00$). This would occur because, as specified, ability and costs would share a predictor variable, subjective knowledge of online search, which has a strong linear dependency with ability ($r = .78$). The link between subjective knowledge and costs, therefore, would attenuate the relationship between ability and costs. The path between subjective knowledge and costs was eliminated to overcome this improper solution. The relationship of subjective knowledge on costs was maintained as an indirect effect through ability.

To ensure the model was not restricting the effect of costs on search, by affixing it solely as a mediated relationship through motivation, a direct path was freed from costs to search and a negative relationship was expected. Costs were now specified to affect search directly and through motivation.

Modification Results

The modified model represented an overall better fit to the data. A diagrammatic representation of the modified model results is presented in Figure 5.3. For contrastive purposes, Table 5.21 presents empirical results for the initial model vs. the modified model. The chi-square value was reduced from $\chi^2(df = 1269, N = 587) = 3876.246, p =$

0.0. to $\chi^2(df = 1118, N = 587) = 3149.146, p = 0.0$. The RMSEA was decreased from 0.059 to 0.055, bringing it closer to the 0.05 indicating a good model fit. The NFI, NNFI, and CFI, while virtually unchanged, remained comfortably above the 0.90 indicating acceptable model fit. The RMR was reduced from 0.101 to 0.073. Likewise, the standardized RMR was reduced from 0.085 to 0.065, bringing both values closer to the preferred 0.05.

As a result of modifications, a better fit to the data also was observed in the structural model. Seven of the ten exogenous variables were found to have a significant relationship with one of the mediating variables (i.e., ability, costs, or motivation). The three exceptions were ease of access to online information, education, and perceived budget constraints. These seven exogenous variables also had significant indirect effects on online price search behavior. In rank order, the standardized total effects of the exogenous variables on price search were: subjective knowledge of internet search (0.281), perceived price dispersion (0.184), perceived time pressure (-0.172), WWW shopping enthusiasm (-0.091), internet involvement (0.052), trust in WWW sellers (-0.048), and need for cognition (-0.043). Three of these seven relationships, need for cognition, trust in WWW sellers, and WWW shopping enthusiasm, were not the predicted direction.

Figure 5.3
Empirically Tested Modified Model of Consumer External Price Search Behavior in an Electronic Marketplace (WWW)

(1) Values are standardized regression estimates

(2) Thick lines indicate statistically significant path ($\alpha = 0.05$)

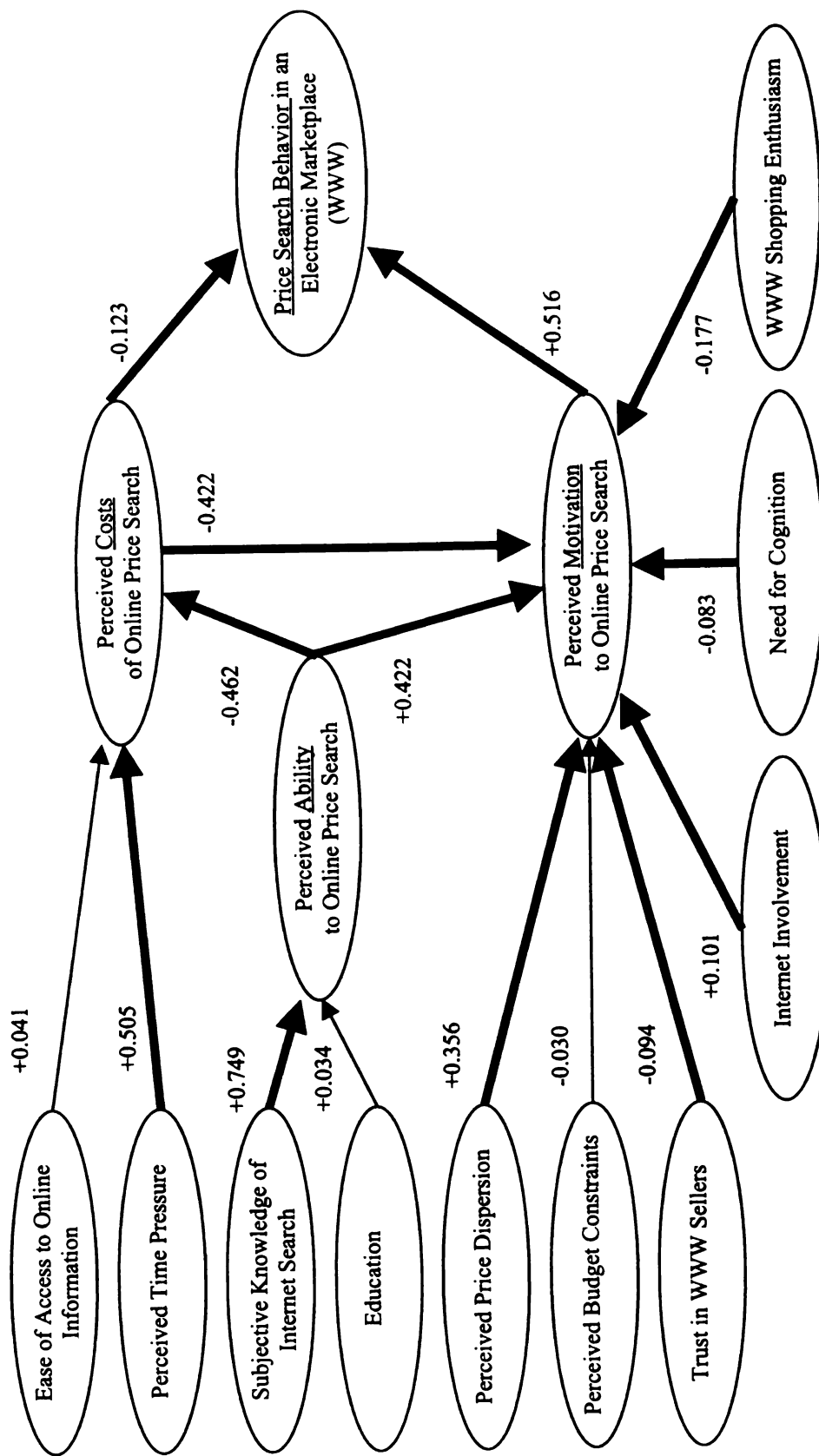


Table 5.21

Empirical Results for Initial Model vs. Modified Model

Test statistic	Initial model	Modified model
Overall Model Fit Assessment		
Degrees of Freedom (<i>df</i>)	1269	1118
Chi-square (χ^2)	3876.246	3149.146
Root Mean Square Error of Approximation (RMSEA)	0.059	0.055
Normed Fit Index (NFI)	0.935	0.936
Non-Normed Fit Index (NNFI)	0.953	0.956
Comparative Fit Index (CFI)	0.957	0.960
Root Mean Square Residual (RMR)	0.101	0.073
Standardized Root Mean Square Residual (SRMR)	0.085	0.065
Measurement Model Assessment (Squared Multiple Correlations for Structural Equations)		
Ability to Online Price Search (R^2)	0.628	0.566
Costs of Online Price Search (R^2)	0.349	0.508
Motivation to Online Price Search (R^2)	0.743	0.711
Online Price Search (R^2)	0.376	0.361

One change in the relationship of the exogenous variables was found. WWW shopping enthusiasm, which prior to modifications was found to have a non-significant negative effect on motivation ($\beta = -0.052$), now exhibited a significant negative link ($\beta = -0.177$), albeit a relatively weak one. A positive relationship had been predicted, based primarily on research using multiple focus groups that found price search was a regular practice for both hedonic and utilitarian online shoppers (Wolfenbarger & Gilly, 2001). This finding, however, did not translate into a relationship where hedonic online shoppers directly seek lower prices. Rather, it first must be acknowledged that finding lower prices, at best, can be only a side benefit for hedonic shoppers, who by definition primarily are seeking escape and distraction in their consumer behavior.

Ability to online price search was found to have a significant positive effect on motivation ($\beta = 0.422$) and a significant negative effect on costs ($\beta = -0.462$). Through its relationship to motivation and costs, ability had a total effect on price search of 0.375. Though the amount of variance accounted for in the ability structural model decreased (R^2 from 0.628 to 0.566), it remained at a respectable level. The amount of variance accounted for in the costs structural model increased (R^2 from 0.349 to 0.508). Costs also were found to have a significant direct negative link to online price search behavior ($\beta = -0.123$). In conjunction with its relationship to motivation, costs had a total effect of -0.341 on price search behavior. While the variance accounted for in the modified structural model for the mediating variables were all in a respectable range after modifications ($> .50$), no improvement was seen in structural model for online price search behavior. The amount of variance accounted for in the online price search structural model was virtually unchanged (R^2 from 0.376 to 0.361). Overall the modified

model should not be rejected, however, just over 60% of the variance in the structural model of online price search behavior remained unexplained. One should expect, therefore, that there are variables with explanatory power not specified in the initial or modified model.

Chapter 6

SUMMARY AND CONCLUSION

Introduction

This chapter first summarizes the research study, reviewing the project's objectives, design, and methods. It then presents an overview of the assessment of the measurement model, overall model fit, and structural model. A discussion of this research's contributions is then presented, followed by a report of its limitations. The dissertation concludes with an agenda for future research on the topic.

Objectives of the study

Price search is a particularly common prepurchase behavior among a substantial portion of online consumers. The proliferation and routinization of price search behavior among online buyers should be of critical concern to online sellers. Online sellers' pricing positions potentially are compromised in an electronic marketplace made extremely efficient through a population dominated by a breed of better-informed consumers. It follows from this perspective to envision destabilization effects ensuing as price search becomes a standard prepurchase practice among online consumers, and, in doing so, seeps seller incentive to participate in electronic commerce.

A more reasonable perspective, however, requires the acknowledgement that no marketplace operates with complete efficiency. The degree of price search behavior will continue to vary between online consumers. It is with an understanding of this variation

that online sellers, depending on their customer orientation, will be able to either facilitate this type of search or build business models and strategies that account and even compensate for this type of online consumer behavior.

How then can this variation be understood? There is a conspicuous lack of research specifically examining consumer online price search behavior. The research that does exist on the topic leans heavily on theories of reduced buyer search costs adapted from economics. Yet, a purely economic explanation appears inadequate. Online price search behavior clearly is facilitated through an electronic marketplace's ability to maximize access to product information, while minimizing the costs associated with acquiring this information. These costs, however, are never eliminated completely, regardless of their reduction relative to search costs in non-electronic marketplaces. Consumers' circumstances and characteristics also must be considered to generate a robust understanding of the determinants of the amount of price search that a consumer engages in prior to purchase in an electronic marketplace.

To contribute research in this area, this dissertation proposed and tested a causal model of the factors influencing consumer external price search behavior in an electronic marketplace. The theoretical model of consumer external information search proposed by Schmidt and Spreng (1996) was employed as a framework within which to specify the relationship between factors. In its specific adaptation of the mediating variable structure proposed by Schmidt and Spreng, the present model attempted empirical verification of a broad theoretical perspective on the online price search phenomena that combines search costs economics with both motivational and information processing theory. The use of a causal model also was viewed as an opportunity to assess the applicability of traditional

determinants of consumer search to an electronic shopping context and to test constructs believed uniquely salient to consumers search for lower prices in a computer mediated environment. The proposed model was operationalized and validated in the context of the WWW as it is currently the most pervasive consumer electronic marketplace.

Research Design

Select items from preexisting scales were adapted to the context of price search and internet shopping and used in combination with original items to form the basis for the construction of the survey research instrument. A pilot study was conducted to assess the validity of the indicators and the reliability of the scales used to measure the 15 latent variables in the proposed model. Using 127 student subjects, scales showed acceptable reliability.

For the main study, a total of 728 surveys were collected from qualified student participants, of which 587 were usable after data screening. Qualified participants had made at least one purchase through the WWW in the 3 months preceding survey administration. Almost half of participants (49%) indicated that they had compared prices online prior to their last WWW purchase. On average, members of this group compared 4 prices before making their purchase.

Method of Analysis

In a pilot study, confirmatory factor analysis, using the LISREL 8.5 statistical software package, was conducted to determine the validity of the scale items used to measure each construct. Scale reliability was assessed using Cronbach Alpha reliability coefficient and principal components analysis figures produced in the SPSS 11.0

statistical software package. Discriminant validity was assessed through an examination of the correlations between latent variables.

The two-step approach to model building was employed for the main study (Anderson & Gerbing, 1988; James et al., 1982). This process emphasizes the analysis of the measurement model before examination of the structural model and the overall model fit. To analyze the measurement model, as in the pilot study, indicator validity was assessed using confirmatory factor analysis. Scale reliability was assessed using Cronbach Alpha reliability coefficient and principal components analysis, and discriminant validity was assessed through an examination of the correlations between latent variables. Maximum Likelihood estimation in the LISREL 8.5 statistical program was used to fit the observed covariance matrix against the predicted covariance matrix in analysis of the measurement model, structural model, and overall model fit. Estimation of the proposed model adhered to the assumptions of the general LISREL model.

Summary of Main Study Results

Measurement Model Assessment

Assessment of the measurement model revealed that all indicators and their corresponding error variances were significant. Nine items were deleted because of weak single item factor loadings. As a result, the perception of budget constraints was measured using a single item. All multiple items scales were found to have sufficient reliability coefficient values. Unacceptably high correlations were found between price search and motivation and between benefits and motivation. These figures indicated multicollinearity between the scales.

The model's measurement and specification were revised to address issues of severe linear dependency between price search and motivation and between benefits and motivation. Online price search, which had been operationalized using a combination of behavior and tendency items, was measured instead using a single behavior oriented item that asked participants to indicate the number of prices they compared prior to their last WWW purchase. The correlation between online price search and motivation was dramatically reduced as a result of this procedure.

Through a closer examination of the relationship between benefits and motivation, it was realized that that when dealing with price search specifically, as opposed to information search in general, both reaping benefits and fulfilling goals (i.e., motivation) are rooted in the same product and predicated on achieving the same outcome (i.e., finding the lowest price). It appeared redundant, therefore, to view the benefits of and motivation to conduct online price search as separate constructs. The motivation construct, thus, was reconceptualized as inherently including benefits of price search as an implicit element of its composition. The initially proposed model, Figure 2.2, was respecified to reflect this new conceptualization, as presented in Figure 5.1.

Overall Model Fit Assessment

Collectively the overall fit statistics indicated that the model represented an adequate fit to the data, but also that there were areas of the model within which less than optimal specification existed. For example, the model's NFI (0.935), NNFI (0.953), and CFI (0.957) were encouraging indicators that the model overall fit the data well. Less encouraging values were found for the model's RMR (0.101) and standardized RMR

(0.085). Through an analysis of the results of the structural model, the areas in the model's specification responsible for these discrepancies were identified.

Structural Model Assessment

Before summarizing the results of the structural model, presented diagrammatically in Figure 5.2, a brief overview of the model's variables is provided. The causal model of price search behavior in an electronic marketplace has four latent endogenous variables and ten latent exogenous variables. The endogenous variables are: Online Price Search Behavior, Ability to Online Price Search, Motivation to Online Price Search, and Costs of Online Price Search. The exogenous variables are: Education, Subjective Knowledge of Internet Search, Perceived Time Pressure, Ease of Access to Online Information, Perceived Price Dispersion, Perceived Budget Constraints, Trust in WWW Sellers, Internet Involvement, Need for Cognition, and WWW Shopping Enthusiasm.

Empirically, nine of the 14 structural relationships proposed in the model were found to be statistically significant. Seven of these nine significant links were in the direction hypothesized.

From the information processing perspective, one would expect ability to have an effect on price search behavior. The direct effect, however, was not significant. Education did not show a significant influence on ability. Subjective knowledge of internet search, individuals' assessment of their general WWW search capability, did have a significant positive link to perceived ability to price search.

Motivation to online price search, derived from the social psychological/motivational perspective, was expected and did have a significant direct

positive effect on online price search. In rank order, the factors with significant direct links on motivation were: costs of online price search, perceived price dispersion, internet involvement, trust in WWW sellers, and need for cognition. WWW shopping enthusiasm and perceived budget constraints did not show significant effects on motivation.

Cost was the major determinant variable on motivation. Motivation was negatively influenced by costs. The direction of this relationship also is consistent with the costs vs. benefits framework, since motivation was conceptualized as possessing benefits as an intrinsic part of its composition. A sense of time constraints when shopping on the WWW was a strong positive influence on perceptions of the costs associated with online price search. This was contrasted by individuals' subjective knowledge of internet search, which had a negative effect on the perceived costs of online price search. Surprisingly, easy access to internet information showed no influence on perceived costs.

Perceived price dispersion, individuals' belief that prices noticeably vary between WWW sellers, was the strongest determinant on motivation after costs. While not as influential on motivation as costs, perceived price dispersion's effect was considerable. Individuals' internet involvement, the personally relevance of the internet in executing objectives and/or achieving goals, also had a positive influence on motivation. Contrary to expectations, neither need for cognition nor trust in WWW sellers positively affected motivation, and their negative influence was relatively weak. The variance accounted for in the structural models of ability ($R^2 = 0.628$), motivation ($R^2 = 0.743$), costs ($R^2 = 0.349$), and price search behavior ($R^2 = 0.376$) were all acceptable.

Model Modifications

To improve structural assessment values and global fit statistics, the model's specification was enhanced through modifications. Empirical results of the modified model's estimation are diagrammatically represented in Figure 5.3, and Table 5.21 compares results.

Four major modifications were made to the structural model. The path from ability to online price search behavior was eliminated because it was not found to be significant. Paths were specified from ability to motivation and from ability to costs. Costs were specified to affect price search directly.

The modified model represented an overall better fit to the data. The modified model's RMSEA (0.055), RMR (0.073), and standardized RMR (0.065) were all closer to the threshold value indicating a good model fit (0.05). A better fit to the data also was observed in the structural model. Ability to online price search was found to have a significant positive effect on motivation and a significant negative effect on costs. Costs also were found to have a significant direct negative link to online price search behavior. In addition, the amount of variance accounted for in the costs structural model increased (R^2 from 0.349 to 0.508). The amount of variance accounted for in the online price search structural model, however, was virtually unchanged (R^2 from 0.376 to 0.361).

The modified model of external price search behavior in an electronic marketplace was found to have moderate explanatory power. In addition, it contained considerable meaning with regards to the relationships between determinant variables. The modified model, therefore, was not rejected. Yet despite modifications, just over 60% of the variance in online price search behavior remained unexplained by the

structural model. Thus, as with the initial model, one should expect that there are variables with explanatory power not specified in the modified model.

Contributions of the Study

This study's empirical verification of a causal model that specifically focused on online price search is, in itself, a contribution toward a more complete understanding of online consumer behavior. Prepurchase price search is a common behavior among a considerable portion of online consumers. Previous research, however, has generally taken a broader perspective, looking more at online information search than price search in particular.

Much of consumer search research has focused on bivariate relationships, which have not proven robust when tested simultaneously that this deficiency has been described as a pressing research need (Wilkie & Dickson, 1991). This study advances our knowledge of the search process through its structural explanation of the relationships of different search determinants as they work concomitantly. For example, it had been hypothesized, consistent with bivariate search research, that ability would have a positive direct effect on online price search. While a significant bivariate relationship was found, the link was not significant in the presence of motivation, thereby leading to the conclusion, supported in multivariate search research (Srinivasan, 1987), that ability's effect on search is indirect. Likewise, the influence of subjective knowledge on search was not direct, but rather completely mediated through ability. Another example is the finding that perceived price dispersion had a strong affect on motivation to online price search. With exception (Urbany et al., 1996), there had been generally weak support for

this part of the classic information economics theory (Claxton et al., 1974; Duncan & Olshavsky, 1982; Goldman & Johansson, 1978).

This study also has empirically verified a theoretically integrated causal model of consumer online price search behavior. In this regard, it has extended online search research beyond its typical focus on search costs economics. Employing the mediating variable framework proposed by Schmidt and Spreng (1996) as its base, the model has unified theoretical perspectives and determinants from economics, social psychology/motivation, and cognitive psychology/information processing.

This study's contributions also include the testing of the applicability of numerous determinants found to influence consumer search in non-electronic markets (e.g., perceived time pressure). In addition, a number of factors unique to an electronic shopping environment (e.g., ease of access to online information) that had been expected to influence consumer online price search were found to have weak, counter intuitive, and/or no effect.

Marketing practitioners and online sellers may find the model to be useful in efforts to design promotional campaigns and WWW sites. Sellers and marketers of sites that have value-pricing strategies should design their sites to facilitate search for price information, given time limitations' influence on the costs associated with search, and in turn, costs strong negative effect on the motivation of comparison-price shoppers. In promoting their site, value-leader marketers should highlight the price dispersion in the online marketplace for their particular product(s), since comparison-price shoppers are highly motivated to search when they believed that prices varied considerably between sellers.

Limitations of the Study

As with all scientific endeavors, this study contains a number of limitations. This study employed survey method for data collection. Some memory bias, therefore, exists in the data, since it was collected post-hoc up to three months after a WWW purchasing experience. Speculation on the extent of this effect is impossible. However, it should be noted that 70% of participants had made their last purchase in the 8 weeks preceding survey completion, 44% had made their last purchase in the 4 weeks preceding, and 23% had made their last purchase in the 2 weeks preceding. This was considered encouraging news for the recall reliability of participants (49%) who indicated that they had compared prices online prior to their last WWW purchase.

This study used a convenience sample of students from a large Midwestern university. While the use of a convenience sample was suitable for this study's exploratory tests of the model's structure, it would be inappropriate to generalize the results to the entire online consumer population. Further, the use of a student sample composed heavily of undergraduate students undoubtedly had some influence on the results, since this group was composed principally of individuals 18 to 23 years old. A representative sample likely would produce some differences in the model's structure. For example, using a student sample, education had no effect on perceived ability to online price search. A probability sample of typical consumers with more variance, it is suspected, would yield the predicted result. That said, given the continued diffusion of the WWW into the workplace, home, and all levels of education, regular access and use of the WWW may be increasingly a more revealing variable than education in assessing consumers' ability to search for lower prices. The typical time constraints on adults with

families should be expected to manifest itself in the perceived time pressure construct, and the strength of the relationship of time constraints on costs, therefore, should be expected to increase. Likewise, the financial pressures of adults with families may appear, through the perceived budget constraints construct, to act as a strong motivator of online price search, though it did not show a significant effect on motivation in tests using the present student sample.

The use of a large sample size reduces the possibility that the results are a capitalization on chance. However, it is only through further development and verification of the model's measurement and structural components that more definitive conclusions can be drawn with regard to this point.

While there was limited variance in the sample's age, there was considerable variance with regard to the types of products participants purchased prior to their online price search. This heterogeneity in products resulted from the qualification of participants based on their last WWW purchase, regardless of its product class. The use of a non-product specific model surely affected its structure, and thus, the application of the model to a single product class should be expected to produce varying results. For example, if the model were to be tested against a class of products for which purchase requires significant financial expenditure (e.g., computers), one might expect that trust in WWW sellers would exhibit a strong role in the price search phenomena, whereas it now shows little effect.

This study also would have benefited from improved construct operationalizations to reduce those instances where the correlations between constructs were exceptionally high, particularly with regard to the mediating variables in the model. The construct

values obtained in the current study, while not precluding model estimation, generated a less than optimal measurement model. As was suggested previously, the strong linear dependency between the various aspects of price search (e.g., ability and motivation) may also suggest that the differences in these facets have relationships of extreme subtlety. In addition to more distinct operationalizations, one might consider, therefore, a more sensitive measurement technique, since a method requiring individuals to consciously differentiate between these aspects (i.e., survey) may not be precise enough. This question remains unexplained in this study.

Future Research Directions

The model of online price search behavior appears to contain moderate explanatory power on the whole and richness in meaning with regard to the structural relationships between determinant variables. A considerable amount of the variance in online price search remained unexplained by the model (62%). There are, therefore, factors not specified in the model with influence on consumer online price search behavior. Further speculation on the origins of these determinants and empirical verification of these factors is necessary to build a fuller understanding of this critical phenomenon. A broader perspective on factors influencing price search unique to a computer mediated shopping environment may lend direction to this effort. This research may need to be exploratory in nature and also may be conducted best from a qualitative orientation. This qualitative approach might include focus groups and/or observations of individuals who can be identified as possessing a propensity toward online comparison-price shopping. Additionally, future research should consider the use of experimental methods to study the model's structure and the online price search phenomenon. The use

of an experimental online shopping environment would be optimal for assessment of certain constructs, for example, ability to online price search.

Having been tested against a convenience sample of students, the model's external validity remains unknown. The model, therefore, now should be examined against a sample of actual online purchasers.

In addition to determining the model's external validity, the use of an actual online consumer sample would be an opportunity to improve the reliability of a number of measures, if the time lag between the shopping incident under question and study participation could be minimized. Ideally, participation should be sought and obtained immediately following an individual's WWW purchase. In such circumstances, the recall reliability of participants' prepurchase online price search behavior could be assessed as very high.

Measurement of time pressure, ease of access to online information, and WWW shopping enthusiasm also would be improved dramatically. In the current model, perceived time pressure was conceptualized as a measure of individuals' general sense of time scarcity when shopping online, and it was found to make significant contributions to individuals' sense of the costs associated with online price search. Using an actual consumer sample shortly following a WWW purchase, time pressure could be tested as it relates to the specific purchasing incident under study.

There also would be improvements in the accuracy of measures assessing the online shopping location (e.g., home vs. work) and internet access speed. Though ease of access to online information (i.e., access speed) was not found to have a significant effect on perceived costs of online price search, there remains a strong belief that access speed,

by way of its relationship to time, is related to costs. In exploring internet access speed, there also is an opportunity to begin answering burgeoning questions regarding the effects of broadband connections on the behavior of online consumers. Dial-up internet connection currently dominates US households, but broadband (e.g., DSL and cable) continues a steady pace of diffusion. The effect of high-speed access to electronic markets is an issue researchers of online consumer behavior are already contemplating. Objective measures of WWW access ease, for example actual speed of home WWW connection and processing speed of home computer at the time of purchase, are an alternative operationalization that might be considered for this construct in subsequent related research.

Questioning shoppers shortly following WWW purchase also would allow for assessments of the extent to which the shopping incident was directed toward a specific product, brand, and/or model or was part of a general tendency toward enthusiastic browsing behavior. Any prepurchase online price search behavior then might be understood in terms of it being intentional vs. incidental. Subsequent related research should adopt measures that tap into price search as a secondary or tertiary goal of hedonic online shoppers. In this manner, there could be better representation and verification of the relationships suggested in the findings of Wolfinbarger and Gilly (2001), in which price search was found to be a factor involved in the browsing behavior of WWW shopping enthusiasts.

The use of interactive technology makes it possible to obtain study participants shortly following or immediately after their WWW purchase. Timing of this type, however, clearly requires, the partnering with and approval of an online seller(s), and

therefore, the likely focus of the model on a specific type of product class. The model of consumer online price search was conceptualized as a general model. Given its general orientation, it is expected that the model possess broad applicability to specific product classes. The model's replication across multiple product classes would increase its validity. An area of interest left uncharted in this research is the affect of online purchase price and frequency on the structure of the model. For example, how varied are the factors influencing online price search between less expensive more regularly purchased items (e.g., books) vs. more expensive less frequently purchased items (e.g., computers)? Future research also easily might compare the model's structure when tested against products that vary in purchase involvement (i.e., high vs. low) or goods that differ in orientation (e.g., search vs. experience or commodity vs. differentiated).

In specifying a product class against which to test the model, future research also might consider the influence of the online marketplace structure of different types of merchandises. That is to say, that depending on the type of product class under study, one likely will find variance in the number of viable vendors. An electronic marketplace in which there are many sellers may have effects on actual price dispersion and/or consumer perception of price variability. One also might expect effects on the time online consumers spend in price search, and also thus the costs of their search, depending on the differing size of the online market for a given product class. Still deeper analysis of specific product class' online market structure and their effects on online price search might consider the role of the varying number of well known and branded sites. Future research applying the model to specific product classes also would be keen to keep in mind the association between time and price with particular products (e.g., airline

tickets). This is yet another type of market structure with likely effects on online price search behavior.

While this model brought empirical verification to a theoretically integrated perspective of the online price search phenomenon, unifying the economic and marketing approaches to consumer search, it remain unknown which perspective possesses the strongest explanatory power. The model's structure is based principally on research investigating information search that was adapted to study price search specifically. As was revealed in the extremely close association between consumers' perceptions of benefits and motivations to price search, when considering price search specifically, as opposed to information search in general, this behavior has a distinct economic orientation. This appears fact, despite motivation to online price search demonstrating the strongest influence on search behavior. Future research, therefore, should consider splitting the model into its economics and psychological components. The two resulting models then could be compared for their ability to explain online price search, and definitive conclusions could be drawn.

There are, in fact, many enhancement and extensions to the current model that would further knowledge of consumer external price search behavior in an electronic marketplace. It is a topic that deserves the serious attention of researchers seeking to fully understand this new and unique consumer distribution channel, currently made available through the mass diffusion of the WWW. While online purchasing only accounts for a small portion of total US retail sales, this figure is growing as consumer use and facility with online shopping increases. One wonders, in closing, how might price search in non-electronic markets change as consumers, increasing keen to the

advantages of shopping in an electronic marketplace, become aware and then accustomed to **shopping** with vast information? Indeed, there remain many questions with regard to the **development** of the WWW as a vast electronic marketplace and the consequences of such **technology** on our consumer oriented society. This study has attempted to **contribute** to our understanding by answering only but a portion of these questions.

APPENDIXES

APPENDIX A

APPENDIX A

PILOT RESEARCH INSTRUMENT

CONSENT FORM

Thank **you** for your voluntary participation in completing this questionnaire.

To **participate** in this study you must:

1. **Be an undergraduate or graduate student at Michigan State University**
2. **Be over 18 years old**
3. **Have purchased at least one item on the world-wide-web in the past three months**

The **researcher** of this study, which is titled A Model of Consumer External Price Search Behavior in an Electronic Marketplace (World-Wide-Web), is conducting this survey in order to understand what factors influence a consumer's search for lower prices when shopping on the world-wide-web.

Voluntary completion of this questionnaire will take approximately a half an hour. If at any time you feel **unable or unwilling** to complete the questionnaire, please feel free to stop.

All **qualified** participants are automatically entered into a drawing for a \$100 cash prize. The winner will be **notified** by phone. Please remember to include your name, phone number, and email address at the end of the **questionnaire** for notification purposes. The prize will be drawn upon full completion of the data.

In certain cases, for your participation, you may also receive extra credit points as determined by your **instructor**. In such cases, upon completion your name will be submitted to the instructor of your **course** to receive extra credit points.

Other **than** in those cases where your name will be submitted to the instructor of your course to receive extra **credit** points, your name, phone number, and e-mail address will not be distributed. All information regarding **participants** will remain confidential. Any information that you provide and the data collected from the **questionnaire** will be kept in the strictest confidentiality. Your privacy will be protected to the **maximum** extent allowable by law.

In **addition**, we will not identify any individual who participates in this survey by name, phone number or email in **any** report or publication. You are also given the option to decline to answer any question at any time. **If you** have any questions or concerns about the study you may contact James Ramos at ramosjam@msu.edu or (517) 372-8095, or Dr. Charles Salmon, Senior Associate Dean, College of Communication at salmon@msu.edu or (517) 355-3410.

If you **have** any questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with **any** aspect of this study, you may contact – anonymously, if you wish - Dr. Ashir Kumar, Chair of the **University** Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 353-2976, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

By **signing** and dating this page, you indicate your voluntary agreement to participate in this study.

Signature _____ Date _____

Print Name _____

You will be asked to indicate the time you start and finish this questionnaire. It is of great interest to us to assess the time it takes to complete this entire questionnaire. Therefore we kindly request that once you begin the questionnaire you complete it without taking any breaks.

Please do not forget to provide us with your name, telephone number, and email address at the end of the survey so that we may notify you if you win a prize.

Thank you.

Start time: _____

The follow questions are related to shopping and the world-wide-web and the prices you paid for items. When asked about price, this means the total cost of an item, including for example, any tax or shipping and handling fees. There are no right or wrong answers to the following questions and people's answers vary widely. Kindly indicate your personal opinion by circling any one number. In all the questions below, do not include any purchases from auction websites like eBay.

1) Have you made at least one purchase on the world-wide-web in the past three months, not including any purchases from auction websites like eBay?

(1)
Yes

(2)
No

(Got to Question 85)

2) How often do you purchase items on the world-wide-web (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Once a year or less	Once every six months	Once every three months	Once every two months	Once a month	Once every two to three weeks	Once a week or more

3) How many individual items have you purchased on the world-wide-web in the past three months (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-2 items	3-5 items	6-10 items	11-15 items	15-19 items	20-25 items	25+ items

4) How much have you spent buying items on the world-wide-web in the past three months (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
\$1 - \$49	\$50 - \$99	\$100 - \$199	\$200 - \$499	\$500 - \$999	\$1,000 - \$2,500	\$2,500+

We would like you to take a minute and think back to the last time you bought something on the world-wide-web (not including any purchases from auction websites like eBay). Thinking back on that particular world-wide-web shopping experience, please respond to the following questions. Again, there are no right or wrong answers. Kindly indicate your personal opinion by circling any one answer. Thank you.

5) When was the last time you purchased an item on the world-wide-web (not including any purchases from auction websites like eBay)?

- | | | | | |
|---------------------------------|----------------------------------|---------------------------------|-----------------------------------|------------------------------------|
| (1) | (2) | (3) | (4) | (5) |
| Within the
past two
weeks | Within the
past four
weeks | Within the
past six
weeks | Within the
past eight
weeks | Within the
past three
months |

6) What exactly did you purchase? (Please check the appropriate box)

- ☐ Item, please specify: _____
- ☐ Prefer not to specify
- ☐ Cannot remember the exact item (Go to Question 14)

7) Under what category would you classify your last purchase? (Please check the appropriate box)

- ☐ Travel (Airline Tickets)
- ☐ Travel (Not including airline tickets)
- ☐ Books
- ☐ Movies (DVD's, VHS, etc.)
- ☐ Music (CD's, Tapes, etc.)
- ☐ Car accessories
- ☐ Clothing and accessories
- ☐ Computer hardware
- ☐ Computer software
- ☐ Consumer electronics
- ☐ Electronic games
- ☐ Event tickets (for music concerts, sporting events, or cultural events)
- ☐ Flowers
- ☐ Health and beauty
- ☐ Home and garden
- ☐ Office related products
- ☐ Sporting goods
- ☐ Other, prefer not to specify
- ☐ Other, please specify _____

How much do you know about the category you indicated in Question 7?

		Strongly Disagree				Strongly Agree		
8)	I know more about <u>the category indicated in Question 7</u> than most people.	1	2	3	4	5	6	7
9)	Among my circle of friends, I'm one of the "experts" on <u>the category indicated in Question 7</u> .	1	2	3	4	5	6	7
10)	I feel very knowledgeable about <u>the category indicated in Question 7</u> .	1	2	3	4	5	6	7

Please consider the category indicated in Question 7. To you this category of products is:

- 11) Unimportant 1 2 3 4 5 6 7 Important
- 12) Means nothing to me 1 2 3 4 5 6 7 Means a lot to me
- 13) Irrelevant 1 2 3 4 5 6 7 Relevant

14) Did you purchase this item for yourself or for another person?

- (1) (2)
- Myself Another person or group

15) Please think about the web retailer from which you made your last web purchase. Before making your last purchase from this web retailer, had you ever bought something from this website?

- (1) (2) (3)
- Yes No Do not recall
- (Go to Question 17) (Go to Question 17)

16) What influenced your decision to buy from this web retailer again?

- (Please circle all that apply)
- (1) (2) (3) (4)
- Satisfaction Felt it was Did not want to Knew they sold
- with previous a fair price shop around what you
- transaction(s) wanted to buy

17) Approximately how much did you pay for your last purchase on the world-wide-web?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Less than \$25	\$25 - \$49	\$50 - \$99	\$100 - \$199	\$200 - \$499	\$500 - \$999	\$1,000+

18) Before making your last purchase on the web, did you compare different prices on the web? (Comparing prices could involve visiting more than one web retailer or using a shop-bot website, like mysimon.com)

(1)	(2)	(3)
Yes — I compared prices before buying	No — I did not compared prices before buying (Go to Question 20)	Do not recall (Go to Question 20)

19) How many prices did you compare on the web before making your last purchase on the world-wide-web? (Please check the appropriate box)

☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8+

20) Do you own a computer with access to the world-wide-web?

(1)	(2)
Yes	No

21) How often do you access the world-wide-web?

Never 1 2 3 4 5 6 7 Everyday

22) How often do you access the world-wide-web to search for information?

Never 1 2 3 4 5 6 7 Everyday

23) From what location do you access the world-wide-web the most?

- | | | | | | |
|-----------|----------------|---------------|------------------------------------|----------------|-------|
| (1) | (2) | (3) | (4) | (5) | (6) |
| Your home | Your workplace | Friend's home | University computer lab or library | Public library | Other |

24) From what location do you do most of your shopping on the world-wide-web?

- | | | | | | |
|-----------|----------------|---------------|------------------------------------|----------------|-------|
| (1) | (2) | (3) | (4) | (5) | (6) |
| Your home | Your workplace | Friend's home | University computer lab or library | Public library | Other |

Please think about the location from where you do most of your shopping on the world-wide-web when answering the following question.

The speed at which web pages load from this location is:

- | | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------|
| 25) Intolerable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Tolerable |
| 26) Unsatisfactory | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Satisfactory |
| 27) Slow | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Fast |

Please describe your ability to search for lower prices when shopping on the world-wide-web:

- | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|-----------------------------|
| 28) Low | 1 | 2 | 3 | 4 | 5 | 6 | 7 | High |
| 29) Inadequate | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Superior |
| 30) Weak | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Strong |
| 31) Incapable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Capable |
| 32) Not confident in my ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Confident in my ability |
| 33) Uncomfortable with my ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Comfortable with my ability |

To me the world-wide-web is:

- | | | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|-------------------|
| 34) Unimportant | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Important |
| 35) Means nothing to me | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Means a lot to me |
| 36) Irrelevant | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Relevant |
| 37) Worthless | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Valuable |
| 38) Not needed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Needed |

The statements that follow concern activities, interests, and opinions related to shopping on the world-wide-web. There are no right or wrong answers to the following statements and people agree and disagree. Kindly indicate your personal opinion by circling any one number for each statement from 1 (Strongly Disagree) to 7 (Strongly Agree).

		Strongly Disagree				Strongly Agree		
39)	When shopping on the world-wide-web, “Never buy the first one you look at” is a good motto.	1	2	3	4	5	6	7
40)	When shopping on the world-wide-web, I am willing to go to extra effort to find lower prices.	1	2	3	4	5	6	7
41)	I make it a rule to visit more than one web retailer or use a shop-bot to compare prices before I buy on the world-wide-web.	1	2	3	4	5	6	7
42)	I would never shop at more than one web site just to find low prices before I buy on the world-wide-web.	1	2	3	4	5	6	7
43)	When shopping on the world-wide-web, I often compare the prices at more than one web retailer before deciding where to buy from.	1	2	3	4	5	6	7
44)	I feel very knowledgeable about searching for information on the world-wide-web,	1	2	3	4	5	6	7
45)	Among my circle of friends, I’m one of the “experts” on searching for information on the world-wide-web.	1	2	3	4	5	6	7
46)	I know how to search for information on the world-wide-web.	1	2	3	4	5	6	7
47)	I know more about searching for information on the world-wide-web than most people,	1	2	3	4	5	6	7
48)	It is important for me to get the best price when shopping on the world-wide-web.	1	2	3	4	5	6	7
49)	It really doesn’t occur to me to search for lower prices when shopping on the world-wide-web.	1	2	3	4	5	6	7
50)	I am motivated to search for lower prices when shopping on the world-wide-web.	1	2	3	4	5	6	7
51)	I am enthusiastic about searching for lower prices when shopping on the world-wide-web.	1	2	3	4	5	6	7
52)	I feel driven to find the best price, when shopping on the world-wide-web.	1	2	3	4	5	6	7

		Strongly Disagree				Strongly Agree		
53)	I really want to find the best prices, when shopping on the world-wide-web.	1	2	3	4	5	6	7
54)	The notion of thinking abstractly is appealing to me.	1	2	3	4	5	6	7
55)	Thinking is not my idea of fun.	1	2	3	4	5	6	7
56)	I prefer my life to be filled with puzzles that I must solve.	1	2	3	4	5	6	7
57)	I only think as hard as I have to.	1	2	3	4	5	6	7
58)	Learning new ways to think doesn't excite me too much.	1	2	3	4	5	6	7
59)	Shopping on the world-wide-web feels like an escape.	1	2	3	4	5	6	7
60)	Compared to other things I could do, the time spent shopping on the world-wide-web is truly enjoyable.	1	2	3	4	5	6	7
61)	I enjoy shopping on the world-wide-web for its own sake, not just for the items I may purchase.	1	2	3	4	5	6	7
62)	By searching around on the world-wide-web for price information, I am certain of making the best buy.	1	2	3	4	5	6	7
63)	It doesn't pay to shop around before buying on the world-wide-web.	1	2	3	4	5	6	7
64)	Shopping around at more than one web site helps me to find the lowest price.	1	2	3	4	5	6	7
65)	When shopping on the world-wide-web, there is too much to lose by being ignorant about prices.	1	2	3	4	5	6	7
66)	By rushing into a purchase when shopping on the world-wide-web, one is bound to miss a good deal.	1	2	3	4	5	6	7
67)	Some web sites have prices that are much lower than others.	1	2	3	4	5	6	7
68)	Prices of individual items may vary between web sites, but overall, there isn't much difference in the prices between web sites.	1	2	3	4	5	6	7

		Strongly Disagree				Strongly Agree		
69)	The price of individual items often varies a lot between web sites.	1	2	3	4	5	6	7
70)	I frequently have problems staying within my budget.	1	2	3	4	5	6	7
71)	My budget is always tight.	1	2	3	4	5	6	7
72)	I often have to spend more money than I have available.	1	2	3	4	5	6	7
73)	I would buy from a web site I never heard of before.	1	2	3	4	5	6	7
74)	I am not concerned about a potential financial loss when buying from a web retailer I never heard of before,.	1	2	3	4	5	6	7
75)	I don't consider it risky to buy from a web site I have never heard of before.	1	2	3	4	5	6	7
76)	When shopping on the world-wide-web, it feels like a chore to search for lower prices.	1	2	3	4	5	6	7
77)	When shopping on the world-wide-web, I feel it is a large sacrifice of time to search for lower prices.	1	2	3	4	5	6	7
78)	When shopping on the world-wide-web, I usually don't have the patience to search for lower prices.	1	2	3	4	5	6	7
79)	When shopping on the world-wide-web, it takes too much effort to find lower prices.	1	2	3	4	5	6	7
80)	When shopping on the world-wide-web, I hate spending time to gather information on products.	1	2	3	4	5	6	7
81)	When I shop on the world-wide-web, I find myself pressed for time.	1	2	3	4	5	6	7
82)	When I shop on the world-wide-web, I have more than enough time to complete my shopping.	1	2	3	4	5	6	7
83)	When I shop on the world-wide-web, I finish my shopping fast because I have other things to do.	1	2	3	4	5	6	7
84)	I know exactly where on the web to begin any search for information.	1	2	3	4	5	6	7

Finally, we would like to ask you some information about you and your family members for classification purposes only.

Please answer each question by circling the appropriate response.

85) Your sex:

- Female
- Male

86) Your age _____

87) Number of years of formal education you have completed

13	:	14	:	15	:	16	:	17	:	18	:	≥19	
						Undergraduate							Graduate

88) Are you currently employed?

- No
- Yes

89) What is your current individual annual income?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
\$0 (Not employed)	Less than \$10,000	\$10,000 - \$19,999	\$20,000 - \$29,999	\$30,000 - \$39,999	\$40,000 - \$49,999	\$50,000+

90) What is the current income of your household (or family income)?

(1)	(2)	(3)	(4)	(5)	(6)
Less than \$10,000	\$10,000 - \$19,999	\$20,000 - \$29,999	\$30,000 - \$39,999	\$40,000 - \$49,999	\$50,000 - \$59,999
(7)	(8)	(9)	(10)	(11)	(12)
\$60,000 - \$69,999	\$70,000 - \$79,999	\$80,000 - \$89,999	\$90,000 - \$99,999	\$100,000+	Not sure

Finish time: _____

Please do not forget to provide us with your name, telephone number, and email address on the following page so that we may notify you if you win a prize.

THANK YOU VERY MUCH FOR YOUR TIME

PLEASE CHECK TO MAKE SURE YOU HAVE ANSWERED ALL OF THE QUESTIONS
COMPLETELY

Please provide us with your name, telephone number, and email so that we may notify you if you win a prize.

Name _____
Telephone number _____
Email _____

If you are taking this survey for class credit, please provide us with the class name, number, and section and the name of the professor so that we might notify them of your participation

Class name _____
Class number _____
Class section _____
Professor's name _____

Please feel free to use the space below to comment on any part of this questionnaire. Any and all comments you may make are greatly appreciated. They will help future versions of this survey. Thank you again.

Construct Question Key

R = Reversed

R = Question un-reversed

Q#	Construct/Control	Rvsd
1	Participation qualifying question	
2	Frequency of web purchases	
3	Web shopping in past three months	
4	Web shopping in past three months	
5	When last purchase	
6	Item last purchased	
7	Product category of last purchase	
8	Subjective knowledge of product class (last purchase)	
9	Subjective knowledge of product class	
10	Subjective knowledge of product class	
11	Enduring involvement with product class (last purchase)	
12	Enduring involvement with product class	
13	Enduring involvement with product class	
14	Personal purchase (last purchase)	
15	Latest buy is a repeat purchase	
16	Possible reasons for repeat purchase	
17	Price of last purchase	
18	Price comparison before last purchase (Y/N)	
19	Number of prices compared (specific search behavior)	
20	Objective knowledge of internet search	
21	Objective knowledge of internet search	
22	Objective knowledge of internet search	
23	Ease of access to online information	
24	Ease of access to online information	
25	Ease of access to online information	
26	Ease of access to online information	
27	Ease of access to online information	R
28	Ability to online price search	
29	Ability to online price search	R
30	Ability to online price search	
31	Ability to online price search	
32	Ability to online price search	
33	Ability to online price search	
34	Internet involvement	R
35	Internet involvement	
36	Internet involvement	
37	Internet involvement	
38	Internet involvement	R
39	Online price search (general tendency)	

40	Online price search	R
41	Online price search	
42	Online price search	R
43	Online price search	
44	Subjective knowledge of internet search	
45	Subjective knowledge of internet search	
46	Subjective knowledge of internet search	
47	Subjective knowledge of internet search	R
48	Motivation to online price search	
49	Motivation to online price search	R
50	Motivation to online price search	
51	Motivation to online price search	
52	Motivation to online price search	
53	Motivation to online price search	
54	Need for cognition	
55	Need for cognition	R
56	Need for cognition	
57	Need for cognition	R
58	Need for cognition	R
59	WWW shopping enthusiasm	
60	WWW shopping enthusiasm	
61	WWW shopping enthusiasm	
62	Benefits of online price search	
63	Benefits of online price search	R
64	Benefits of online price search	
65	Benefits of online price search	
66	Benefits of online price search	
67	Perceived price dispersion	
68	Perceived price dispersion	R
69	Perceived price dispersion	
70	Budget constraints	
71	Budget constraints	
72	Budget constraints	
73	Trust in WWW sellers	
74	Trust in WWW sellers	R
75	Trust in WWW sellers	
76	Costs of online price search	
77	Costs of online price search	
78	Costs of online price search	
79	Costs of online price search	R
80	Costs of online price search	
81	Time pressure	
82	Time pressure	R
83	Time pressure	
84	Objective knowledge of internet search	

85	Sex	
86	Age	
87	Education	
88	Currently employed	
89	Individual income	
90	Household income	

APPENDIX B

APPENDIX B

MODIFICATIONS TO PILOT RESEARCH INSTRUMENT

Ability to Online Price Search

<u>Pilot Statement</u>	<u>Finalized Statement</u>
Please describe your ability to search for lower prices when shopping on the world-wide-web:	
1. Low vs. High	When it comes to searching for lower prices on the world-wide-web, I am an expert.
2. Inadequate vs. Superior	Searching for lower prices on the world-wide-web is something I can do with great ease.
3. Weak vs. Strong	When it comes to searching for lower prices on the world-wide-web, I am better at it than most people.
4. Incapable vs. Capable	When I shop on the world-wide-web, I have superior techniques for locating lower prices.
5. Not confident in my ability vs. Confident in my ability	I am extremely effective at locating lower prices when I search for them on the world-wide-web.
6. Uncomfortable with my ability vs. Comfortable with my ability	I am very confident in my ability to search for lower prices on the world-wide-web.

Benefits of Online Price Search

<u>Pilot Statement</u>	<u>Finalized Statement</u>
1. By searching around on the world-wide-web for price information, I am certain of making the best buy.	When shopping on the world-wide-web, I am certain of making the best buy by searching around for price information.
2. It doesn't pay to shop around before buying on the world-wide-web. (R)	It pays to shop around before buying on the world-wide-web.
3. Shopping around at more than one web site helps me to find the lowest price.	Not modified
4. When shopping on the world-wide-web, there is too much to lose by being ignorant about prices.	Not modified
5. By rushing into a purchase when shopping on the world-wide-web, one is bound to miss a good deal.	When shopping on the world-wide-web, one is bound to miss a good deal by rushing into a purchase.
6.	Before buying on the world-wide-web, a person can save a lot of money if they compare prices from different websites.
7.	Before buying on the world-wide-web, there are definite benefits to comparing the prices at different websites.

Costs of Online Price Search

<u>Pilot Statement</u>	<u>Finalized Statement</u>
1. When shopping on the world-wide-web, it feels like a chore to search for lower prices.	Not modified
2. When shopping on the world-wide-web, I feel it is a large sacrifice of time to search for lower prices.	Not modified
3. When shopping on the world-wide-web, I usually don't have the patience to search for lower prices.	Not modified
4. When shopping on the world-wide-web, it takes too much effort to find lower prices.	Not modified
5. When shopping on the world-wide-web, I hate spending time to gather information on products.	Not modified

Ease of Access to Online Information

<u>Pilot Statement</u>	<u>Finalized Statement</u>
Please think about the location from where you do most of your shopping on the world-wide-web when answering the following question. The speed at which web pages load from this location is:	
1. Intolerable vs. Tolerable	The speed at which web pages load on the computer where I do most of my web shopping is tolerable.
2. Unsatisfactory vs. Satisfactory	I am completely satisfied with the speed at which web pages load on the computer where I do most of my web shopping.
3. Slow vs. Fast	Web pages load quickly on the computer where I do most of my web shopping.

Internet Involvement

<u>Pilot Statement</u>	<u>Finalized Statement</u>
To me the world-wide-web is:	
1. Unimportant vs. Important	The world-wide-web plays an extremely important role in my life.
2. Mean nothing to me vs. Means a lot to me	It means a lot to me to have daily access to the world-wide-web.
3. Irrelevant vs. Relevant	The world-wide-web is a very valuable tool in my life.
4. Worthless vs. Valuable	The world-wide-web is a relevant part of my daily life.
5. Not needed vs. Needed	I need the world-wide-web.
6.	The day isn't complete unless I have used the world-wide-web.
7.	Daily access to the world-wide-web is something I could not live without.
8.	I feel like I use the world-wide-web for everything.

Motivation to Online Search

Pilot Statement	Finalized Statement
1. It is important for me to get the best price when shopping on the world-wide-web.	When I shop on the world-wide-web, it is important for me to get the best price.
2. It really doesn't occur to me to search for lower prices when shopping on the world-wide-web. (R)	When I shop on the world-wide-web, it really doesn't occur to me to search for lower prices. (R)
3. I am motivated to search for lower prices when shopping on the world-wide-web.	When I shop on the world-wide-web, I am motivated to search for lower prices.
4. I am enthusiastic about searching for lower prices when shopping on the world-wide-web.	When I shop on the world-wide-web, I am enthusiastic about searching for lower prices.
5. I feel driven to find the best price, when shopping on the world-wide-web.	When I shop on the world-wide-web, I feel driven to find the best price.
6. I really want to find the best prices, when shopping on the world-wide-web.	When I shop on the world-wide-web, I really want to find the best prices.

Need for Cognition

Pilot Statement	Finalized Statement
1. The notion of thinking abstractly is appealing to me.	Not modified
2. Thinking is not my idea of fun. (R)	Not modified
3. I prefer my life to be filled with puzzles that I must solve.	Not modified
4. I only think as hard as I have to. (R)	Not modified
5. Learning new ways to think doesn't excite me too much. (R)	Not modified
6.	I would rather do something that requires little thought than something that is sure to challenge my thinking. (R)
7.	It's enough for me that something gets the job done: I don't care how or why it works. (R)

Online Price Search

<u>Pilot Statement</u>	<u>Finalized Statement</u>
1. How many prices did you compare on the web before making your last purchase on the world-wide-web?	Not modified
2. When shopping on the world-wide-web, "Never buy the first one you look at" is a good motto.	Not modified
3. When shopping on the world-wide-web, I am willing to go to extra effort to find lower prices.	Not modified
4. I make it a rule to visit more than one web retailer or use a shop-bot to compare prices before I buy on the world-wide-web.	Before I buy on the world-wide-web, I make it a rule to compare the prices of different web sites.
5. I would never shop at more than one web site just to find low prices before I buy on the world-wide-web. (R)	I would not buy anything on the world-wide-web without first comparing the price at another web site.
6. When shopping on the world-wide-web, I often compare the prices at more than one web retailer before deciding where to buy from.	When I shop on the world-wide-web, I often compare the prices between web site before deciding whom to buy from.

Perceived Budget Constraints

<u>Pilot Statement</u>	<u>Finalized Statement</u>
1. I frequently have problems staying within my budget.	I frequently have problems only spending what I am suppose to for the week.
2. My budget is always tight.	My spending budget is usually tight.
3. I often have to spend more money than I have available.	I often feel I have to spend more money than I have available.
4.	I don't usually feel like I have enough money to spend during the week.

Perceived Price Dispersion

Pilot Statement	Finalized Statement
1. Some web sites have prices that are much lower than others.	No matter what I am shopping for on the world-wide-web, I believe that some web site is selling it at a much lower price than others.
2. Prices of individual items may vary between web sites, but overall, there isn't much difference in the prices between web sites. (R)	When shopping on the world-wide-web, one should expect the price of an item to really differ between web sites.
3. The price of individual items often varies a lot between web sites.	For almost any item one can purchase on the world-wide-web, the price often varies a lot between web sites.

Perceived Time Pressure

Pilot Statement	Finalized Statement
1. When I shop on the world-wide-web, I find myself pressed for time.	Not modified
2. When I shop on the world-wide-web, I have more than enough time to complete my shopping. (R)	Not modified
3. When I shop on the world-wide-web, I finish my shopping fast because I have other things to do.	Not modified
4.	When I shop on the world-wide-web, I am in a hurry.
5.	When I shop on the world-wide-web, I only have a limited amount of time to finish my shopping.

Subjective Knowledge of Internet Search

<u>Pilot Statement</u>	<u>Finalized Statement</u>
1. I feel very knowledgeable about searching for information on the world-wide-web,	Not modified
2. Among my circle of friends, I'm one of the "experts" on searching for information on the world-wide-web.	Not modified
3. I know how to search for information on the world-wide-web.	Search for information on the world-wide-web is something I know how to do really well.
4. I know more about searching for information on the world-wide-web than most people,	Not modified

Trust in WWW Sellers

<u>Pilot Statement</u>	<u>Finalized Statement</u>
1. I would buy from a web site I never heard of before.	If I have never heard of a web site, I will not buy from it. (R)
2. I am not concerned about a potential financial loss when buying from a web retailer I never heard of before,.	When buying from a web site I have never heard of before, I am concerned about a potential financial loss. (R)
3. I don't consider it risky to buy from a web site I have never heard of before.	I consider it risky to buy from a web site I have never heard of before. (R)
4.	When buying on the world-wise-web, I need to have heard of the web site before I purchase anything. (R)

WWW Shopping Enthusiasm

Pilot Statement	Finalized Statement
1. Shopping on the world-wide-web feels like an escape.	
2. Compared to other things I could do, the time spent shopping on the world-wide-web is truly enjoyable.	
3. I enjoy shopping on the world-wide-web for its own sake, not just for the items I may purchase.	
4.	While I shop on the world-wide-web, I am able to forget my problems.

APPENDIX C

APPENDIX C

RESEARCH INSTRUMENT

CONSENT FORM

Thank you for your voluntary participation to complete this questionnaire.

To participate in this study you must:

1. **Be an undergraduate or graduate student at Michigan State University**
2. **Be over 18 years old**
3. **Have purchased at least one item on the world-wide-web in the past three months**

The researcher of this study, which is titled A Model of Consumer External Price Search Behavior in an Electronic Marketplace (World-Wide-Web), is conducting this survey in order to understand what factors influence a consumer's search for lower prices when shopping on the world-wide-web.

Voluntary completion of this questionnaire will take approximately a half an hour. If at any time you feel unable or unwilling to complete the questionnaire, please feel free to stop.

All qualified participants are automatically entered into a drawing for a \$100 cash prize. The winner will be notified by phone. Please remember to include your name, phone number, and email address at the end of the questionnaire for notification purposes. The prize will be drawn upon full completion of the data.

In certain cases, for your participation, you may also receive extra credit points as determined by your instructor. In such cases, upon completion your name will be submitted to the instructor of your course to receive extra credit points.

Other than in those cases where your name will be submitted to the instructor of your course to receive extra credit points, your name, phone number, and e-mail address will not be distributed. All information regarding participants will remain confidential. Any information that you provide and the data collected from the questionnaire will be kept in the strictest confidentiality. Your privacy will be protected to the maximum extent allowable by law.

In addition, we will not identify any individual who participates in this survey by name, phone number or email in any report or publication. You are also given the option to decline to answer any question at any time. If you have any questions or concerns about the study you may contact James Ramos at ramosjam@msu.edu or (517) 372-8095, or Dr. Charles Salmon, Senior Associate Dean, College of Communication at salmon@msu.edu or (517) 355-3410.

If you have any questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish - Dr. Ashir Kumar, Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 353-2976, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

By signing and dating this page, you indicate your voluntary agreement to participate in this experiment.

Signature _____ Date _____

Print Name _____

The follow questions are related to shop on the world-wide-web and the prices you paid for items you purchased. When asked about price, this means the total cost of an item, including for example, any tax or shipping and handling fees. There are no right or wrong answers to the following questions and people answers' vary widely. Kindly indicate your personal opinion by circling any one number.

Thank you.

Start time: _____

1) Have you made at least one purchase on the world-wide-web in the past three months, not including any purchases from auction websites like eBay?

(1)	(2)
Yes	No

2) How often do you purchase items on the world-wide-web (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Once a year or less	Once every six months	Once every three months	Once every two months	Once a month	Once every two to three weeks	Once a week or more

3) How many individual items have you purchased on the world-wide-web in the past three months (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-2 items	3-5 items	6-10 items	11-15 items	15-19 items	20-25 items	25+ items

4) How much have you spent buying items on the world-wide-web in the past three months (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
\$1 - \$49	\$50 - \$99	\$100 - \$199	\$200 - \$499	\$500 - \$999	\$1,000 - \$2,500	\$2,500+

We would like you to take a minute and think back to the last time you bought something on the world-wide-web (not including any purchases from auction websites like eBay). Thinking back on that particular world-wide-web shopping experience, please respond to the following questions. Again, there are no right or wrong answers. Kindly indicate your personal opinion by circling any one answer. Thank you.

5) When was the last time you purchased an item on the world-wide-web (not including any purchases from auction websites like eBay)?

(1)	(2)	(3)	(4)	(5)
Within the past two weeks	Within the past four weeks	Within the past six weeks	Within the past eight weeks	Within the past three months

6) What exactly did you purchase?

- Item: _____
- Prefer not to specify
- Cannot remember the exact item (Go to Question 14)

7) Under what category would you classify your last purchase?

- Travel (Airline Tickets)
- Travel (Not including airline tickets)
- Books
- Movies (DVD's, VHS, etc.)
- Music (CD's, Tapes, etc.)
- Car accessories
- Clothing and accessories
- Computer hardware
- Computer software
- Consumer electronics
- Electronic games
- Event tickets (for music concerts, sporting events, or cultural events)
- Flowers
- Health and beauty
- Home and garden
- Office related products
- Sporting goods
- Other, prefer not to specify
- Other, please specify _____

How much do you know about the category you indicated in Question 7?

		Strongly Disagree				Strongly Agree		
8)	I know more about <u>the category indicated in Question 7</u> than most people.	1	2	3	4	5	6	7
9)	Among my circle of friends, I'm one of the "experts" on <u>the category indicated in Question 7</u> .	1	2	3	4	5	6	7
10)	I feel very knowledgeable about <u>the category indicated in Question 7</u> .	1	2	3	4	5	6	7

Please consider the category indicated in Question 7. To you this category of products is:

11)	Unimportant	1	2	3	4	5	6	7	Important
12)	Means nothing	1	2	3	4	5	6	7	Means a lot to me
13)	Irrelevant	1	2	3	4	5	6	7	Relevant

14) Did you purchase this item for yourself or for another person?

(1)	(2)	(3)
Yourself	Another person or group	You and another person or group

15) Please think about the web retailer from which you made your last web purchase. Before making your last purchase from this web retailer, had you ever bought something from this website?

(1)	(2)	(3)
Yes	No	Do not recall
	(Go to Question 17)	(Go to Question 17)

16) What reasons do you believe influenced your decision to buy from this web retailer again?

(Please circle <u>all</u> that apply)			
(1)	(2)	(3)	(4)
Satisfaction with previous transaction(s)	Felt it was a fair price	Did not want to shop around	Knew they sold what you wanted to buy

17) Approximately how much did you pay for your last purchase on the world-wide-web?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Less than \$25	\$25 - \$49	\$50 - \$99	\$100 - \$199	\$200 - \$499	\$500 - \$999	\$1,000+

18) Before making your last purchase on the web, did you compare the price of that item at different web sites? (Comparing prices could involve visiting more than one web retailer or using a shop-bot website, like mysimon.com)

(1)	(2)	(3)
Yes — I compared prices before buying	No — I did not compared prices before buying (Go to Question 20)	Do not recall (Go to Question 20)

19) How many prices did you compare on the web before making your last purchase on the world-wide-web?

2 : 3 : 4 : 5 : 6 : 7 : 8+

20) Do you own a computer with access to the world-wide-web?

(1)	(2)
Yes	No

21) How often do you access the world-wide-web?

Never 1 2 3 4 5 6 7 Everyday

22) How often do you access the world-wide-web to search for information?

Never 1 2 3 4 5 6 7 Everyday

23) From what location do you access the world-wide-web the most?

(1)	(2)	(3)	(4)	(5)	(6)
Your home	Your workplace	Friend's home	University computer lab or library	Public library	Other

24) From what location do you do most of your shopping on the world-wide-web?

(1)	(2)	(3)	(4)	(5)	(6)
Your home	Your workplace	Friend's home	University computer lab or library	Public library	Other

The statements that follow concern activities, interests, and opinions related to shopping on the world-wide-web. There are no right or wrong answers to the following statements and large numbers of people agree and disagree. Kindly indicate your personal opinion by circling any one number for each statement from 1 (Strongly Disagree) to 7 (Strongly Agree).

		Strongly Disagree				Strongly Agree		
25)	When I shop on the world-wide-web, I hate spending time to gather information on products.	1	2	3	4	5	6	7
26)	The world-wide-web plays an extremely important role in my life.	1	2	3	4	5	6	7
27)	When I shop on the world-wide-web, it is important for me to get the best price.	1	2	3	4	5	6	7
28)	The notion of thinking abstractly is appealing to me.	1	2	3	4	5	6	7
29)	When it comes to searching for lower prices on the world-wide-web, I am an expert.	1	2	3	4	5	6	7
30)	Shopping on the world-wide-web feels like an escape.	1	2	3	4	5	6	7
31)	When shopping on the world-wide-web, "Never buy the first one you look at" is a good motto to follow.	1	2	3	4	5	6	7
32)	No matter what I am shopping for on the world-wide-web, I believe that some web site is selling it at a much lower price than others.	1	2	3	4	5	6	7
33)	When shopping on the world-wide-web, I am certain of making the best buy by searching around for price information.	1	2	3	4	5	6	7
34)	I frequently have problems only spending what I am suppose to for the week.	1	2	3	4	5	6	7
35)	I feel very knowledgeable about searching for information on the world-wide-web.	1	2	3	4	5	6	7
36)	If I have never heard of a web site, I will not buy from it.	1	2	3	4	5	6	7
37)	When shopping on the world-wide-web, it feels like a chore to search for lower prices.	1	2	3	4	5	6	7
38)	Thinking is not my idea of fun.	1	2	3	4	5	6	7

		Strongly Disagree				Strongly Agree		
39)	Shopping around at more than one web site helps me to find the lowest price.	1	2	3	4	5	6	7
40)	Compared to other things I could do, the time spent shopping on the world-wide-web is truly enjoyable.	1	2	3	4	5	6	7
41)	Among my circle of friends, I'm one of the "experts" on searching for information on the world-wide-web.	1	2	3	4	5	6	7
42)	When shopping on the world-wide-web, one should expect the price of an item to really differ between web sites.	1	2	3	4	5	6	7
43)	When I shop on the world-wide-web, I am willing to go to extra effort to find lower prices.	1	2	3	4	5	6	7
44)	My spending budget is usually tight.	1	2	3	4	5	6	7
45)	When I shop on the world-wide-web, it really doesn't occur to me to search for lower prices.	1	2	3	4	5	6	7
46)	When buying from a web site I have never heard of before, I am concerned about a potential financial loss.	1	2	3	4	5	6	7
47)	Searching for lower prices on the world-wide-web is something I can do with great ease.	1	2	3	4	5	6	7
48)	When I shop on the world-wide-web, I have more than enough time to complete my shopping.	1	2	3	4	5	6	7
49)	When I shop on the world-wide-web, I usually don't have the patience to search for lower prices.	1	2	3	4	5	6	7
50)	I enjoy shopping on the world-wide-web for it's own sake, not just for the items I may purchase.	1	2	3	4	5	6	7
51)	When it comes to searching for lower prices on the world-wide-web, I am better at it than most people.	1	2	3	4	5	6	7
52)	For almost any item one can purchase on the world-wide-web, the price often varies a lot between web sites.	1	2	3	4	5	6	7
53)	Before buying on the world-wide-web, a person can save a lot of money if they compare prices from different websites.	1	2	3	4	5	6	7
54)	I often feel I have to spend more money than I have available.	1	2	3	4	5	6	7

		Strongly Disagree				Strongly Agree		
55)	Before I buy on the world-wide-web, I make it a rule to compare the prices of different web sites.	1	2	3	4	5	6	7
56)	I consider it risky to buy from a web site I have never heard of before.	1	2	3	4	5	6	7
57)	Search for information on the world-wide-web is something I know how to do really well.	1	2	3	4	5	6	7
58)	When I shop on the world-wide-web, I finish my shopping fast because I have other things to do.	1	2	3	4	5	6	7
59)	When I shop on the world-wide-web, I am motivated to search for lower prices.	1	2	3	4	5	6	7
60)	Web pages load quickly on the computer where I do most of my web shopping.	1	2	3	4	5	6	7
61)	When shopping on the world-wide-web, it's takes too much effort to find lower prices.	1	2	3	4	5	6	7
62)	I don't usually feel like I have enough money to spend during the week.	1	2	3	4	5	6	7
63)	I know more about searching for information on the world-wide-web than most people.	1	2	3	4	5	6	7
64)	When buying on the world-wide-web, I need to have heard of the web site before I purchase anything.	1	2	3	4	5	6	7
65)	When I shop on the world-wide-web, I am enthusiastic about searching for lower prices.	1	2	3	4	5	6	7
66)	When I shop on the world-wide-web, I am in a hurry.	1	2	3	4	5	6	7
67)	When I shop on the world-wide-web, I often compare the prices between web site before deciding whom to buy from.	1	2	3	4	5	6	7
68)	The world-wide-web is a relevant part of my daily life.	1	2	3	4	5	6	7
69)	When I shop on the world-wide-web, I have superior techniques for locating lower prices.	1	2	3	4	5	6	7
70)	I only think as hard as I have to.	1	2	3	4	5	6	7

		Strongly Disagree				Strongly Agree		
71)	When shopping on the world-wide-web, there is too much to lose by being ignorant about prices.	1	2	3	4	5	6	7
72)	While I shop on the world-wide-web, I am able to forget my problems.	1	2	3	4	5	6	7
73)	When I shop on the world-wide-web, I feel it is a large sacrifice of time to search for lower prices.	1	2	3	4	5	6	7
74)	When I shop on the world-wide-web, I only have a limited amount of time to finish my shopping.	1	2	3	4	5	6	7
75)	I am extremely effective at locating lower prices when I search for them on the world-wide-web.	1	2	3	4	5	6	7
76)	I need the world-wide-web.	1	2	3	4	5	6	7
77)	It pays to shop around before buying on the world-wide-web.	1	2	3	4	5	6	7
78)	Learning new ways to think doesn't excite me too much.	1	2	3	4	5	6	7
79)	I would not buy anything on the world-wide-web without first comparing the price at another web site.	1	2	3	4	5	6	7
80)	The speed at which web pages load on the computer where I do most of my web shopping is tolerable.	1	2	3	4	5	6	7
81)	Before buying on the world-wide-web, there are definite benefits to comparing the prices at different websites.	1	2	3	4	5	6	7
82)	It means a lot to me to have daily access to the world-wide-web.	1	2	3	4	5	6	7
83)	When I shop on the world-wide-web, I feel driven to find the best price.	1	2	3	4	5	6	7
84)	I prefer my life to be filled with puzzles that I must solve.	1	2	3	4	5	6	7
85)	I feel like I use the world-wide-web for everything.	1	2	3	4	5	6	7

		Strongly Disagree				Strongly Agree		
86)	The world-wide-web is a very valuable tool in my life.	1	2	3	4	5	6	7
87)	I am completely satisfied with the speed at which web pages load on the computer where I do most of my web shopping.	1	2	3	4	5	6	7
88)	It's enough for me that something gets the job done: I don't care how or why it works.	1	2	3	4	5	6	7
89)	I am very confident in my ability to search for lower prices on the world-wide-web.	1	2	3	4	5	6	7
90)	Daily access to the world-wide-web is something I could not live without.	1	2	3	4	5	6	7
91)	When shopping on the world-wide-web, one is bound to miss a good deal by rushing into a purchase.	1	2	3	4	5	6	7
92)	I would rather do something that requires little thought than something that is sure to challenge my thinking.	1	2	3	4	5	6	7
93)	The day is not complete unless I have used the world-wide-web.	1	2	3	4	5	6	7
94)	When I shop on the world-wide-web, I find myself pressed for time.	1	2	3	4	5	6	7
95)	When I shop on the world-wide-web, I really want to find the best prices.	1	2	3	4	5	6	7

Please do not forget to provide us with your name, telephone number, and email address on the following page so that we may notify you if you win a prize.

Finally, we would like to ask you some information about you and your family members for classification purposes only.

Please answer each question by circling the appropriate response.

96) Your sex:

- Female
- Male

97) Your age _____

98) Number of years of formal education you have completed

13	:	14	:	15	:	16	:	17	:	18	:	≥19	
						Undergraduate							Graduate

99) Are you currently employed?

- No
- Yes

100) What is your current individual annual income?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
\$0 (Not employed)	Less than \$10,000	\$10,000 - \$19,999	\$20,000 - \$29,999	\$30,000 - \$39,999	\$40,000 - \$49,999	\$50,000+

101) What is the current income of your household (or family income)?

(1)	(2)	(3)	(4)	(5)	(6)
Less than \$10,000	\$10,000 - \$19,999	\$20,000 - \$29,999	\$30,000 - \$39,999	\$40,000 - \$49,999	\$50,000 - \$59,999
(7)	(8)	(9)	(10)	(11)	(12)
\$60,000 - \$69,999	\$70,000 - \$79,999	\$80,000 - \$89,999	\$90,000 - \$99,999	\$100,000+	Not sure

Finish time: _____

Please do not forget to provide us with your name, telephone number, and email address on the following page so that we may notify you if you win a prize.

THANK YOU VERY MUCH FOR YOUR TIME

PLEASE CHECK TO MAKE SURE YOU HAVE ANSWERED ALL OF THE QUESTIONS
COMPLETELY

Please provide us with your name, telephone number, and email so that we may notify you if you win a prize.

Name _____

Telephone number _____

Email _____

If you are taking this survey for class credit, please provide us with the class name, number, and section and the name of the professor so that we might notify them of your participation

Class name _____

Class number _____

Class section _____

Professor's name _____

Please feel free to use the space below to comment on any part of this questionnaire. Any and all comments you may make are greatly appreciated. They will help future versions of this survey. Thank you again.

Construct Question Key

R = Reversed

Q#	Construct/Control (Item Number)	Rvsd
1	Participation qualifying question	
2	Frequency of web purchases	
3	Web shopping in past three months	
4	Web shopping in past three months	
5	When last purchase	
6	Item last purchased	
7	Product category of last purchase	
8	Subjective knowledge of product class (last purchase)	
9	Subjective knowledge of product class	
10	Subjective knowledge of product class	
11	Enduring involvement with product class (last purchase)	
12	Enduring involvement with product class	
13	Enduring involvement with product class	
14	Personal purchase (last purchase)	
15	Latest buy is a repeat purchase	
16	Possible reasons for repeat purchase	
17	Price of last purchase	
18	Price comparison before last purchase (Y/N)	
19	Online price search (search behavior) (OPS1)	
20	Objective knowledge of internet search	
21	Objective knowledge of internet search	
22	Objective knowledge of internet search	
23	Ease of access to online information (priming question)	
24	Ease of access to online information (priming question)	
25	Online price search (general tendency) (OPS2)	
26	Internet involvement (IIV1)	
27	Ability to online price search (AOPS1)	
28	Need for cognition (NFC1)	
29	Subjective knowledge of internet search (SKIS1)	
30	WWW shopping enthusiasm (WSE1)	
31	Motivation to online price search (MOPS1)	
32	Perceived price dispersion (PPD1)	
33	Benefits of online price search (BOPS1)	
34	Perceived budget constraints (PBC1)	
35	Costs of online price search (COPS1)	
36	Trust in WWW sellers (TWS1)	R
37	Online price search (general tendency) (OPS3)	
38	Need for cognition (NFC2)	R
39	Subjective knowledge of internet search (SKIS2)	

40	WWW shopping enthusiasm (WSE2)	
41	Ability to online price search (AOPS2)	
42	Perceived price dispersion (PPD2)	
43	Benefits of online price search (BOPS2)	
44	Perceived budget constraints (PBC2)	
45	Motivation to online price search (MOPS2)	R
46	Trust in WWW sellers (TWS2)	R
47	Costs of online price search (COPS2)	
48	Perceived time pressure (PTP2)	R
49	Online price search (general tendency) (OPS4)	
50	WWW shopping enthusiasm (WSE3)	
51	Benefits of online price search (BOPS3)	
52	Perceived price dispersion (PPD3)	
53	Motivation to online price search (MOPS3)	
54	Perceived budget constraints (PBC3)	
55	Ability to online price search (AOPS3)	
56	Trust in WWW sellers (TWS3)	R
57	Subjective knowledge of internet search (SKIS3)	
58	Perceived time pressure (PTP3)	
59	Costs of online price search (COPS3)	
60	Ease of access to online information (EAOI3)	
61	Online price search (general tendency) (OPS5)	
62	Perceived budget constraints (PBC4)	
63	Motivation to online price search (MOPS4)	
64	Trust in WWW sellers (TWS4)	R
65	Benefits of online price search (BOPS4)	
66	Perceived time pressure (PTP4)	
67	Subjective knowledge of internet search (SKIS4)	
68	Internet involvement (IIV4)	
69	Ability to online price search (AOPS4)	
70	Need for cognition (NFC4)	R
71	Costs of online price search (COPS4)	
72	WWW shopping enthusiasm (WSE4)	
73	Online price search (general tendency) (OPS6)	
74	Perceived time pressure (PTP5)	
75	Benefits of online price search (BOPS5)	
76	Internet involvement (IIV5)	
77	Motivation to online price search (MOPS5)	
78	Need for cognition (NFC5)	R
79	Ability to online price search (AOPS5)	
80	Ease of access to online information (EAOI1)	
81	Benefits of online price search (BOPS7)	
82	Internet involvement (IIV2)	
83	Costs of online price search (COPS5)	
84	Need for cognition (NFC3)	

85	Benefits of online price search (BOPS6)	
86	Internet involvement (IIV3)	
87	Ability to online price search (AOPS6)	
88	Need for cognition (NFC7)	R
89	Motivation to online price search (MOPS6)	
90	Internet involvement (IIV7)	
91	Ease of access to online information (EAOI2)	
92	Need for cognition (NFC6)	R
93	Internet involvement (IIV6)	
94	Perceived time pressure (PTP1)	
95	Internet involvement (IIV8)	
96	Sex	
97	Age	
98	Education	
99	Currently employed	
100	Individual income	
101	Household income	

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