ONLINE SHOPPING'S VITAL INTERFACE COMPONENTS AND THEIR RELATIVE IMPORTANCE IN ONLINE SHOPPING TASKS: A CONJOINT APPROACH

by

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A Dissertation Submitted
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
Business Administration

National Cheng Kung University
Tainan, Taiwan
Republic of China

February 2002

網站核心購物介面成份在線上購物時之相對重要性：聯合分析研究

線上消費者對嵌於網站購物介面成份之解讀及重視情形之實證探討賦予可能性來增進了解線上消費者行爲，並進而應用於以消費者爲導向的網站設計決定之參考依據。鑑於介面成份阻礙或協助消費者對線上行銷訊息的認知之相關研究文獻尚少，本論文研究分析核心購物介面成份在線上購物時之相對重要性及在思考可能性模式 (Elaboration Likelihood Model)
中之說服的中心路線及說服的周邊路線所扮演的角色。本研究探討網路購物之重要及相關因素後，發現便利性、資訊流及安全信任度爲線上購物之核心成份。本研究再應用虛擬線上購物情境進行上述各核心成份之實證研究，結果顯示受試者深思地考慮(說服的中心路線)有關購物旅程之極少化、資訊流及信用卡被盜刷之防護措施問題。本研究還發現省時者、資訊搜尋者及一般瀏覽者三種不同區隔的受試者對線上購物核心成份有不同的特定偏重選擇。本研究並建構網路行銷訊息、購物介面成份在說服的中心路線或說服的周邊路線所扮演的角色及界面成份在三種不同線上消費區隔的相對重要性之敘述模型。

ABSTRACT

Empirical exploration of how online consumers interpret and value the marketing communication embedded in shopping interface components has the potential to advance knowledge of online consumer behavior and to inform design decisions concerning consumer-oriented Web sites. To date, little research has been completed regarding how interface components hinder or aid consumer perceptions of the online marketing message. This dissertation investigates the relative importance of online shopping interface components for online consumer shopping tasks and the role they play within the context of the Elaboration Likelihood Model's central and peripheral routes of persuasion. The important and relative issues surrounding online shopping were explored, finding the core components of *convenience*, *access to information*, and *trust*. These components were then implemented in an online shopping task. Respondents considered thoughtfully (central route) marketing messages that involved issues of minimizing travel, information access, and fraud protection. The specific preference of respondents for each of these components was found to differ depending on three market segments: *time savers*, *information seekers*, and *general surfers*. A descriptive model of Web-based marketing messages, their roles in the central or peripheral route, and their relative importance to the three online consumer segments was developed.

ACKNOWLEDGMENTS

This dissertation, and the supporting research, is the product of a cooperation among many people to whom I would like to express my deep gratitude.

My advisor and committee members: Professor Wann-Yih Wu has guided me through the complexities and unknown territory of an American studying a Ph.D. in Taiwan, all the while pushing me to new levels of hard work and the resulting insights. My committee co-chair Dungchun Tsai, who has always been patient with me, and Mengkuan Lai who has helped me develop many of my ideas on consumer behavior in the Internet context. Tsung-Chi Liu always encouraged me to try something new and was patient when my ideas did not quite work the way I planned.

My research sponsors and universities: The Republic of China's Ministry of Education gave me the opportunity to study in Taiwan, and NCKU took a chance on me. During my time in the Ph.D. program, The National Science Council has assisted me by financially supporting my research, while Chaoyang University of Technology's excellent facilities and supportive attitude helped me complete this and other complex Web-based experiments. Without these two institutions' support, it would have been impossible to develop this experiment and attract participants.

My family: Both my American and Chinese families gave me encouragement when I needed it most and helped me to go on when things looked uncertain.

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

CHAPTER 1
INTRODUCTION

Consumers ordering products they cannot physically inspect and then enduring the risk of lost orders, dishonest traders, and products not up to expectations. Rather than a description of shopping in the new e-economy, this passage portrays the British colonies of pre-Revolutionary America where consumers of the day were importers of British finished goods. Members of the upper-class often ordered products, sight unseen, through London agents and then waited months before delivery (McCusker & Menard, 1991; Middlekauff, 1982; Witkowski, 1989). Early mail-order markets, which were a by-product of the late nineteenth century American improved rural postal service (Klos, 1998), also can fit this description.

Marketing channels are products of their time, yet address issues of exchange that are persistent over generations. Products or services consumers find satisfactory in one channel may not be up-to-par in another channel. Creating a bundle of services and goods, within a specific channel, that consumers will consider buying is a challenge faced by marketers throughout history. Communicating a marketing message that was able to address the concerns of the day is how the above examples were able to satisfy consumers. Sears, Roebuck & Company, for example, conveyed a relevant and convincing marketing message in its catalogs leading to successful direct sales at a time when the majority of Americans lived on farms and were suspicious of salesmen. Today's evolving online channels present the next intermingling of these time-honored issues. The challenge is to understand what consumers value in the marketing communication they receive when cruising the information highway.

This dissertation has important potential implications given that marketing communication over the Web attempts to create a positive attitude toward the Web site. This is just as true from firms' branded sites as it is for personal Web sites. Understanding which components and what combinations increase elaboration likelihood allows more accurate decisions to be made when designing both actual Web sites and undertaking research into specific aspects of online consumer behavior. Currently, Web site designers and researchers do not have any guidelines concerning which components to include and how to implement them. Employing popular beliefs about Web design, such as the emphasis on the need for security in personal information collection, raises two issues. The first issue is that the construct is not defined clearly. What exactly does security mean, and how is such a meaning accurately conveyed through the Web interface? The second issue if one of nomic necessity (Hunt, 1991), or spurious correlation. Although it may appear *obvious* to the casual observer, or be a popular headline for selling newspapers and magazines, a link between the online component variable and consumers' actual online shopping attitudes may not exist, or may even be in a different direction than thought. Rigorous development of a schema through actual measurement of online consumer behavior can create the basis for overcoming these fundamental issues and thus creating more effective Web sites and better informed research.

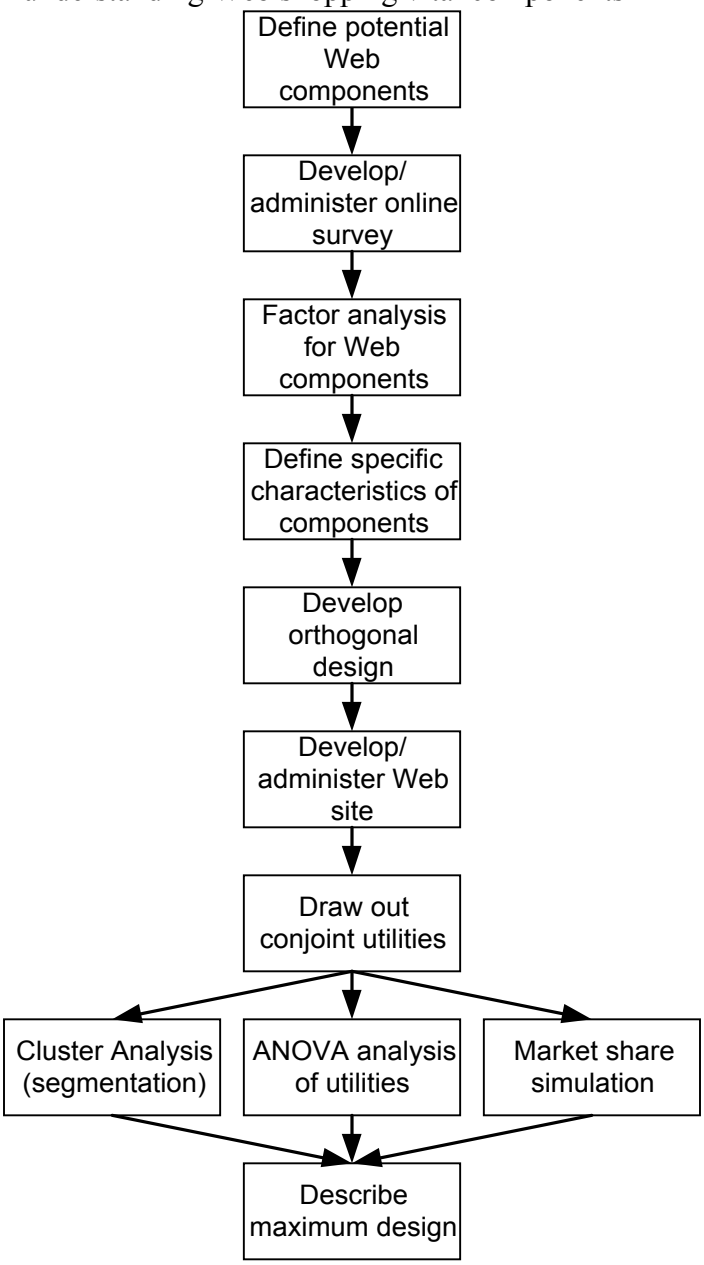
DISSERTATION ORGANIZATION

In exploring what components are important to online shopping, this research was organized as follows (see Figure 1): To begin, Study 1, the important and relative issues surrounding online shopping were explored, and the results input to an online survey

determining the salient issues for consumers pertaining to online shopping. Next, since online shopping takes place in cyberspace, as represented on a computer screen, these issues were rendered to components appearing within the Web browser. A simulated online shopping task, Study 2, was executed. This conjoint-based simulation was used to determine the relative value of each component to online consumers' satisfaction with the shopping experience in searching for and purchasing both a service and a physical product. The conjoint part-worth utility values were used to find three market segments through cluster analysis.

Finally, conjoint results for all market segments were used to predict maximum combinations of the components as well as market share simulations that were then used to predict potential changes in market share of online consumers as differing interface designs were introduced to the simulated market. A descriptive model of online shopping interface components was developed to describe their relative importance for each market segment. Discussion of findings, limitations, and future directions were included.

Figure 1. Steps for understanding Web shopping vital components



CHAPTER 2
STUDY 1: COMPONENTS OF ONLINE SHOPPING

Online consumer reaction to changes in vital components expressed through the Web page interface design is the focus of this research. By experimentally representing consumer concerns of online shopping within Web page interface components, the relative value of such components can be quantified both individually and in combination. Online consumers may find such components convey a fundamental marketing message about the virtual environment being visited. When the message sent is perceived positively, concerns about online shopping can be eased and the utility of such activity increased. Watson, Zinkhan, and Pitt (2000) labeled this combination of factors *integrated Internet marketing*, and emphasized that Web design communicated a message to the consumer that is more than the sum of its technical parts. Duncan and Moriarty (1998) argue that in the age of interactivity, the importance of communication in marketing is greatly increased and that communication is the integrating factor that brings together numerous marketing activities. The Web certainly has a role to play in this communication, but exactly what the components of that communication are has not yet been well explored in the existing literature.

ATTITUDE TOWARD THE WEB SITE

Murphy (1999) attempted to use clicking behavior as the basis for understanding the importance of graphics on Web pages, but results were inconclusive, partly due to the difference in what he labeled searchers' and surfers' behaviors. Stevenson, Bruner, & Kumar (2000) and Bruner and Kumar (2000) asserted that components of the Web site

design do influence attitudes toward the underlying marketing message, but in their experiment only examined the impact of complex versus simple Web page backgrounds. Stevenson et al. found that attitude-toward-the-Web site (A_{WS}) had an important role to play in the advertising hierarchy-of-effects. Attitude-toward-the-ad (A_{AD}), on which A_{WS} was derived, is based on cognitive evaluations of the ad and affective reactions to the ad (Burton & Lichtenstein, 1988; Celuch & Slama, 1995; Miniard, Bhatla, & Rose, 1990). These two tracks of persuasion are well represented in the Elaboration Likelihood Model (ELM, Petty & Cacioppo, 1981, 1986; Petty, Cacioppo, & Schumann, 1983). The ELM postulates that a *central route* of persuasion exists for consumers who are interested in the information presented and such consumers carefully consider the content of the message in a thoughtful manner.

Thoughtfulness in Using the Web

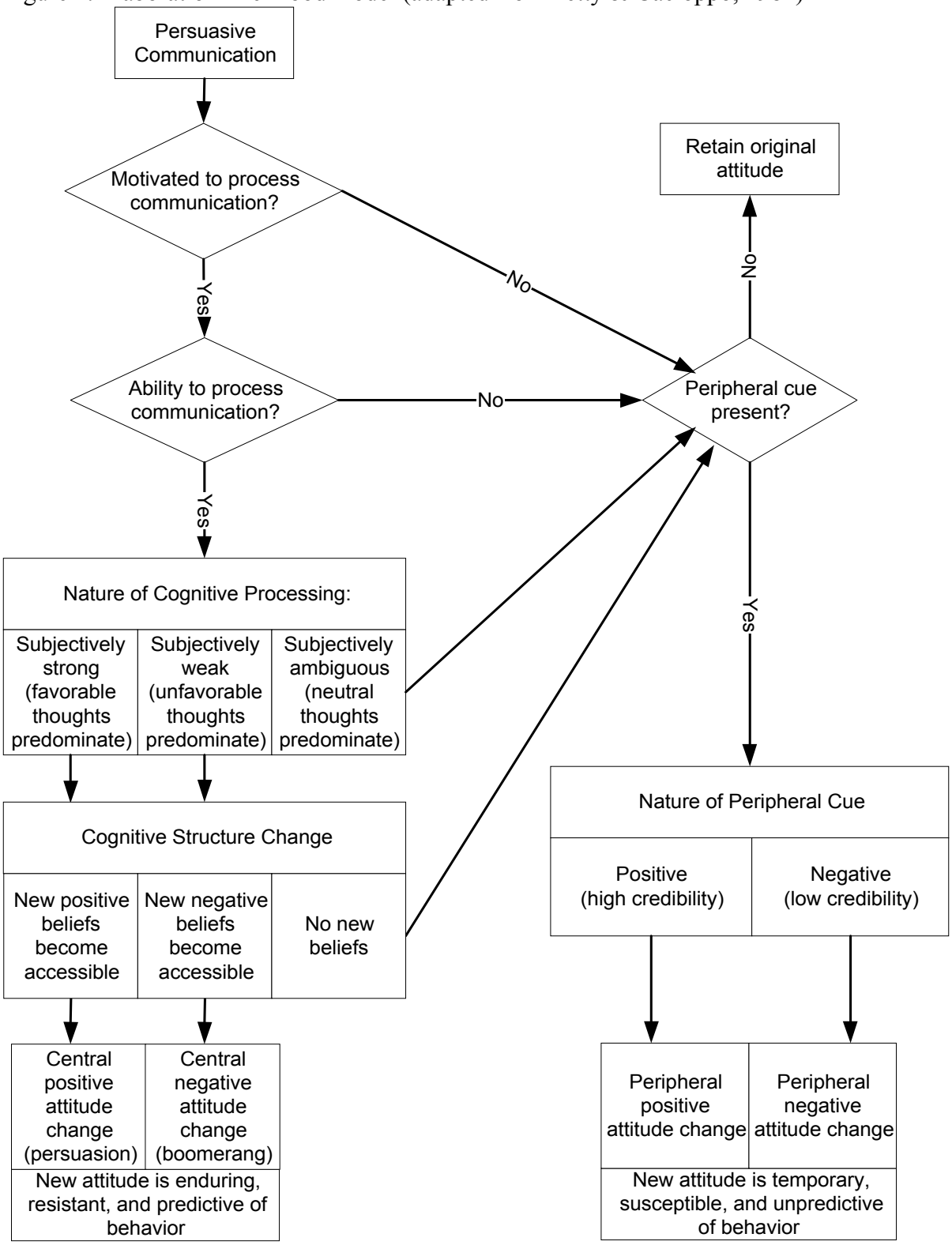
Thoughtfulness is central to consumer attitudes when considering online marketing communication, especially since the Internet is an information rich environment. Web surfers can become involved in the information they are scanning, a phenomenon labeled *flow* by Hoffman and Novak (1997). Obstacles to involvement with Web content can appear in the interface between the user and the firm, namely, the browser and its required Internet connection. For example, a slow connection speed will negatively influence users' attitudes about information presented in video format that requires a high-speed Internet connection to view smoothly. While this example is mainly a technical issue, solved through higher connection speeds and data compression, a number of issues are related to cognitive preferences of consumers, which may require reexamination in the interactive context (Bezjian-Avery, Calder, & Iacobucci,1998). Cho

(1999) studied this issue and presented a modified ELM that included mediating variables specific to the Web. Although the variables studied by Cho were attitudinal, rather than specifically examining Web page components, the implication was that the ELM could be used in understanding how A_{WS} is influenced by the unique aspects of Web sites.

Elaboration of Message

According to the ELM (see Figure 2), attitudes formed under central route persuasion have a greater influence on behavior, are longer lasting, and more resistant to change. Attitude change from the central route is brought about by *effortful issue-relevant cognitive activity* (Petty & Cacioppo, 1996, p. 263). Information in the central route should involve more details since the receiver of the message will exhibit high levels of involvement. As issues in the communication become more personal, the receiver of the communication will think about it more. If the message communicated results in a favorable thought, on the part of the recipient, then such a message would have its strongest effect when presented through the central route. Conversely, the peripheral route would be preferred if the message elicits unfavorable thoughts since this route's influence on attitude is short lived. Before considering the design of online marketing communication approaches for specific products, it is important to consider the fundamental and generic parts of the shopping interface that online consumers find salient and under what conditions such components convey favorable or unfavorable thoughts.

Figure 2. Elaboration likelihood model (adapted from Petty & Cacioppo, 1981)



Interface Components

Since involvement determines whether or not the message will be elaborated on, it is important to know if certain Web interface components can be classified as inherently high involvement or low involvement. It is also possible that components' involvement levels are dependent on the specific consumer viewing them. Thus, market segmentation may describe homogeneity of involvement among members of a group. An important element of the ELM was elaborated by Petty & Cacioppo (1986) as the fourth postulate, which states that if a consumer has a preconceived notion concerning the message, (s)he will scrutinize that message more than someone who had no preexisting attitude. Understanding what components of the shopping interface activate preexisting attitudes, and are therefore considered in a more thoughtful manner, can foster effective communication through ELM's central route of persuasion. Defining the Web site components that commonly activate such preconceived notions, generically across Web site design, is the first step in quantifying the role they play in online shopping.

Attitude Direction

According to cognitive response theory (Greenwald, 1968; Petty & Brock, 1981), the receiver of the message will attempt to relate the content to preexisting knowledge about the topic. Favorable thoughts will result when the cognitive responses provoked are positive, while unfavorable thoughts result from negative responses (also referred to as a *boomerang* effect). For example, an online consumer at the checkout stage of a purchase may have a positive reaction to a detailed explanation of the server's security system due to preexisting thoughts about the importance or usefulness of such security. The better the

marketing communication fits with the receiver's *schemas* (Tesser, 1978), whether reinforcing negative or positive views, the more consistent that person's schema will become. Having met the expectation of server security, a consumer may go on to infer that other parts of the online purchasing process also match his/her beliefs which form the basis of attitude. Within the context of the current research, that resulting attitude would be A_{WS}.

Research Questions

Based on the previous discussion, differences in online shopping Web page designs will influence A_{WS} if consumers have preexisting expectations about what the Web site should include. These expectations will trigger a thoughtful examination of the Web sites' design components and the marketing message they convey. In order to begin understanding the specific Web site components involved in these issues, it is necessary to first find if consumers do have cognitive preferences and what they are. Therefore the following research questions guided the exploratory research of Study 1:

Q1. Do online consumers exhibit preexisting cognitive preferences for Web page components?

Q2. Can online shopping interface components be grouped in dimensions based on consumers' preexisting preferences?

METHODOLOGY

To begin narrowing the universe of Web site components for consideration, an open-ended interview technique followed up with a classification process was implemented.

Studies examining Web components to date tend to begin with specific items the researcher has a priori decided are important. Such an approach may prove problematic if the components selected are not perceived by consumers as important, or if the components are perceived as part of a common underlying construct. Keeney (1999) avoided these problems and investigated the important characteristics of Internet commerce by creating a means-end objectives network for characteristics of Internet commerce that were important to consumers from 20 countries. That open-ended survey resulted in 26 classifications of important objectives that covered a wide range of concerns for consumers shopping over the Web (see Table 1). To confirm these 26 items included all possible online shopping concerns in Taiwan, 120 university students in central Taiwan were surveyed with an open-ended instrument asking for respondents to list as many advantages and disadvantages of shopping on the Web as they could (the same technique used by Keeney). Responses, in Chinese, were well represented by the 26 categories, with no response that did not fit into an existing category.

Table 1. Issues consumers consider important in Internet commerce (Keeney, 1999)

	Component	Description
1.	Minimize Fraud	Maximize fraud protection. Discourage/prevent fraud. Maximize seller legitimacy.
2.	Assure System Security	Maximize security of transaction. Discourage hacking.
3.	Minimize Misuse of Credit Card	Minimize unauthorized use of credit card. Maximize safety of credit card.
4.	Assure Reliable Delivery	Provide reliable delivery. Assure arrival of purchase.
5.	Maximize Accuracy of Transaction	Minimize product errors. Minimize shipping errors. Minimize charging errors.
6.	Minimize Misuse of Personal Information	Minimize receipt of unsolicited material. Minimize transfer of personal information.
7.	Maximize Access to Information	Have many search possibilities. Learn about product/price specials efficiently. Facilitate information gathering.
8.	Maximize Product Information	Maximize information about promotions. Maximize available product information.
9.	Limit impulsive Buying	Minimize "unwanted" purchases. Control unreasonable buying.
10.	Enhance Comparison Shopping	Maximize products for comparison. Maximize ease of comparison-shopping.
11.	Make Better Purchase Choices	Minimize likelihood of disappointment. Maximize confidence (right choice).
12.	Maximize Product Variety	Increase variety of products. Maximize product selection.
13.	Maximize Product Availability	Have many products in stock. Maximize range of quality options.
14.	Minimize Personal Travel	Minimize travel distance. Minimize driving effort.
15.	Maximize Ease of Use	Maximize ease of user interface. Make access easy. Make search process easy. Maximize ease of the purchase.
16.	Offer Personal Interaction	Provide human customer support. Provide opportunity for personal interaction.
17.	Overall Objective	Maximize customer satisfaction.
18.	Maximize Product Quality	Maximize product value (i.e., price/quality relationship). Ensure quality of product.
19.	Minimize Cost	Minimize product cost. Minimize tax cost. Minimize shipping cost. Minimize Internet cost. Minimize travel cost.
20.	Minimize Time to Receive Product	Minimize delivery time. Minimize shipping time. Minimize dispatch time.
21.	Maximize Convenience	Maximize purchasing convenience. Maximize time flexibility in purchasing. Provide quality after-sales service.
22.	Minimize Time Spent	Minimize purchase time. Minimize processing time. Minimize payment time. Minimize queuing time. Minimize time to find product. Minimize search time.
23.	Maximize Privacy	Avoid electronic mailing lists.
24.	Maximize Shopping Enjoyment	Make shopping a social event. Minimize worry. Inspire customers. Enhance user productivity.
25.	Maximize Safety	Maximize driving safety. Minimize risk of product use.
26.	Minimize Environmental Impact	Minimize pollution.

In order to test for underlying constructs and the possibility of reducing the range of concerns, exploratory factor analysis was undertaken. The 26 issues of online shopping were transformed into questions in the context of considering an online purchase. The

questions were translated to Chinese and back translation used (Green & White, 1976), with appropriate modifications, to confirm translation accuracy. All questions were worded so as to rate the importance of each item; i.e., *in considering an online purchase, minimizing fraud is: strongly considered* . . . to . . . *not considered at all*. Responses were on a seven-point scale ranging from strongly considered to not considered at all. The online survey was designed, so participants could enter the Web site at any time from any location with an Internet connection. A Web site was established on a university server dedicated to marketing research. Directions, in Chinese, were presented with a button to begin the questions. Questions were randomly ordered for each participant.

Procedure

A participant could freely choose what order to answer questions, although all 26 questions had to be completed before exiting this section. Participants answered the questions by clicking the appropriate buttons and were then given an opportunity to write any comments (see Figure 3 and Figure 4). After all questions were reviewed, a personal information page was presented that the participant completed. When finished, the data were sent to the research server's database.

Figure 3. Survey Web site homepage

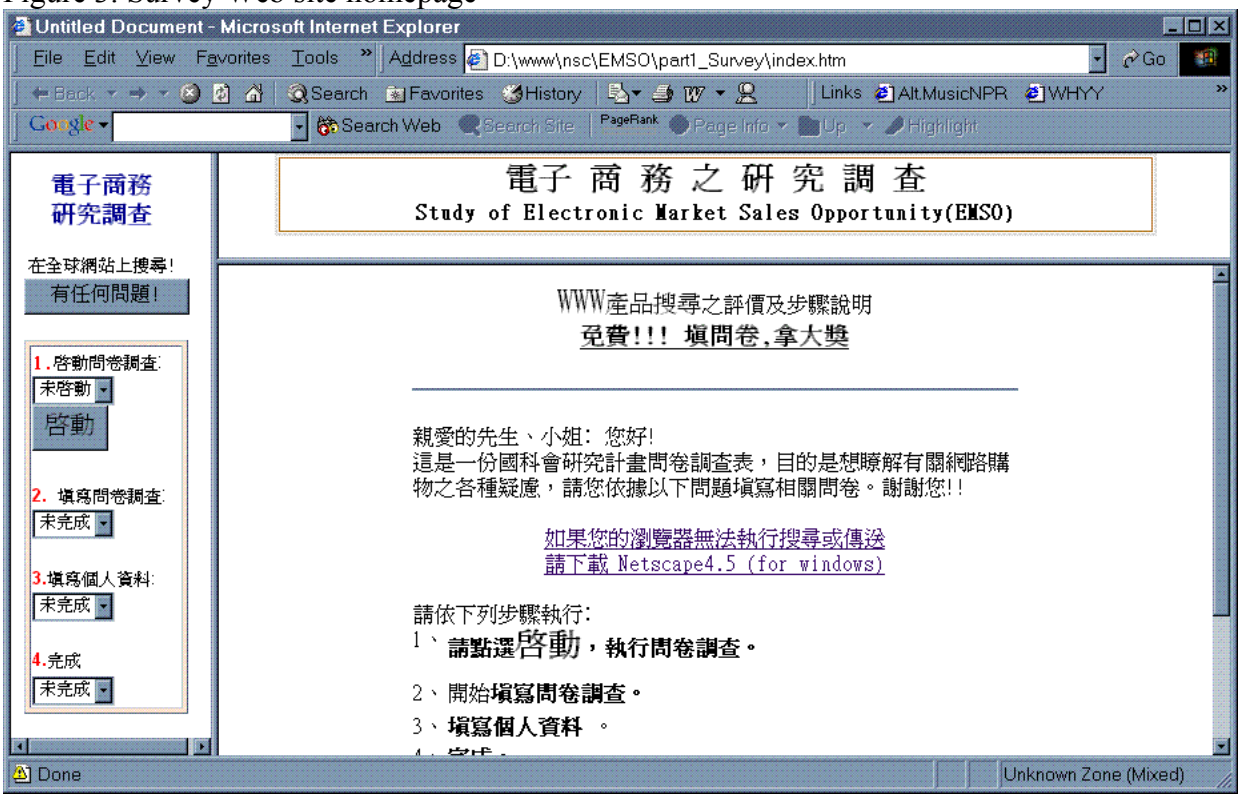


Figure 4. Questionnaire in right frame (order randomized for each respondent)

Subjects

Since the focus of this study was Web shoppers, only users of the Web were sought as subjects. An email list was purchased from a local mail server company from which respondents were drawn. Although information about the accounts' status or frequency of use was unavailable, it is certain that anyone on this list contacted via email was a potential online consumer. Those who have an email account but infrequently use the Web or are not certain how to enter a Web site from an email link were expected to self-filter out of participation in this survey.

Email Draw

Email invitations were sent to randomly chosen email accounts with no repeats or follow-ups for a period of one week in May, of the year 2000. The mail was completely text-based with the server address clearly displayed and included the capability to be clicked on to open a browser window linked to the experiment Web site. Actual number of emails that were opened and read is impossible to track, as many email accounts could have been unused (dead accounts). Response rates for emailed surveys have been observed as generally low (Tse, 1995; 1998), but as having the advantages of speed of response and low expense (Oppermann, 1995) while also showing no signs of systematic bias (Miller & Dickson, 2001; Weible & Wallace, 1998).

Description of Respondents

A total of 306 Web site visitors went on to complete the questionnaire. Respondents' demographic data (see Table 2) compared well with government statistics on Internet

usage in Taiwan (Find, 2001) as well as private Internet service providers' reported usage patterns (YamWeb Frontier Foundation, 1999). A total of 62% of the respondents had previously made a purchase over the Web. Twenty-nine percent of respondents had spent NT$3000-4000 over the Web with the most commonly purchased products being books/magazines and computer software.

Table 2. Sample and Taiwan Web users' demographic comparison

	Average age	Female	Student	Married	College graduate	Grad. school graduate	Average income (NT$)
Taiwan Web users*	25.3	45.6%	40.9%	29.1%	40.5%	10.1%	20-30K
Experiment Sample	26	47%	36%	34%	61%	9.6%	20-30K

*Note: Taiwan averages from Find, 2001

RESULTS AND DISCUSSION

Responses to the online survey exhibited a Cronbach's alpha of .91 and a Guttman split-half reliability of .91, displaying an acceptable level of internal reliability. A Bartlett's test of sphericity ($\chi^2 = 2754$, $p < .000$) and the measure of sampling adequacy (MSA = .91) both revealed high levels of correlations among the 26 issues, thus making the sample suitable for factor analysis. To classify the Internet commerce components, exploratory principal component factor analysis was undertaken using SPSS 10, with VARIMAX rotation. Five factors with eigenvalues over one emerged, showing that there was a large amount of overlap in the 26 items (see Table 3). Loadings of .30 are both of practical and statistical significance, given the sample size (Hair, Anderson, Tatham, & Black, 1998, p. 112). Items that loaded over or near .30 on more than one factor were removed from further consideration and a purified result obtained.

Table 3. Preliminary factor loadings

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Communalities
Assure system security	.83	.03	.18	.06	.03	.73
Min misuse of personal info	.83	.04	.05	.21	.11	.75
Min fraud	.8	.05	.24	.12	.13	.73
Min misuse of credit card	.74	.19	-.25	.05	.32	.75
Max accuracy of transaction	.70	.25	.22	.03	.10	.61
Max product quality*	.67	.29	.24	.04	-.11	.61
Max safety*	.60	.22	.33	.04	.02	.5
Max product variety*	.52	.20	.29	.35	.05	.52
Overall objective*	.43	.25	.26	.39	-.18	.50
Offer personal interaction	.20	.72	.05	.06	.06	.56
Max access to info	.09	.61	.23	.27	-.11	.52
Max ease of use	.09	.60	.22	.02	.06	.42
Min time to receive product*	.08	.58	.11	.28	.20	.48
Enhance comparison shopping	.24	.57	.05	.14	.25	.47
Assure reliable delivery*	.36	.54	.17	.03	.12	.46
Max product info*	.20	.44	.40	.34	-.34	.62
Max convenience	.27	.24	.65	.21	.09	.6
Make better purchase choices*	.29	.20	.63	-.18	.15	.57
Min personal travel	.23	.06	.63	.17	.19	.51
Limit impulse buying	.09	.16	.61	.21	.20	.49
Max shop enjoyment	.11	.24	.50	.21	.06	.37
Min time spent	.08	.23	.23	.70	.13	.61
Max privacy*	.38	-.15	.19	.48	.45	.64
Min cost*	.10	.43	.08	.46	.07	.41
Min environmental impact*	.07	.36	.32	.01	.65	.66
Max product availability*	.04	.38	.28	.20	.52	.54
Eigenvalue:	8.38	2.51	1.43	1.27	1.03	
Percent of variance:	32.22	9.64	5.48	4.87	3.95	

Note: * = items removed from purified analysis; Min = Minimize, Max = Maximize

Purified Factors

The purified rotated results (see Table 4) exhibited three factors with eigenvalues over one accounting for 57.43% of the total variance. Both personal information and security issues dominated factor 1, which was labeled *Trust*. The second factor contained items such as interaction, comparison shopping, maximizing access to information, and ease of use; this factor was labeled *Access* (access to information). The last factor components included maximize convenience, minimize travel, and maximize enjoyment; thus, this factor was labeled *Convenience*. This result showed that consumers have opinions about what issues should be included in an online shopping experience,

positively answering research question 1 (*Do online consumers exhibit preexisting cognitive preferences for Web page components?*).

Table 4. Purified factor loadings

	Convenience	Access	Trust	Communalities	Item-to-factor correlation
Max convenience	.74	.16	.21	.61	.71
Min personal travel	.72	-.04	.23	.56	.69
Limit impulse buying	.64	.23	.05	.47	.71
Min time spent	.55	.31	.09	.41	.67
Max shop enjoyment	.54	.28	.1	.38	.68
Offer personal interaction	.07	.78	.18	.64	.75
Enhance comparison shopping	.12	.66	.23	.50	.67
Max access to info	.28	.66	-.03	.51	.72
Max ease of use	.24	.61	.07	.43	.75
Min misuse of personal info	.15	.11	.84	.75	.87
Assure system security	.2	.04	.83	.73	.85
Min misuse of credit card	-.16	.23	.81	.76	.79
Min fraud	.33	.03	.81	.73	.88
Max accuracy of transaction	.28	.19	.67	.56	.78
Eigenvalue:	1.35	2.11	6.14		
Percent of variance:	7.49	11.73	34.09		

Note: Min = Minimize, Max = Maximize

Convenience Factor

The Convenience factor is related to the time savings offered by the Web, since one needs not leave home, as well as the ability to make better purchase decisions with less associated expense. To obtain the same number of search results a Web-shopping-bot can offer in just a few minutes, for the cost of phone and ISP service, a consumer would have to spend days on foot incurring the costs of personal time and transportation expense. Of course this is only possible if the Web site really does help the consumer save time, which is dependent on the site's accessibility. A poorly designed site will lower convenience, waste the users' time and could even be unethical in encouraging impulse buying.

Access Factor

The Access factor clearly related to the online shopping experience itself in which these respondents felt it important to be able to seek out products easily and then gather information about the products. This feature is the central advantage of the Web; namely, it can supply access to information across normal retail boundaries and give highly involved consumers an opportunity to find detailed comparative information about products. The interface plays a role in this factor that emphasizes the specific user interface (UI) design of the Web pages. Whereas Convenience represents the general Web site's ability to bring accessibility to the shopper, Access emphasizes the ability to understand the data presented, modify its presentation, and make it easy to manipulate.

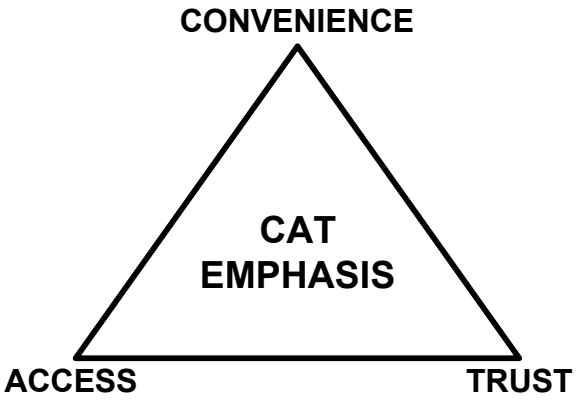
Trust Factor

The Trust factor contained items directly related to online security issues. This factor was mainly concerned with assuring that personal and financial information was not misused and that a transaction was accurate. Within Taiwan, this topic has often received great attention and is blamed for the delay in e-commerce taking off domestically. Any firm that wishes to succeed in attracting online consumers will have to first address these issues and assure customers that not only is the credit card correctly billed, but that personal information will not be used for purposes other than those related directly to the purchase. These three factors answer positively research question 2 (*Can online shopping interface components be grouped in dimensions based on consumers' preexisting preferences?*).

CAT Emphasis

Study 1's Web users often had some experience in making online purchases and all were frequent users of the Web. Although online purchasing was still small in monetary terms, previous experience allowed these subjects to clarify what the online experience meant to them. Convenience, Access, and Trust (CAT) formed a triangle of emphasis for study 2 (see Figure 5).

Figure 5. CAT emphasis model



This CAT result answers the basic question of what areas have the greatest potential to influence likelihood for elaboration within the ELM context. Web users surf with these three factors in mind and are cognitively predisposed to thinking about these issues. Left unanswered, however, is how actual implementation of interface components representing the CAT emphasis influences online shoppers' attitudes toward the Web site. The ELM includes the possibility that important issues for consumers trigger negative thoughts, which in the central route context would result in a negative persuasion effect. Such issues should be de-emphasized and less information provided in order for the peripheral route to be used by the consumer, thus limiting negative thoughts. This is the opposite of positive thought provoking issues that should be emphasized in the

communication in order to increase elaboration likelihood. Thus, further analysis is required to understand how the components of CAT actually influence the thoughts of online consumers and specifically in what direction (positive or negative thoughts).

CHAPTER 3
STUDY 2: RELATIVE VALUE OF COMPONENTS IN ONLINE SHOPPING

The vital components of online shopping, as perceived by respondents, were summarized in Study 1's CAT emphasis. In order to understand which parts of CAT activate cognitive processing, for what types of consumers, and the direction of thoughts (favorable, unfavorable, or ambiguous), Study 2 was undertaken. This section describes Study 2, which explored the relative importance of each CAT component through a conjoint experiment that simulated an online shopping task. Study 2 adopted the CAT components to form the basis of an online conjoint experiment—a simulated online product search and purchase (thus the emphasis is on a task orientation rather than searching the Web for hedonistic purposes). Relevant literature for each CAT component was first reviewed in order to inform construct creation of the CAT components for the shopping simulation.

LITERATURE REVIEW AND HYPOTHESES

Convenience

Travel. Information about products is sought over the Internet because of the increased convenience and lower costs compared to physical searching (Burke, 1997, 1998). Factors that have contributed to the success of catalog and television shopping, namely that time-starved consumers can benefit from home delivery and shopping from home, also are important to online shoppers. Online shopping has the added convenience of searching across any online vendor for any available products at any time. This leads to the first hypothesis:

H_1 Minimizing travel to pick up a purchase will have a positive effect on A_{WS} for task-oriented shoppers.

Interface Design. This convenience can be limited by the hardware/software interface that consumers may not be familiar with or find poorly designed. The look and feel of a software interface activates a mental model for the user. If that model or schema is familiar, then finding what is sought will be easy, but if the interface does not match any preexisting schema, the user may be frustrated (Satzinger & Olfman, 1998). Just what the schema is and how far from it a design can vary in order to generate interest, while not raising frustration can only be found through further research and observation in an approach that parallels physical store layout research (Underhill, 1999).

Lohse and Spiller (1998) analyzed 28 online retailers' interface features and found that convenience was the top priority to meet consumers' needs. Online consumers expect to be in control of the search experience, making the accessibility of a vendor's interface of primary importance (Wolfinbarger & Gilly, 2001). If a Web surfer cannot find the content (s)he is looking for at a firm's site, the visitor quickly leaves (Liebmann, 2000). The quality or usefulness of the information lies in its ability to assist the consumer in accurately predicting satisfaction of later consumption (Alba, Lynch, Weitz, & Janiszewski, 1997). To accomplish this, Nielsen and Tahir (2001) emphasized interface features that empower the consumer, such as viewing items side-by-side for comparison.

Differences in the way Web-based information is displayed from traditional print means that online stores should not simply repeat what has been done previously in

catalogs (Hoque & Lohse, 1999). Web shopping's advantage of low switching costs also means that a poor interface design can quickly drive visitors away (Nielsen & Norman, 2000a). Observing how online shoppers react to specific designs can give accurate information for designing a better shopping interface (Nielsen & Norman, 2000b) which may be specific to product lines, market segments, and even culture (Simon, 2001).

Perfection in online interface design is elusive simply because there is no master list of what works. The most basic issue faced when designing a Web page is the amount of complexity versus simplicity (Nielsen, 2000). Research results point to contrary influences on this point. Complex and simple Web site designs display effects that oppose each other (Bruner & Kumar, 2000; Stevenson et al., 2000). A simple and clean interface helps viewers quickly find what they want. A complex and busy interface attracts attention and interest and encourages discovery (D'Angelo & Twining, 2000; Huang, 2000). Current online search site interfaces reflect these different approaches in their underlying design, with Google.com following the absolute minimalist approach, Yahoo.com keeping a very clean interface, and MSN.com employing the high complexity (busy) approach. Nielsen labels these two approaches as engineering (simple and direct) versus art (rich and complex). Thus, the second hypothesis:

H_2 Lower Web page complexity will have a positive effect on A_{WS} for task-oriented shoppers.

Access to Information

Product Information. Consumers use the Internet as a major source of information, with much of that information playing a role in purchasing decisions. The

Internet as a whole (including the Web, email, and other services) can be viewed as a value-added service that is transported over telephone and cable networks, with the value carried being information (Benjamin & Wigand, 1995). Emphasis on information combined with the reversal from push media (such as radio, television, and mail) to pull must be recognized by marketers as a radical shift from being an agent of the seller to being an agent of the buyer (Achrol & Kotler, 1999). This approach emphasizes assisting consumers to access product information rather than simply sending information to passive consumers.

Ratchford, Talukdar, and Lee (2001) found that 38% of consumers surveyed had used the Web to gather information when considering a car purchase. This emphasis on practicality is a feature of Internet users who are most often goal-oriented or utilitarian shoppers (Wolfinbarger & Gilly, 2001). For Web shoppers, shopping is a task-oriented affair that includes deliberate and rational behavior. Wolfinbarger and Gilly found that over three quarters of online shoppers surveyed want to have control of their experience and actually value obtaining information directly and thereby avoiding interaction with a salesperson. Web shoppers may emphasize control since one reason for shopping online is the compression of free time many professionals face. Nevertheless, the use of the Internet as an information source is not limited to time-starved working professionals.

La Ferle, Edwards, and Lee (2000) found that tech-savvy teens relied on the Web for 82% of their research, 66% of their homework, 33% of their health information, and 43% of their news and current events information. The Web was their favored source of information related to research and homework but not an important resource for leisure, entertainment, or shopping. For teens, a physical social life is still preferred, but their

adoption of online information searching is important for marketers, as future consumers will first turn to the Web when searching for alternatives and product information.

Nearly all Web users use search engines or some kind of search tool to find information over the Web (Kobayashi & Takeda, 2000). Entertainment products also have an important information dimension that can be presented over networks. Zufryden (2000) found that film promotion Web site activity has a pattern similar to that of box office sales. Film promotion site activity increases prior to the release of a film, peaks around the first week after introduction of a film and then declines. Film promotion Web sites were found to be used by active seekers of information about new films, most likely judging if the film will be a good buy. Moe and Fader (2001) found Web use to be dominated by search/deliberation activity while a much smaller group of Web surfers were hedonistic in their Web surfing. Determined search for information implies high involvement with the product being sought, which is what Singh and Dalal (1999) observed. Hedonistic surfers, in contrast, tend to be low involvement and more likely to make an impulse purchase and search the Web for fun, rather than for specific information. This leads to the next hypothesis:

H_3 Increased levels of product information will have a positive effect on A_{WS} for task-oriented shoppers.

Price Search. Although Web searches may often be targeted, once consumers find a site they expect to explore it. The ability to view more information, compare prices, list price ranges, make quality assessments, and even compare across product sources is important. Lynch and Ariely (2000) labeled this *transparency* of the Web site, which

results in increased *welfare* for Web site visitors. Welfare improvement from availability of information can also be viewed from the social marketing perspective as governments work to move their services online and assure all citizens have access and the ability to make comparisons (Asfaw, Karunanayake, Mehta, Parnaik, Shah, & Targett, 2001). Ability to make comparisons, specifically for price, leads to the next hypothesis:

H_4 Including price comparisons in the search result will have a positive A_{WS} for task-oriented shoppers.

Trust

Personal Information. Within the popular press, it is the risk of shopping on the Web that is most often reported in relation to Internet marketing. That a buying channel has its own specific risk is nothing new, as researchers have shown in both telephone and mail-order shopping (Cox & Rich, 1964; Jasper & Lan, 1992; Peterson, Albaum, & Ridgway, 1989; Simpson & Lakner, 1993; Spence, Engel, & Blackwell, 1970). Direct marketing has dealt with issues of risk for decades, especially in relation to the collection and use of personal information (Culnan, 1993; 1995; Nowak & Phelps, 1992; 1995; 1997). Milne (1997) investigated consumers' willingness to provide personal data, finding that transparency of purpose made respondents more willing to supply such data. Similarly, the powerful capability of the Web to personalize marketing activity is appreciated when the result is on target, but for many consumers, experiences with previous direct marketing efforts, i.e., junk mail and telemarketing, have left them suspicious that personal information will be abused.

Online Shopping Experience. Although nearly half of Internet users have made some online purchase (Sefton, 2000), with average per capita online expenditures exceeding 1,200 USD in 1999 (Ernst & Young, 2000), potential abuse of personal data has not ceased being an important issue. Non-Web users have expressed concern over misuse of personal information and tracking or clickstream data (recording the activity of a Web surfer when visiting a firm's Web site). These issues do not fade with increased use. Experienced Internet users, including those with online buying experience, show increasing levels of such concern (Bellman, Lohse, & Johnson, 1999; Hoffman, Novak, & Peralta, 1999; Miyazaki & Fernandez, 2001). The tracking of online consumer activity is looked at suspiciously by Web surfers, who generally relish the empowerment self-directed Web surfing gives them. These independent-oriented consumers feel that monitoring of activity by a firm has overtones of Big Brother. Third party attempts to improve the environment of online trust, such as TRUSTe, involve branding Web sites that meet standards (Benassi, 1999). These efforts usually have no official capacity to investigate or punish participating sites beyond visual inspection and volunteered information, raising the same issue of trust, since consumers must now trust a third party. Thus, the roots of trust, at least as they relate to marketing, must be addressed if consumers are to increase their acceptance of online shopping.

Developing Trust. A relationship of trust involves making oneself vulnerable to others. When that vulnerability is not taken advantage of, trust can grow (Cassell & Bickmore, 2000). Improving trust does not require the complete removal of risk, which itself may be an impossible goal. Olson and Olson (2000) cite a number of experiments on trust, finding that personal interchange of communication improves trust. Fukuyama

(1995; 1999) argues that people do not act completely rationally, dependent on utility alone, when deciding to trust, but instead respond to an enhancement of social capital in which the individual feels part of a social group. The establishment of this social capital, or trust, allows increased prosperity in a society as individuals are more willing to undertake the social exchanges (including economic transactions) that involve risk. The alternative is a culture of fear, overestimating risk, where selfishness dominates, and ultimately results in decreased economic opportunities. We can conclude that exchanging information in a symbiotic fashion allows consumers to play more of a role in an online trusting relationship and that such a relationship can improve acceptance of the inherent risks of online shopping.

Online Promise. A promise up front to not abuse data collected during online shopping, or at least a clear statement of how such data will be used, opens a window for trust to be built upon. Since current legal protection resides mainly in contract law (Volokh, 2000), a promise, on the part of the online firm, opens the firm to the increased risk of frivolous lawsuits, but simultaneously presents the opportunity for trust building. Legal trends suggest that personal information online may in the future be recognized as a form of intellectual property vested in the individual who can use it in economic transactions (Clarke, 1999). Identifying the innate value of this information can help firms engage in trust building now and such trust can be a differentiating competitive factor in the future (Reichheld, Markey, & Hopton, 2000). These issues lead to the next hypothesis:

H_5 Including assurances that personal information will not be given to any third party will have a positive effect on A_{WS} for task-oriented shoppers.

Server Security. These larger issues of trust can also be examined at the specific level of security, since even the best bilateral intentions of firm and customer can be harmed by technical failures. Whereas catalogs had to deal with the collection and potential misuse of personal information, online firms have the added issue of storage. Previously, concerns about personal data storage have included such professional areas as medicine, government, and insurance, traditionally involving issues of internal security (examples include insiders stealing or misusing data they have access to). With open network systems, the opportunity for outsiders to penetrate an organization's database becomes a new security threat. The publicity surrounding hackers raises cognitive concerns (rational or not) that databases containing personal and credit information are not safe from outside invaders. Such invasion of privacy has its ultimate expression in the phenomenon of identity hijacking (Verton, 2001), where a hacker takes over the electronic identity of another person. The risk of security breaches also concerns firms and has slowed adoption of online business models (Schoder & Pai, 2000). Addressing these issues has proven difficult.

Third Party Solutions. Removal of personal and credit information from the online buying process has been the goal of e-cash developers (Mitchell, 2000). A completely new currency, electronic cash (also known as e-cash, cyber dollars, or digital cash) has not yet caught on and at best would take many years of support to succeed, as even credit cards took decades to become widely adopted. Such systems themselves involve risks, such as multilateral netting (Green, 1999), which involves trust in a third party to complete payment. Jones, Wilikens, Morris, and Masera (2000) point out that complete security is currently obtainable, but the trade off is lower levels of availability.

The industry has responded with increased use of cryptographic technologies (Ginzboorg, 2000). However, security hardening approaches do not address the cognitive perception at the purchasing point. The best security system is only as good as the online consumer believes it is. If there is no confidence in the system, then online commercial activity will be impeded.

Mail-order Experience. Pledges of consumer protection by mail-order companies were prevalent as far back as 1875 (Klos, 1998). By letting customers know that security issues have been addressed, and how they have been handled, the value of the shopping experience can increase. Online sellers must offer a bundle of services that their potential market segments value more highly than other competitors (both online and off) if they are to compete (Bhatnagar, Misra, & Rao, 2000). When consumers know that there is a controlling mechanism overseeing security, trust may be increased (Eisner, Jett, & Korn, 2001). This leads to the next hypothesis:

H_6 Including assurances that the most up-to-date security software is being used to protect against fraud will have a positive effect on A_{WS} for task-oriented shoppers.

Heterogeneity. Table 5 summarizes the salient research when considering what components constitute the concerns of online consumers. The three main areas of research to date align well with concerns found in Study 1, expressed through the CAT emphasis. The last hypothesis asserts that attitudes toward CAT components, integrated into the Web site, will not be homogeneous.

H_7 Subsets of respondents will exhibit measurable differences in their preferences for the CAT components.

Table 5. Summary of relevant literature

	Author	Primary Focus	Research Method	Summary
Convenience	D'Angelo & Twining, 2000	easy to use interface	computer lab simulation	simple page design is easier to understand
	Hoque & Lohse, 1999	format of information can influence consumer choice	computer lab simulation and pen & paper	Web presentation of data influences consumer decisions differently from paper-based ads
	Nielsen, 2000	art versus engineering	observation/ focus groups	complex designs confuse users
	Nielsen & Tahir, 2001	easy to use interface	focus group	effective interfaces are also the ones users feel comfortable with
	Stevenson, Bruner, & Kumar, 2000	response to Web page complexity	computer lab simulation	complex designs are harder to understand, but are also interesting
Access to information	La Ferle, Edwards, & Lee, 2000	teenagers' purpose for using Internet	paper & pen survey	teens use net for homework, research medical information, but not for entertainment
	Lohse & Spiller, 1998	convenience of use	content analysis	store layout, organization, and ease of use are all convenience factors
	Moe & Fader, 2001	purpose of online shopping	online clickstream measures	online visitors tend to be search or hedonistic oriented
	Singh & Dalal, 1999	involvement with the Web page	computer lab simulation	consumers are able to classify Web pages as rational or emotional
	Wolfinbarger & Gilly, 2001	purpose of online shopping	online survey	online shoppers tend to be goal-oriented
	Zufryden, 2000	Search for information	online clickstream measures	consumers use Web sites evaluate out new films
Trust	Bellman, Lohse, & Johnson, 1999	measure predictors of online buying	online survey	demographics did not predict online buying, but amount of *wired* lifestyle did
	Bhatnagar, Misra, & Rao, 2000	reasons for some consumers acceptance of online risk	online survey	music, Web services, apparel and clothing and general products with prices under 50 USD were seen as less risky
	Cassell & Bickmore, 2000	improving online trust through interface innovation	lab development	using virtual images of people or other images, and including small talk, creates an atmosphere of trust
	Hoffman, Novak, & Peralta, 1999	misuse of personal and financial information	online survey	privacy concerns do not decline as Internet use increases, but stays a major concern for most online consumers
	Milne, 1997	willingness of consumers to supply personal information	pen & paper survey	when use of data is made clear, consumers are more willing to supply their personal data
	Miyazaki & Fernandez, 2001	classify types of online risk perceived by consumers	pen & paper survey	issues of privacy increased in importance with online experience
	Schoder & Pai, 2000	online risk in B2B transactions	pen & paper conjoint exercise	legal risk is main concern of firms, which can only be offset when client risk and financial risks were both low

Conjoint Analysis

Conjoint analysis has been widely applied in marketing research (Cattin & Wittink, 1982; Green & Rao, 1971; Green & Srinivasan, 1990), and is one of the most widely used methodologies for measuring consumer preferences (Carroll & Green, 1995), and has recently been used in consumer behavior studies within e-commerce (Lynch, Kent, & Srinivasan, 2001; Tan, 1999; Wood, 2001). Conjoint is employed for its emphasis on understanding tradeoffs consumers make when evaluating competing options (Green, Krieger, & Wind, 2001). Manipulated variables (*attributes*), in conjoint experiments, represent clear different states (*levels*) to the subjects who rate combinations (bundles) of product features. In Study 2, the different bundles are made up of six variables, each with two states, i.e., present or not present.

Construct Development

CAT Factors. Resulting CAT factor variables were re-examined in the context of Study 1's corresponding online survey questions in order to derive Web browser interface components that accurately represented the underlying factors. The highest loading variables were examined first, with an emphasis on the normal implementation of those variables within the browser interface. This resulted in the CAT construct being represented by six independent variables (see Table 6), the study's conjoint stimuli, with each having two value levels. These six variables were then implemented to represent the CAT components in real-world Web shopping use.

Table 6. CAT components implemented in conjoint experiment

CAT component	Conjoint implementation (present/not present)
Convenience:	Include travel/minimize travel
	Accessibility high/Accessibility low
Access:	Information access high/ information access low
	Price search high/price search low
Trust:	Fraud protection high/fraud protection low
	Personal information protection high/personal information protection low

Convenience. Convenience's highest loading variables were maximize convenience and minimize personal travel. In light of the literature, it was clear that saving time is a priority for online shoppers. Saving time was represented in the interface design through *minimize travel*. Follow-up interviews showed the convenience variable (loading on the Convenience factor) and ease of use variable (loading on the Access factor) both had some similarity in their relation to interface design. Convenience was generally expressed as the ability to quickly get to the shopping activity, while ease of use was more related to the details of how the product information was shown and how the search/checkout interface functioned. Overall, the Convenience and Access factors differ in this aspect, i.e., Convenience is the general measure of using online shopping efficiently while Access is related to finding specific information, or being effective in the product search. This difference can be seen in Nielsen's (2000, p. 168) observation that the *home page* acts as the flagship of a Web site in that it answers the questions *Where am I* and *What does this site do?* This first page functions primarily as a point of departure (navigation) to more specific tasks or detailed information. Thus, the first page of a Web site determines just how convenient the shopping experience will be. It is possible that convenience is high, yet the resulting information is difficult to understand or hard to manipulate (features related specifically to the ease of use variable and the

Access factor in general). With this in mind, convenience was represented in the experiment's interface as *accessibility* on the first page of the shopping site.

Access. Although personal interaction was the highest loading variable in the access factor, it was excluded from the interface design because of the difficulty of including the flexibility of interaction while maintaining an experimental condition. The next two highest loading variables were included in the experiment, with the first being enhancing comparison shopping, represented in the interface design as *price search* and maximize access to information, which was represented by the variable *information access*. These variables generally emphasize the way product information is displayed in the interface.

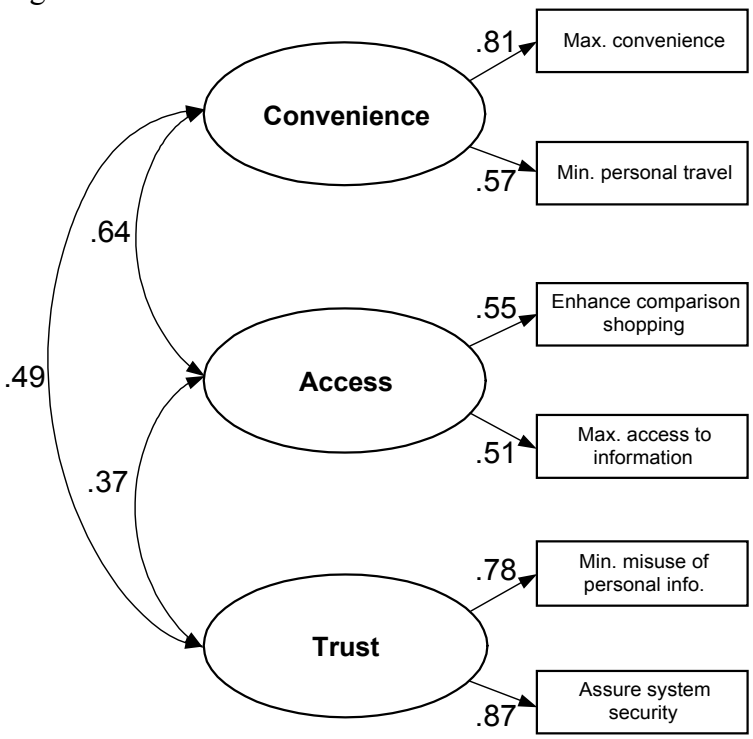
Trust. In the case of Trust, the two top loading factors were minimize misuse of personal information and assure system security. Many of the other Trust variables appeared to fall into these two categories of interface implementation. For example, the third variable, minimize fraud, could be represented on screen through the same method as system security. Thus, Trust was represented by the two variables: *personal information protection* and *fraud protection*.

Confirmatory Factor Analysis

To assure the two variables chosen for each of the CAT components were accurate descriptors of the latent constructs, confirmatory factor analysis (CFA) was undertaken. The survey data from Study 1 was used in Analysis of Moment Structures (AMOS, Arbuckle & Wothke, 1999) with acceptable results (see Figure 6). The model

obtained a good fit (χ^2 = 7.86, p = .25) reinforcing confidence in the validity of the six variables in representing the underlying factors (see Table 7).

Figure 6. Path diagram for CFA



Note: All paths are significant at p < .01

Table 7. Fit measures for CFA

Fit Measure	Default model	Independence
Discrepancy	7.86	336.68
Degrees of freedom	6	15
p	.25	.00
Number of parameters	15	6
Discrepancy / df	1.31	22.45
RMR	.03	.24
GFI	.99	.67
Adjusted GFI	.97	.54
Parsimony-adjusted GFI	.28	.48

Pre-Testing Constructs

Web Interface Testing. In order to determine the salient levels of differences between variables' high/low states as well as interface designs that accurately conveyed

the intended simulation of an online search and purchase, all variables were pre-tested with numerous focus groups drawn from a university student population in central Taiwan. Each participant viewed the pre-test program, run on PCs, in a computer lab. In the program, pairs of attribute levels were shown with the respondent asked to score the degree of similarity (if any), on a ten point scale. For example, the first screen would show a Web page with the information content set to low and the next screen would show the information content set to high followed by a screen for assigning a similarity score. Each participant viewed all six attributes, rating the difference between each level (a total of twelve screens), in a randomized design where both the order of the attributes and the sequence of levels were randomly varied. A paired t-test was run to assess significant differences between the attribute levels. Adjustments were made to the Web page designs where the differences were not significant. Changes were guided by participant exit interviews.

Cover Story Testing. Also examined, through focus groups, was the actual ease of completion of the experiment and its cover story. After focus group feedback and redesign, fifty subjects were randomly solicited through email sampling and contacted after completion of the online conjoint experiment. Interviews inquired into flaws in the experiment or areas of difficulty in use. This feedback led to adjustments resulting in the final design.

Shopping Web Site Design

Independent Variables. The resulting six variables, of the CAT emphasis, were implemented within the online shopping interface based on surveying Web site designs of

firms from *PC Magazine's* year 2000 top 100 Web sites list (PC Magazine, 2000, examples included in Appendix A). Details of construct implementation follow:

Convenience (Minimize Travel). Minimize travel was represented by the online purchase being shipped to the consumer compared with the travel time of a trip to make a physical purchase. This variable was represented in the experiment at the checkout stage by informing the subject that the product will be sent directly (minimize travel) or that a pickup by the customer is required (include travel).

Convenience (Accessibility). *Accessibility* was represented by the two fundamentally different front page Web site designs popular at the time, i.e., high/low page complexity. Nielsen (2000) pointed out that the front page often takes the form of a list of hierarchical directories, which is easier to use than unstructured text and graphics that make it difficult for a user to guess where links lead. Accessibility high was implemented by designing the front page of the experiments' shopping mall to follow the Yahoo.com design paradigm that emphasized a clean interface with minimal use of graphics and text organized by topics in an outline structure. Accessibility low followed the design implemented by MSN.com that contained a more graphics laden page with colors and numerous text groupings that followed no apparent structure. Generally, MSN's site could be described as very busy in comparison with Yahoo. For this experiment, the two designs were given the labels accessibility high and low; however, this was not intended to declare one better than the other. The labels were only for conjoint design implementation, and it remained for the experiment to find which design paradigm was actually more valued by online shoppers.

Access to information (Information Access). Information access was high when the product description was detailed and expanded, including a picture, while information access was low when the product description was condensed and lacked a picture.

Access to information (Price Search). Price comparison and search features were included by displaying search results with one single price (price search low) or with a range of prices (price search high) indicating the current result to be the lowest price across all firms searched for the same product.

Trust (Fraud Protection). Fraud protection high was implemented through a popup window that required a user click before moving into the checkout stage of the online purchase. The window explained that the server was running a new security system called *ULTRA* that assured credit card security. Fraud protection low was represented by the lack of such a window.

Trust (Personal Information Protection). Personal information protection high was implemented at the checkout stage, when the name and credit card, shipping address, etc., were requested. This was done through the inclusion of large text explaining that the hosting firm would not use the customer's personal data for other purposes and would not sell or distribute the information to other companies. Personal information protection low did not include this text in the checkout stage.

Procedure

Design of the online experiment was based on actual online shopping Web sites, such as Amazon.com, Barnes&Nobel.com, Buy.com, PCmag.com, Yahoo.com,

IBM.com, etc., (see Appendix A for examples). There was, at the time, remarkable similarities among shopping sites in the stages consumers followed when making an online purchase, generally summarized as:

1) Product search, where parameters for a search, including product type, description, price range, etc., were input.

2) Product feature and price comparison, where all results matching search parameters were displayed.

3) Purchase request, where the desired product was placed in a virtual shopping cart.

4) Checkout, where shipping information and payment data were input.

Factorial Design

Table 8 shows the conjoint labels used to represent the six variables in this experiment along with the stages they appeared in the actual online shopping simulation. The conjoint experiment had six attributes with two levels each for a total of 64 possible combinations (2x2x2x2x2x2) in a full factorial design. This meant that respondents would have to rate 64 shopping experiences (each somewhat different) in order to obtain both the main effects and interaction effects.

Table 8. Conjoint labels and sequence in experiment

Conjoint label	Conjoint implementation (present/not present)	Experiment (shopping) stage
A	Accessibility high/accessibility low	Front page/search portal
B	Information access high/ information access low	Search result
C	Price search high/price search low	Search result
D	Fraud protection high/fraud protection low	After product selection
E	Minimize travel/include travel	Checkout
F	Personal information protection high/personal information protection low	Checkout

Orthogonal Design

Sixty-four evaluations of slightly different shopping interfaces were far too many for normal human endurance. For this reason, an orthogonal design was used that resulted in eight conjoint profiles. An orthogonal design allows testing of the main effects (Addelman, 1962) by employing an appropriately chosen subset of all possible designs (Green & Rao, 1971). SPSS Conjoint 8.0 was used to generate the orthogonal design in Table 9, which included two levels for each attribute, and the resulting conjoint profiles that were the basis for designing the Web page bundles.

Table 9. Conjoint orthogonal design

	Minimize travel	Interface accessibility	Information access	Price search	Fraud protection	Personal information protection
Card 1	Low	High	High	Low	Low	High
Card 2	High	High	Low	Low	Low	Low
Card 3	High	Low	High	High	Low	Low
Card 4	High	Low	Low	Low	High	High
Card 5	Low	Low	Low	High	Low	High
Card 6	High	High	High	High	High	High
Card 7	Low	Low	High	Low	High	Low
Card 8	Low	High	Low	High	High	Low

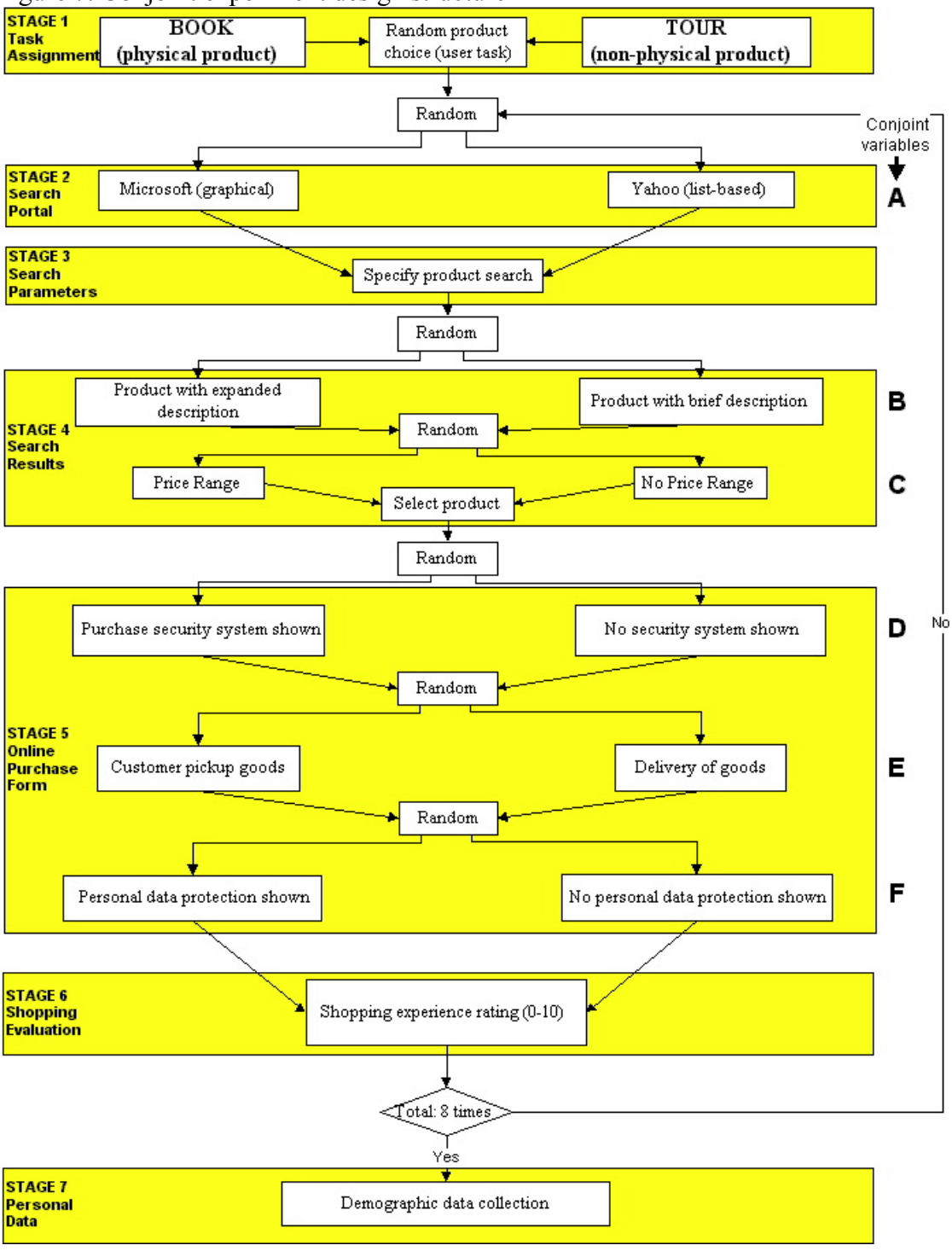
Note: High represents the attribute is present; Low represents the attribute is absent

Experiment Stages

Figure 7 shows the conjoint experiment's shopping simulation flow, with a loop back to the start after completing a purchase, a total of eight times (corresponding to the

eight conjoint profiles). Before any shopping simulation began, each participant was directed either to a product or a service. Differences between products and services within the Web environment, an issue that has not been discussed in existing literature, were included in this experiment for examination. Random assignment was used for this variable so that participants who were assigned to the physical product category did not know that there was a service category and viewed all eight profiles with the same task and same product. A random assignment was then used to begin the display of one of the eight conjoint profiles. The order of the profiles was also randomly selected each time the participant completed a purchase, such that each participant had viewed all eight profiles when finished, but in different orders (this process is represented in Figure 7 by a box labeled *random* at each stage, although technically it represents the conjoint orthogonal design).

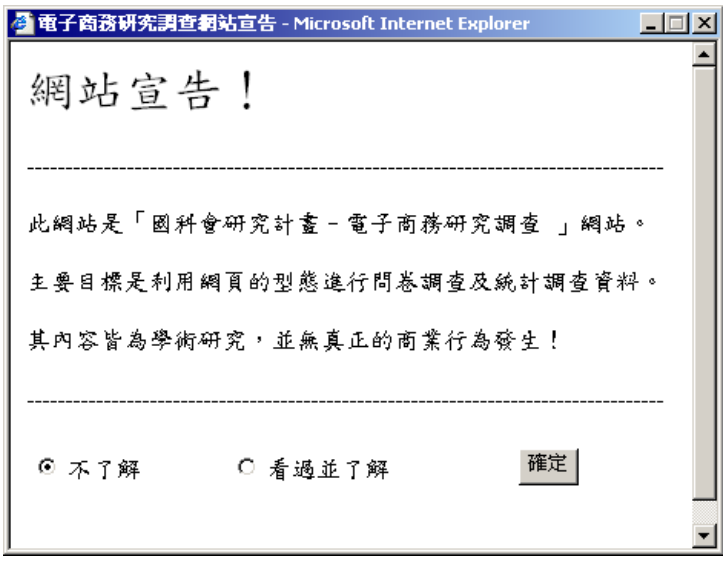
Figure 7. Conjoint experiment design structure



Informed Consent

After entering the experiment Web site, the cover story page could not be viewed without first reading a window meant to act as informed consent for participation. The American Psychological Association's (APA) guidelines on informed consent (Fischman, 2000) were followed by supplying all participants with a clear statement of the purpose, procedures, and obligations when joining this experiment. The consent window (see Figure 8) stated that the research was part of a National Science Council project and that everything contained in the simulation was not real. By default, the radio button for *not read* was clicked. If the subject did not manually click the *read* button, the experiment could not continue (a modal form). Once the read button was clicked, the OK button then closed the window and the experiment could proceed. Further detailed instructions and contact information were included on the first page of the experiment, according the APA guidelines. At any time, if a participant exited the experiment site, the consent window again appeared. This prevented the possibility that someone could have joined in the experiment, having missed the first informed consent window, and later exited without knowing the site was constructed for experimental purposes.

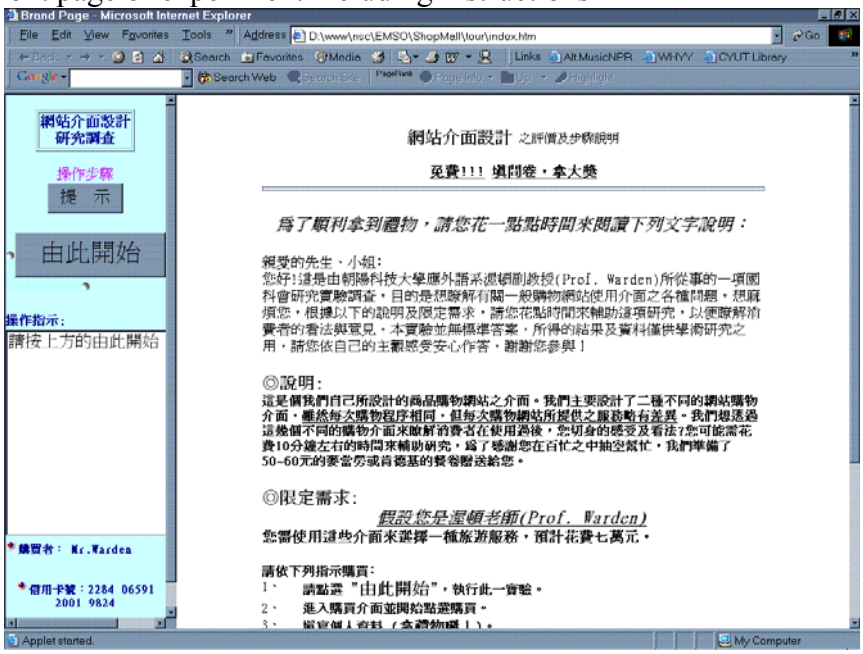
Figure 8. Informed consent modal window



Task Explanation (Cover Story)

A cover story was generated that both hid the actual variables under study and increased involvement and sense of reality among participants. It appeared on the first page after the informed consent modal window. The cover story explained a purchase was going to be made online by the experimenter and participants were to help in evaluating different online shopping designs. A logo and name were included in the site, *@HomeShopping*, that were consistent across all profiles and gave the appearance that the site was indeed a professional search/shopping engine under development.

Figure 9. Front page of experiment including instructions



Search Portal Design

After beginning, a participant viewed one of the accessibility designs, depending on the random selection of a conjoint profile (no conjoint profile was repeated). Instructions for use were displayed in a box in the left frame. During the first profile completion, at each step a popup non-modal box appeared guiding the participant in how to proceed. Pre-testing had shown this method effective for reducing confusion and giving participants a sense of confidence in completing these complex tasks. Both interface designs (accessibility high/low) contained the same items in approximately the same order to avoid any biasing due to page content.

Figure 10. Stage 2, portal page accessibility attribute set to high level

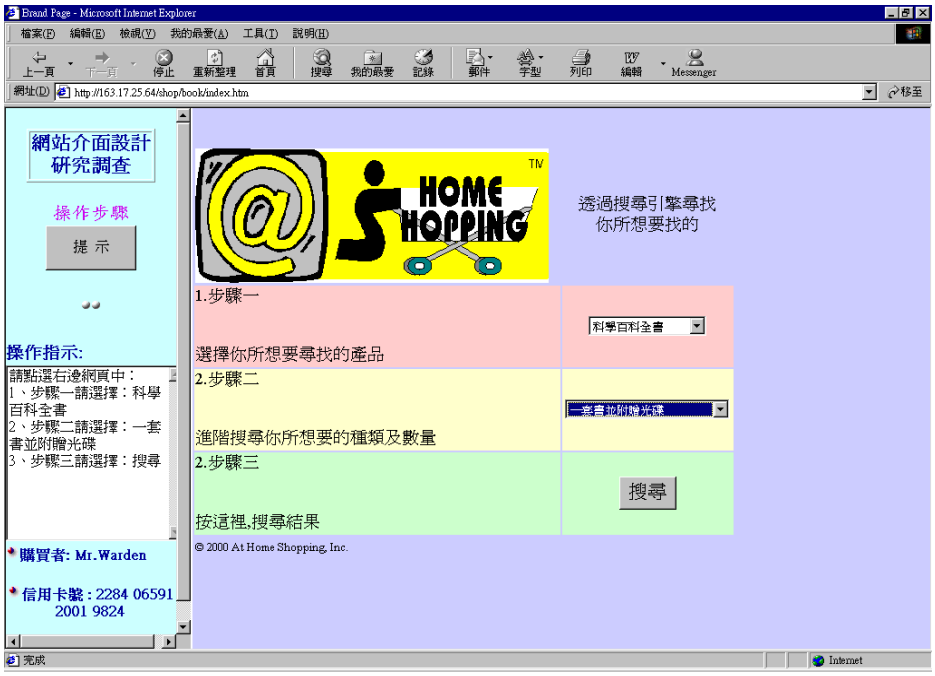
Figure 11. Stage 2, portal page accessibility attribute set to low level

Product Search

Instructions informed users of the type of product being searched for and the target price range. According to pre-testing, books were most readily understood and accepted as an online purchase that could be searched for. Within this category, encyclopedias were most easily accepted as a possible purchase while also having a high

enough price range as to activate risk concerns. An overseas tour, to Holland in this case, was found to do the same for the service product. Users actively used dropdown menus to choose product specifications. These specifications remained the same throughout the eight conjoint profiles, but had to be completed again during each conjoint profile. Pre-testing found that this consistency of task meant that by the second profile users are able to complete the tasks without difficulty.

Figure 12. Stage 3, product search parameter entered through dropdown menus



Product Result

After specifying the product and price, the search was completed with a built in time delay as the system simulated searching over the Web. A list of five *possible matches* was displayed on the result page. Product information and comparative price information differed at this stage, depending on the specific conjoint profile randomly chosen (see Figure 13, Figure 14, and Figure 15). The information access attribute had

two levels, as did the price search attribute. Depending on which conjoint profile was in use, the user saw the same attribute levels across all displayed search results for this specific conjoint profile. In other words, if information access was low and price search also low, all five search results displayed the low state for information and price (as in Figure 13). Users were then instructed to choose for purchase (put in shopping basket) the product that best matched the specifications of the search. Which search result was actually chosen made no difference to the flow of the experiment.

Figure 13. Stage 4, information access low and price search low (book)

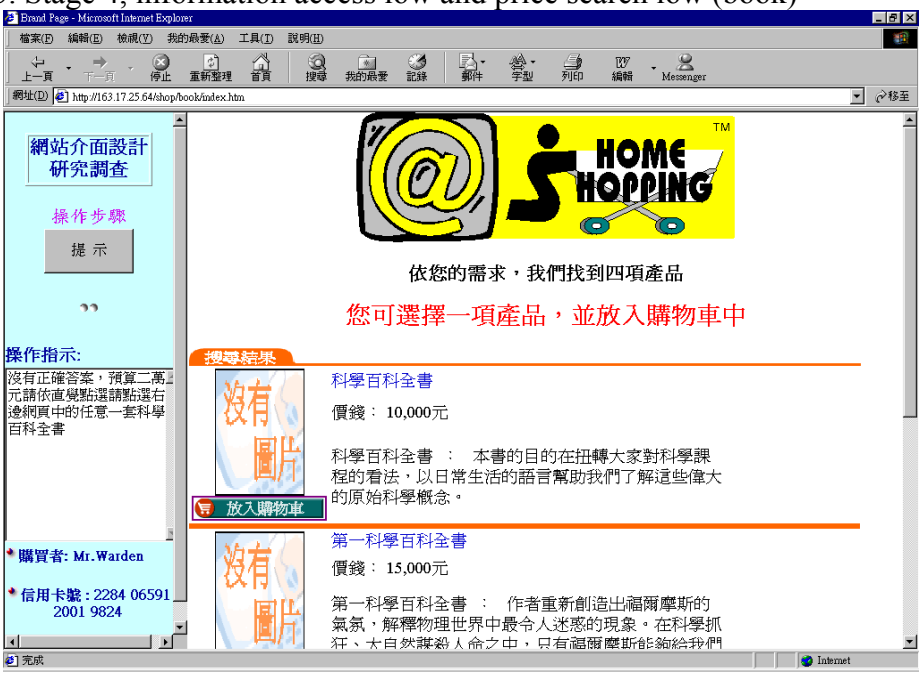
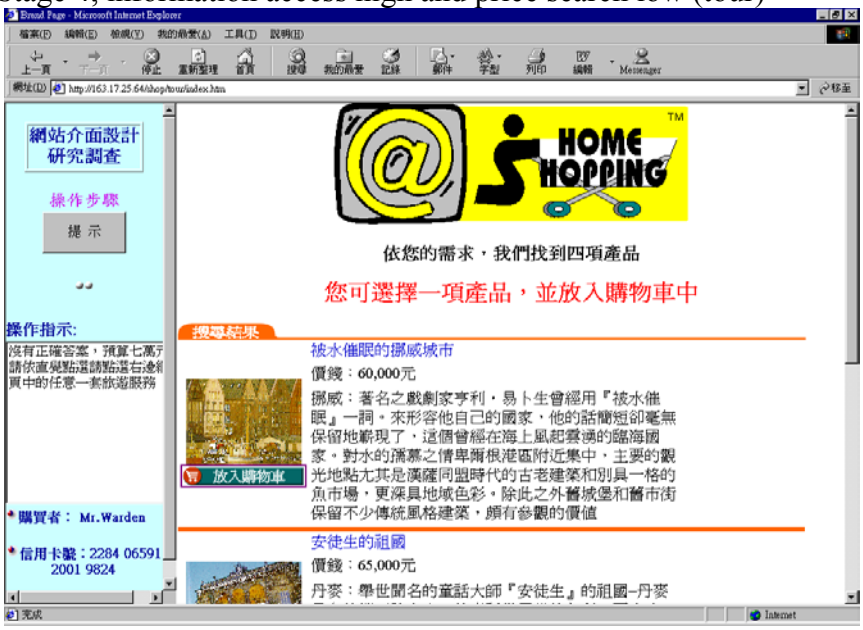


Figure 14. Stage 4, information access high and price search low (book)

Figure 15. Stage 4, information access high and price search low (tour)

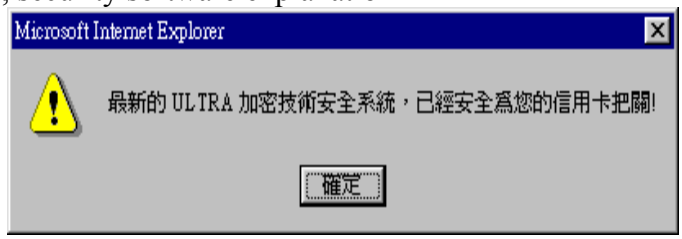


Security Guaranty

Upon entering stage 5, if the fraud protection attribute level was high, a modal popup window, requiring a click, explained that the server employed an advanced security system that protected credit card information (see Figure 16). This window only

appears in high security profiles. For the low security level, no window appeared and no explanation was given.

Figure 16. Stage 5, security software explanation



Checkout

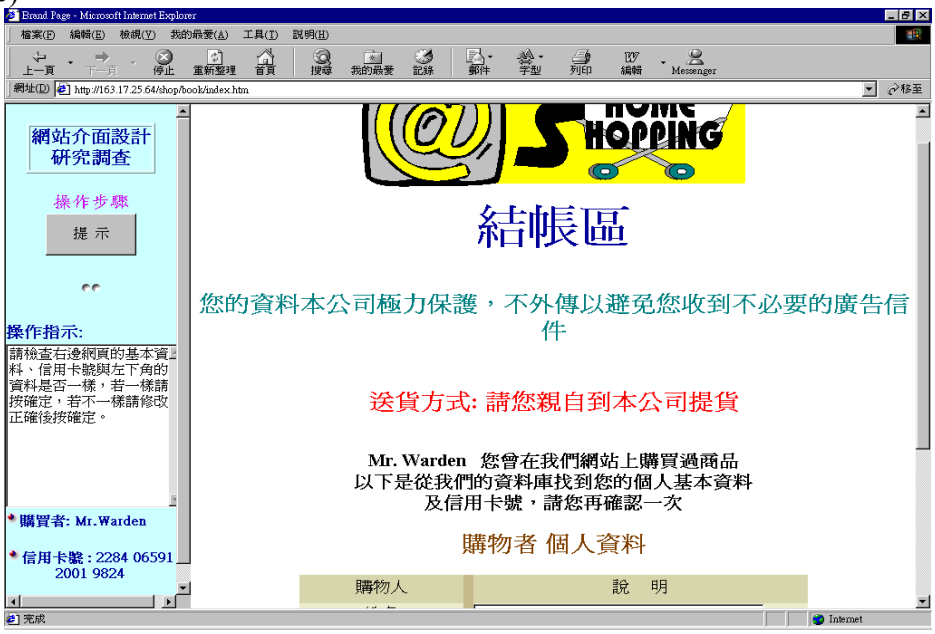
Stage 5 continued with checkout. Information required for checkout, including name, address, and credit card number, was previously given to the participant on the first instruction page, and could again be accessed at any time by viewing the instructions in the left frame (which always gave instructions relevant to the current task in the right frame). Participants completed the name, mailing address and credit card information, all of which was not their own, but supplied by the experimenter (as was consistent with the cover story). On this page, the mailing or pickup option was displayed in red letters depending on the conjoint profile. If the minimize travel attribute level was high, large red text informed the participant that the purchase would be mailed directly to the address indicated within three days (see Figure 17). If the minimize travel attribute level was low, the user was informed that the purchase would require a pick up at the store (see Figure 18). Personal information protection was described in much the same way, with blue text explaining that the user's personal information would not be used by or sold to any third party, and that the data would only be used in relation to this purchase (see Figure 19). In

the case of the personal information protection attribute being low, no text was included and no explanation given.

Figure 17. Stage 5, minimize travel high (red colored text explaining three-day shipping)

Figure 18. Stage 5, minimize travel low (red colored text explaining required pickup)

Figure 19. Stage 5, personal information protection high (blue text explaining no third party use)



Conjoint Profile Scoring

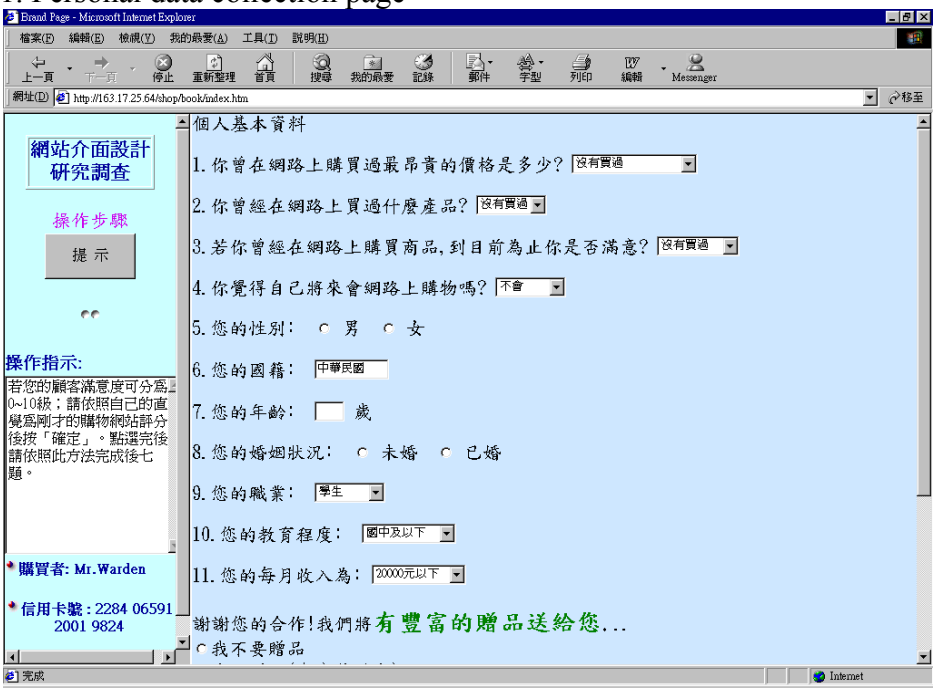
At the end of each profile, after checkout, participants scored the overall shopping experience on an eleven-point scale (0 to 10). Space was also provided for comments (see Figure 20). Clicking the complete button began the process again until all eight profiles had been completed.

Figure 20. Stage 6, overall rating of shopping experience

Personal Data

Personal demographic data was collected after all eight profiles and their ratings were completed (see Figure 21). Most questions were easily answered through dropdown menus. Space was provided for completing name and address so that the gift certificate could be mailed to the participant.

Figure 21. Personal data collection page



Conjoint Analysis

Conjoint analysis is widely used in marketing and other research fields to quantify individuals' trade-offs when choosing between multidimensional alternatives; thus, it is often referred to as *trade-off analysis*. Subjects are asked to indicate their preferences, in hypothetical situations, where a fixed number of attributes have a number of levels (differences). Combinations of the attributes' levels are given to each subject to rate according to his/her own subjective preferences.

Utility Scores. Results from the preference scores are decomposed to derive overall preference for the attribute levels (part-worth utility values). Part-worth utility values are larger for preferred attribute levels and smaller for less preferred levels. With these utilities, a researcher can predict consumer preference for any combination of the

attribute levels. Attributes, and their levels, can be any possible feature of a product or service, such as color, size, efficiency, price, etc.

Conjoint Stages. Conjoint analysis approaches the reality of deciding among features, since subjects rate combinations of features. Important to the process, however, is that the attributes and their levels make sense to the subjects and are generally realistic combinations of features. For example, a high efficiency car that is also powerful and has a low price is a combination of features that is unrealistic and would distort results (Hair et al., 1998). Thus, pre-testing plays an important role in finding combinations of features that the subjects will perceive as possibly occurring in reality while still having a noticeable difference. After choosing attributes and their levels, conjoint analysis generally follows four steps:

1) data collection
2) measurement scale for respondent judgments
3) parameter estimation
4) market simulation

The following section will follow these stages in analyzing the results from the online shopping simulation.

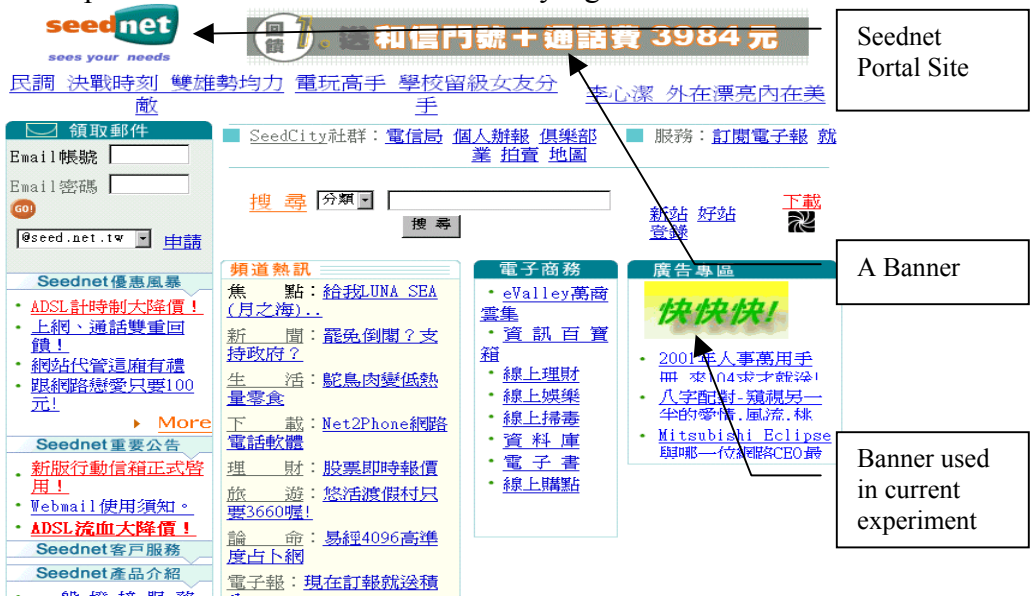
Subjects

Rich email (email containing HTML markup language) invitations for research participants were sent out through purchased email lists from local ISP (Internet Service

Provider) firms. The mail included graphics and animations that could be clicked on for further information and opened a browser window directly to the experiment Web server.

Portal/Banner Draw. Portal space was rented from a local ISP firm (different from the mail list vendor). A banner advertising the experiment was placed on the portal Web page (see Figure 22). Surfers were able to click-through and open a browser window to the experiment Web site.

Figure 22. Portal space with banner ad linked to survey sight



Description of Respondents. Resulting visits to the experiment Web site totaled 625 during a one week period when the portal advertisement was run in May 2001. Out of the total visitors, 506 went on to complete the experiment with the remaining visitors completing none or only part of the experiment. The sample compared well with government statistics on Internet usage in Taiwan at the time (Find, 2001) as well as private Internet service providers' reported usage patterns (YamWeb Frontier

Foundation, 1999), with the experiment's participants exhibiting higher levels of education than the Taiwan Internet users' average (see Table 10).

Table 10. Sample and Taiwan Web users' demographic comparison

	Average age	Female	Student	Married	College graduate	Grad. school graduate	Average income (NT$)
Taiwan Web users*	25.3	45.6%	40.9%	29.1%	40.5%	10.1%	20-30K
Experiment Sample	27.4	47%	41.8%	27.5%	67.4%	11.4%	20-30K

*Note: Taiwan averages from Find, 2001

Complete Data. A total of 429 respondents' data was complete and usable. Of the online respondents, 59% of the total sample had some online buying experience, with 77% having some intention of making an online purchase in the future and 20% stating they had no such intention, which means about half of those who have not already bought online have no intention to purchase on the Internet in the future. The most frequent online purchases were books and magazines (24%), electronics, computers, and software (33%), and stock (6%). Of those who had purchased online, 83% were satisfied with the product they received, and the remainder expressing a *little* dissatisfaction and only one person reported being very dissatisfied.

RESULTS AND DISCUSSION

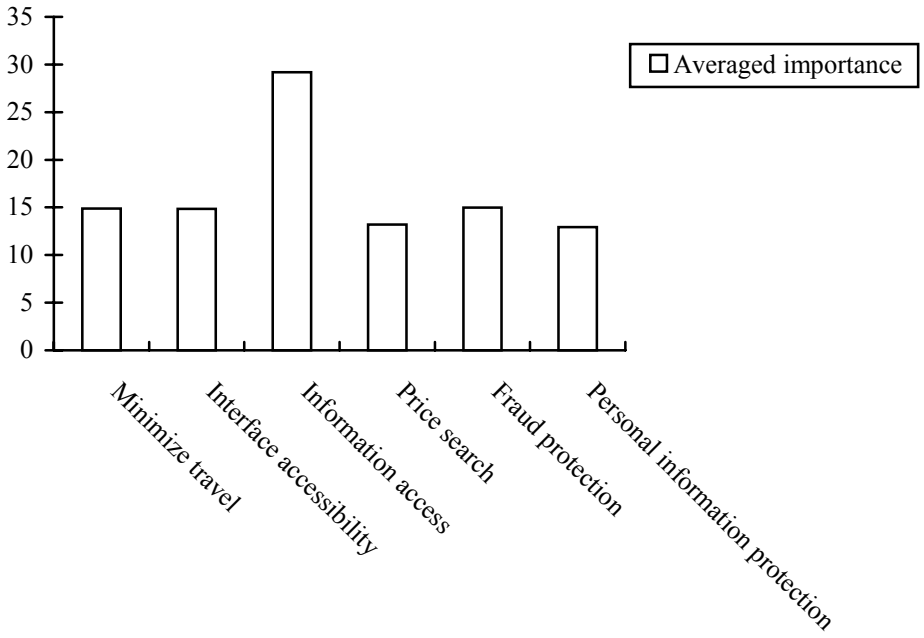
Responses to the online shopping simulation exhibited good internal reliability with a Cronbach's alpha of .91 and a Guttman split-half reliability of .92. Correlation between the six attributes, product type, online shopping history, and demographics was found in only a few cases. Correlation was found between amount of money spent online and gender (males spending 14% more than females), amount of money spent online and age, older buying more (Pearson correlation .51, $p < .001$), and amount spent online and

marriage status, married spending more online (Pearson correlation .38, $p < .001$). This finding confirms previous work showing the general lack of correlation between online shopping and other demographic and online experience variables (Bellman, Lohse, & Johnson, 1999).

Conjoint Values

Relative Importance. Conjoint averaged importance showed the relative importance subjects assigned to each attribute (total importance equals 100). Overall conjoint results showed the most valued component of the shopping experience was a high level of information (see Figure 23). The information access component was nearly twice the value of the other components (29 compared to 15). Importance of the other five components did not differ radically, all valued from 13 to 15, but the direction of utility did have some unexpected results.

Figure 23. Conjoint averaged importance results



Part-Worth Utilities. Conjoint part-worth utilities describe the value and direction of specific attributes in the conjoint bundle. Since all attribute levels in this experiment were binary (present or not present), the part-worth utilities for the not present state were equal in value and opposite in direction of influence to the present state. Their statistical significance was tested with a *t*-test of repeated measure means between the two states. Part-worth utility values were first derived and examined in their overall state. Next, each of the six components' part-worth utility values were held as a dependent variable and tested for significant differences based on the independent variables of product type (book or tour), online purchase history data, and demographics. Part-worth utility results were used to test the first 6 hypotheses and cluster analysis was then applied to test for the existence of segments within the overall results (the final hypothesis). Three clusters were defined, and the analysis procedure repeated for each cluster (market segment), with the hypotheses then reviewed again within the context of each market segment.

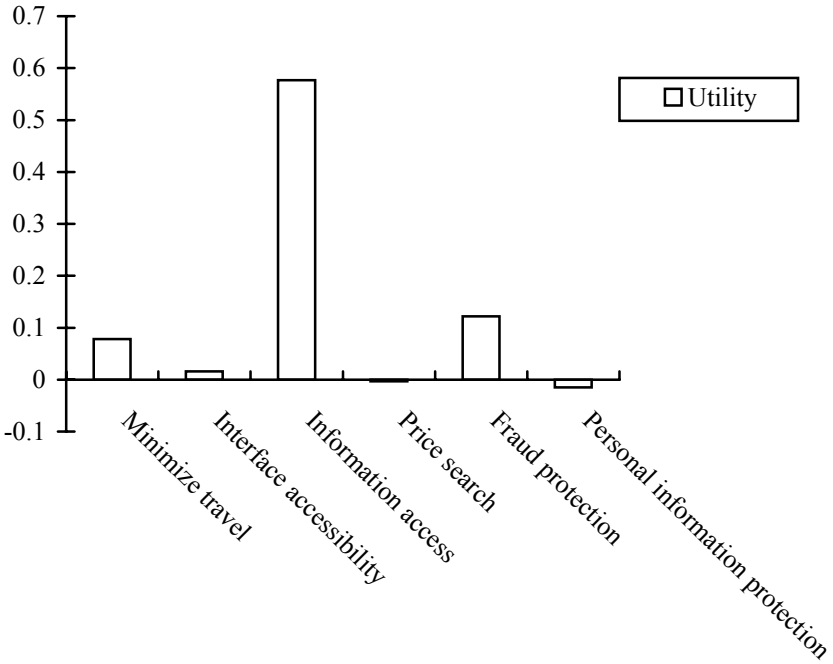
Minimize Travel Result. Overall conjoint results can be seen in Table 11 and Figure 24 (Kendall's tau = 1.00, $p < .0003$, and R2 = .99). Minimizing travel did have a statistically significant positive effect on the shopping experience with a utility of .081, and the inclusion of travel had the exact opposite effect (-.081), confirming hypothesis 1 (*Minimizing travel to pick up a purchase will have a positive effect on A_{WS} for task-oriented shoppers*).

Table 11. Part-worth utility values

	Min. travel	Accessibility high	Info access high	Price search high	Personal protection high	Fraud protection high
Overall results	.081*	.023	.579*	-.006	-.021	.12*
N = 428	(.486)	(.494)	(.731)	(.465)	(.435)	(.487)

Note: Values in parentheses represent standard deviation; significance level represents difference between the two levels of the utility values tested with a paired *t*-test
* $p < .05$

Figure 24. Part-worth utility values



Accessibility Results. Interface accessibility part-worth utility showed that the simple interface was preferred over the complex, with a positive utility (.023). The difference between the high and low states for this component, however, was not statistically significant, meaning that hypothesis 2 (*Lower Web page complexity will have a positive effect on A_{WS} for task-oriented shoppers*) could not be supported.

Information Access Results. Information access displayed the highest part-worth utility level (.579) of all the components studied and was statistically significant. Thus, hypothesis 3 (*Increased levels of product information will have a positive effect on A_{WS} for task-oriented shoppers*) was supported when the information includes expanded text descriptions and graphics.

Price Search Results. Opportunity to view price comparisons, however, exhibited a small negative utility (-.006) while not reaching statistical significance. Ability to display price ranges, in an attempt to show that Web page shopping results are *beating the competition* was included here as part of product information, but respondents did not find this attribute very important. Within the context of a shopping site and a shopping goal, such information appears unhelpful in improving the user's shopping experience, thus rejecting hypothesis 4 (*Including price comparisons in the search result will have a positive A_{WS} for task-oriented shoppers*).

Personal Information Protection Results. Personal information protection displayed a negative part-worth utility value (-.021) and was not statistically significant. It appears that specifically announcing the intent to protect personal information was not clearly helpful, thus rejecting hypothesis 5 (*Including assurances that personal*

information will not be given to any third party will have a positive effect on A_{WS} for task-oriented shoppers).

Fraud Protection Results. Fraud protection, the second component of security issues, exhibited the second highest part-worth utility for the online shopping bundle (.12) and was statistically significant. This supported hypothesis 6 (*Including assurances that the most up-to-date security software is being used to protect against fraud will have a positive effect on A_{WS} for task-oriented shoppers*).

ANOVA Analysis

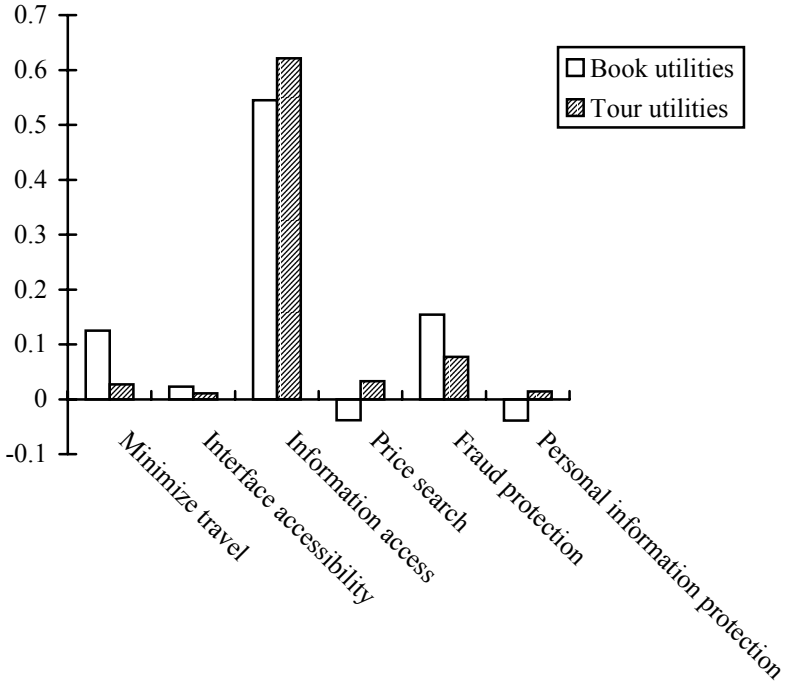
Holding the six component part-worth utility scores as dependent variables and the product type, online purchase history, and demographic variables as independent, one significant difference was found. The minimize travel variable differed significantly between the product types (book and tour), with the utility of minimizing travel significantly higher for the book product as can be seen in Table 12 and Figure 25. Since one of the characteristics of services is that they require the presence of the customer, it could be expected that services would benefit less from this component of online shopping.

Table 12. Analysis of variance for vital components' part-worth utility scores

	n	df	Min. travel	Accessibility high	Info access high	Price search high	Personal protection high	Fraud protection high
Product/service	406	1	4.1*	0.22	1.09	2.44	0.89	2.52
Gender	401	1	0	1.83	0.55	0.26	0.72	0.68
Age	400	4	0.31	0.11	1.26	1.38	0.36	0.57
Marriage	403	1	0.14	1	2.18	0.53	1.35	0.07
Job	411	7	1.01	0.55	1.17	1.29	0.64	0.77
Education	411	3	1.02	0.87	2.35	2.28	0.6	1.81
Pay	411	6	0.73	0.93	0.59	0.64	0.28	0.28
Previous online purchase	403	7	1.01	0.55	1.17	1.29	0.64	0.77
Product	411	12	0.57	0.85	0.53	0.82	0.95	0.73
Satisfaction	411	7	2.81	0.66	0.67	1.32	1.06	1.37
Future intention	411	4	1.09	0.62	2.06	1.82	0.56	0.86

Note: Values represent *F* ratios for test of between-subjects effects
*p<.05

Figure 25. Product type utility comparison



Part-worth utility values for information access, price search, personal information protection, and fraud protection were all uniform and did not significantly differ depending on product type, online purchase history data, or demographics.

Manipulation Check

Conjoint analysis manipulations can be checked by holdout conjoint profiles in the conjoint design (Hair et al., 1998). However, pre-testing showed that requiring respondents to complete the shopping task eight times was already at the maximum of their endurance and any holdouts would increase the number of shopping tasks to at least ten. In place of this, a post hoc online survey was employed in order to confirm that differences in the experiment's Web page designs (based on the six attributes) were actually noticed by the survey respondents in a manner predicted by the pre-testing efforts, a post-test survey was administered. During the fall semester of 2001, an online survey drew 184 participants through email invitation sent through 60 night school students (most night school students have full time jobs) attending a university class on international business culture. The students, who were not involved in the survey design or administration, were asked to forward the survey invitation to people they knew or worked with.

Survey Design. Participants viewed 12 sets of two screens in order (not side-by-side) as graphics on a Web page that could not be manipulated with the mouse. Six of the sets represented the six attributes of the CAT emphasis, with one of the screens in each set showing the attribute in its high state and the other screen showing it in its low state. The remaining six sets were controls that showed the same screen twice, with both screens showing the attribute in its high state or low state throughout the survey (depending on a random selection at the start). Order of test and control screens, CAT attributes, and which screen of the pair to be shown first, were randomized. After viewing

a pair of screens, the participant scored the difference between screens and then the importance of that difference when shopping online (both on a ten point scale).

Validity of Design Elements. ANOVA results showed no difference between ratings when either the high or low attribute states were used as controls, eliminating the possibility that one of the states could influence perceptions of other pages. Paired *t*-test results (see Table 13) show that in all cases, the six attributes were ranked significantly higher in difference when the attribute level was manipulated. This confirms that the CAT components, as implemented in this experiment's Web page design, were noticed by respondents as being different in their high/low levels. Importance ratings of the differences also show significant difference compared to the controls, confirming that the differences noticed were perceived as being important. Comparison of the importance ratings from this survey with ratings obtained from the online shopping simulation can be used to confirm the simulation's external validity further.

Table 13. Paired *t*-test results

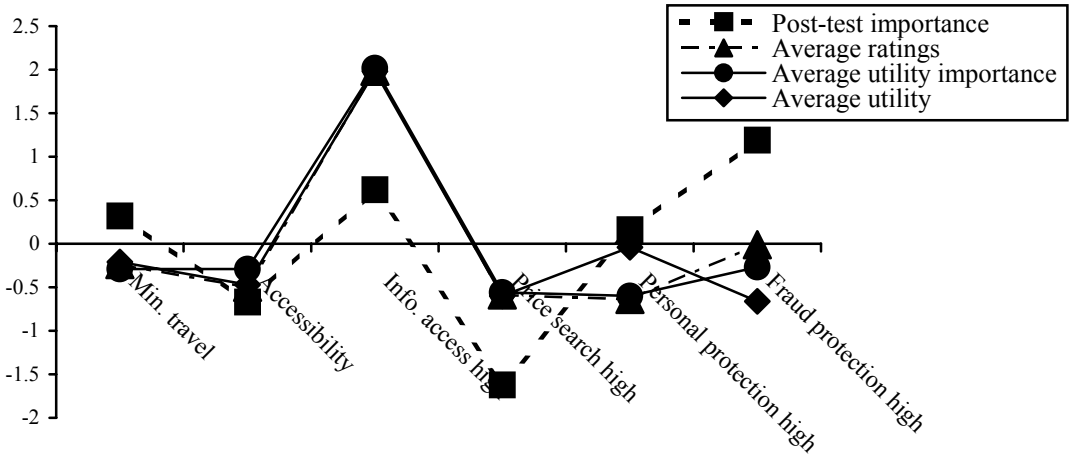
		Difference mean	*t*	Importance mean	*t*
Minimize travel	Difference between high/low	5.97 (3.51)	21.91*	7.43 (2.96)	26.90*
	Difference between control	0.12 (0.70)		0.60 (2.14)	
Accessibility	Difference between high/low	6.94 (2.31)	35.88*	5.86 (2.89)	21.50*
	Difference between control	0.26 (1.24)		0.70 (2.27)	
Information access	Difference between high/low	7.76 (2.47)	40.37*	7.90 (2.15)	37.66*
	Difference between control	0.13 (0.78)		0.54 (1.93)	
Price search	Difference between high/low	4.11 (2.70)	16.99*	4.37 (3.12)	11.87*
	Difference between control	0.37 (1.35)		0.98 (2.62)	
Fraud protection	Difference between high/low	6.91 (3.54)	25.51*	8.81 (2.21)	33.96*
	Difference between control	0.11 (0.64)		0.69 (2.33)	
Personal protection	Difference between high/low	5.61 (3.09)	20.96*	7.17 (2.72)	26.81*
	Difference between control	0.29 (1.14)		0.68 (2.05)	

Note: Values in parentheses represent standard deviation; $N = 184$
*$p < .001$

Validity of Components' Importance. Although the post-test was not a shopping simulation, respondents rated the CAT attributes, as viewed on a static page, in a similar

pattern to that of the average conjoint part-worth utility values from the simulated shopping task (see Figure 26). This result lends confidence to the external validity of the shopping simulation's constructs, as the Web page designs appear to have a similar meaning to different people, at different times, and in a very different context. Of special interest is the high importance placed on fraud protection in the post-test, while information access and price search capability take on an increased importance in an actual shopping task. These results suggest that the online shopping simulation succeed in so far as participants used the features in order to complete the shopping task they were given. In such a context, product information and price search were, on average, more useful than respondents to the post-test believed they would be.

Figure 26. Comparison of CAT component ratings



Note: All scores are standardized

Segmentation

Segmentation by Utility Scores. Analysis of part-worth utility score clusters is commonly undertaken in order to segment the market based on consumer preferences for specific attributes within the conjoint experiment (Green & Krieger, 1991). Although the conjoint results describe the relative importance of the attributes under study, it is likely

that groups of consumers have different preferences (market segments). Conjoint part-worth utility scores have been recognized as valuable in market segmentation since the measures are centered directly on consumer preferences (Green & Srinivasan, 1978, 1990). Ward's cluster analysis was run on the part-worth utility scores, producing a three-cluster pattern of dendrograms followed up with a K-means cluster analysis using the initial seed points from the hierarchical analysis.

Market Segments. An examination of the overall part-worth utility scores for the six attributes showed that respondents in the three clusters did have important differences in their preferences (see Table 14) that were further examined. Independent conjoint analysis of each cluster showed the part-worth utility values and their significance along with the labels given to the clusters based on the following discussion. Patterns of results showed that indeed the three clusters contained respondents that approached the online shopping exercise with different expectations. This result supports hypothesis 7 (*Subsets of respondents will exhibit measurable differences in their preferences for the CAT components*).

Table 14. Cluster part-worth utility means

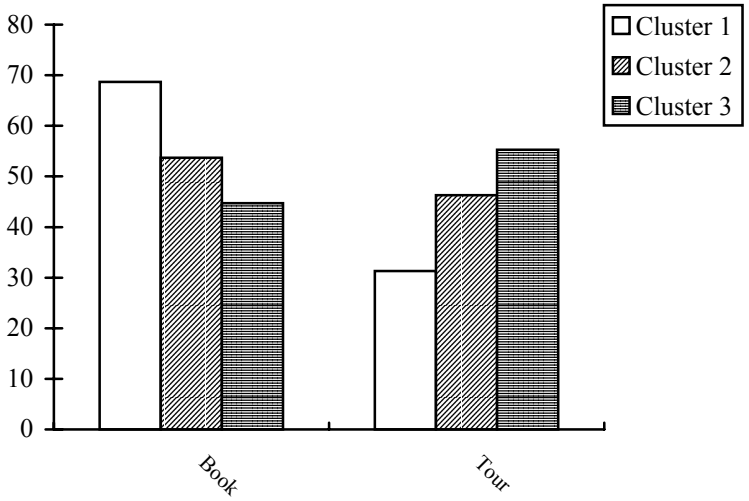
	Cluster 1 n = 91	Cluster 2 n = 240	Cluster 3 n = 98	*F*	Sig.
Minimize travel	.62* (.48)	-.07* (.35)	-.07 (.43)	104.71	.000
Information access high	.54* (.4)	.18* (.41)	1.59* (.56)	343.95	.000
Accessibility high	-.08 (.47)	.05 (.49)	.02 (.54)	2.24	.11
Price search high	-.09 (.57)	.01 (.38)	.04 (.52)	2.42	.09
Fraud protection high	.46* (.52)	-.03 (.39)	.19* (.49)	40.56	.000
Personal protection high	.01 (.49)	.01 (.41)	-.10* (.43)	2.68	.07

Note: Significance of part-worth utility values tested with a paired *t*-test; values in parentheses represent standard deviation; *F* test evaluates difference in utility score among the three clusters; *p<.05 on *t*-test

Three Segments. Part-worth utility means for Cluster 1 show that this group of 91 respondents perceived important differences between the presence and absence of the attributes minimize travel, information access, and fraud protection, all of which had a positive influence on shoppers' experiences when present in the interface (the *high* state). Price and personal information protection were negative or flat. Cluster 2 part-worth utility means resembled the overall sample analysis with much less noticeable difference between the attribute levels. Cluster 3 analysis displayed the most extreme differences between the attribute levels. Information access manifested the clearest difference between the two levels. Only one variable, personal information protection, decreased significantly in value when the attribute level was high.

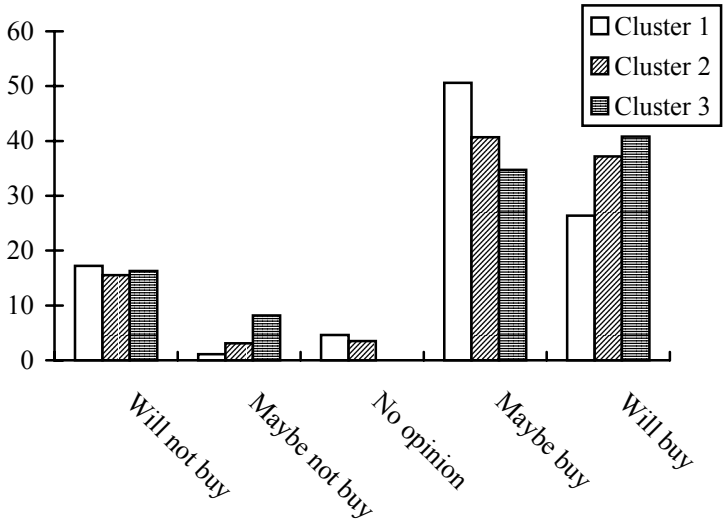
Segments' Demographic Differences. ANOVA analysis of the three clusters showed no difference in the ratings for the shopping experience based on cluster membership, nor any difference in online purchase history or demographic variables. Chi-Squared analysis found two significant differences in cluster membership: product type (Pearson Chi-Squared 10.45, df 2, $p<.05$) and future intention to buy over the Web (Pearson Chi-Squared 16.57, df 2, $p<.05$). As seen in Figure 27, the physical product (book) occurred most often in Cluster 1 and less often in Cluster 3. Just the opposite pattern was observed with the service (tour), occurring less frequently in Cluster 1 and most often in Cluster 3.

Figure 27. Percentage occurrence of product type within cluster



Intention to make a future purchase showed a small difference among the clusters, mainly in the level of positive attitude toward a future purchase. Cluster 3 respondents tended to be more certain about a future purchase, while Cluster 1 respondents expressed less certainty (see Figure 28) although still positive toward future online purchases.

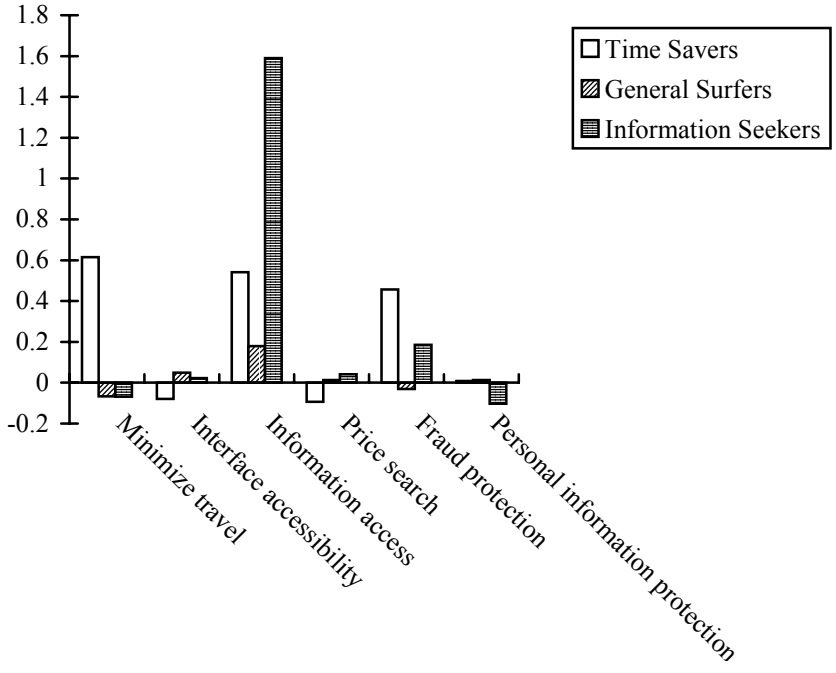
Figure 28. Percentage of occurrence of intention to buy over Web within cluster



Naming Segments. Examining overall patterns (Figure 29), Cluster 1 (Time Savers) exhibited an emphasis on the presence of minimizing travel, information access,

and fraud protection. Cluster 3 (Information Seekers) stood out for its emphasis on information access with a part-worth utility nearly three times larger than any other part-worth utility value. Minimizing travel was most important for Time Savers and least important for Cluster 2 (General Surfers). Information access was an important feature for all three clusters, but especially important for Information Seekers. Accessibility interface and price listings were not valued by members of any of the clusters. Fraud protection was most important for Timer Savers, but also important for Information Seekers. General Surfers did not exhibit exceptionally strong part-worth utility values for any of the variables. This cluster exhibited a compromise between the other two clusters in that General Surfers valued increased levels of information but preferred to pick up the product, rather than having it sent.

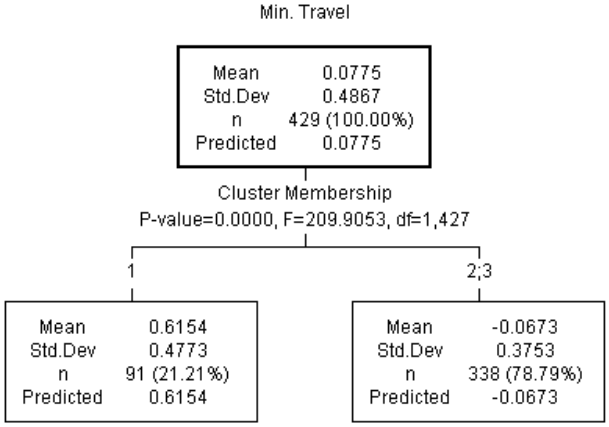
Figure 29. Cluster part-worth utility values with attribute present



Confirming Segments' Name. Conjoint part-worth utility scores were reexamined for groupings through an *F* test using SPSS CHAID 6.0 software, which resulted in

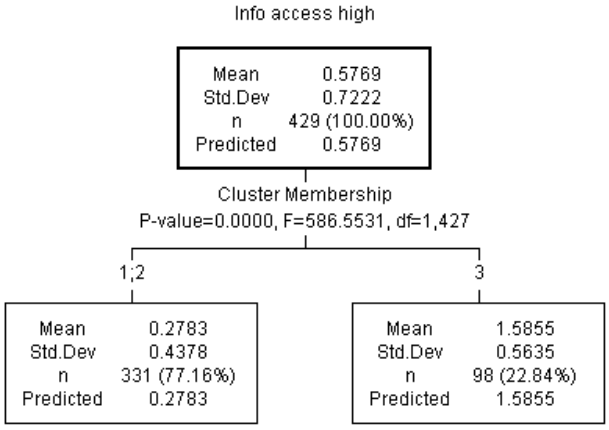
graphical representations of groups. Three variables (minimize travel, information access, and fraud protection) had significantly different utility scores based on segment membership. Minimizing travel's utility was significantly higher for Time Savers (F = 209.91), confirming this segment's label (see Figure 30). Information access was significantly higher for Information Seekers (Figure 31). Although the mean utility for this variable was also positive for the other two segments (M = 0.28), the difference in scores was large (F = 586.55), thus confirming the label *Information Seekers* was accurate. Fraud protection's utility (Figure 32) was significantly lower for General Surfers (F = 61.25), pointing out the possibility that members of this segment may have less specific concerns about online purchases due to their using the Web more for hedonistic purposes.

Figure 30. Cluster part-worth utility scores for minimize travel



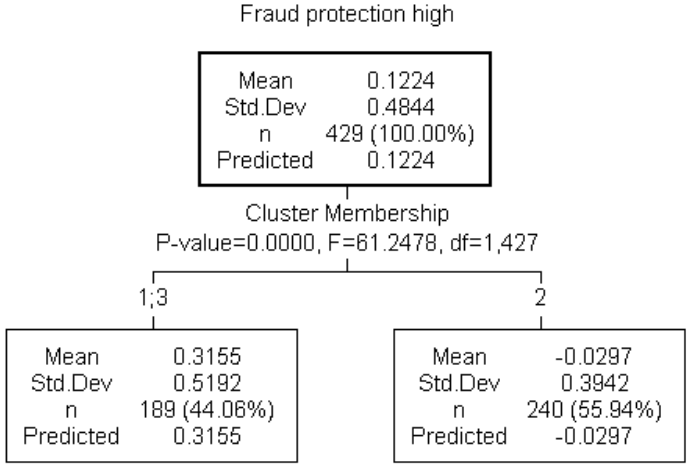
Note: 1 = Time Savers, 2 = General Surfers, 3 = Information Seekers

Figure 31. Cluster part-worth utility scores for information access



Note: 1 = Time Savers, 2 = General Surfers, 3 = Information Seekers

Figure 32. Cluster part-worth utility scores for fraud protection



Note: 1 = Time Savers, 2 = General Surfers, 3 = Information Seekers

Results by Market Segment. Reexamination of the research hypotheses within the context of the three clusters showed that the attributes not important to the overall sample were also not important to members of all three clusters (see Table 15). These included accessibility, price search information, and notification of personal information protection. The only attribute that was consistently valued across all three clusters was the inclusion of expanded product information.

Table 15. Summary of hypotheses results

		Results for sample segments			
		Overall N = 428	Time Savers n = 91	General Surfers n = 240	Information Seekers n = 98
H_1	Minimizing travel to pick up a purchase will have a positive effect on A_{WS} for task-oriented shoppers.	S	S	NS	NS
H_2	Lower Web page complexity will have a positive effect on A_{WS} for task-oriented shoppers.	NS	NS	NS	NS
H_3	Increased levels of product information will have a positive effect on A_{WS} for task-oriented shoppers.	S	S	S	S
H_4	Including price comparisons in the search result will have a positive A_{WS} for task-oriented shoppers.	NS	NS	NS	NS
H_5	Including assurances that personal information will not be given to any third party will have a positive effect on A_{WS} for task-oriented shoppers.	NS	NS	NS	NS
H_6	Including assurances that the most up-to-date security software is being used to protect against fraud will have a positive effect on A_{WS} for task-oriented shoppers.	S	S	NS	S

Note: S = Supported; NS = Not Supported

Conjoint Simulators

Interface Preference Simulation. By examining the differences in part-worth utility values, predictions can be made of the differences in *market share* (preferred interface design, not actual purchase) for any hypothetical combination of attribute levels. Conjoint simulation allows a *what if* analysis that is more accurate than simple examination of part-worth utility means (Orme & Huber, 2000; Hair et al., 1998) and results in hypothetical market share predictions. In the current research, the part-worth utility values represented the respondents' overall experience of the Web shopping task such that the differences in part-worth utilities represented preference for the shopping experience, rather than a measure of purchasing intention. Thus, predictions here measured changes in preference for the shopping experience based on preferred online shopping interface.

Retained Independent Variables. Interface components with Part-worth utility values across the three clusters that were not statistically significant were removed from further analysis as these attribute levels did not illicit a clearly measurable impact on respondents' perceptions of the shopping experience (dropped variables included: interface accessibility, price search, and personal protection). Three attributes remained for further analysis (minimize travel, information access, and fraud protection), which together well represent the CAT emphasis of Convenience, Access, and Trust. These variables all exhibited statistically significant part-worth utility values. Since each attribute contained two possible levels, the total number of possible combinations was 8 (2x2x2), which were arranged in the bundles displayed in Table 16.

Table 16. Combinations of remaining attributes

Bundle	Minimize travel	Info access	Fraud protection
A	High	High	High
B	High	High	Low
C	High	Low	Low
D	Low	Low	Low
E	Low	Low	High
F	Low	High	High
G	Low	High	Low
H	High	Low	High

Overall Preference Results. Expected preference share was predicted using the maximum utility model, which assumes each subject always prefers the shopping interface with the highest subjective part-worth utility. Table 17 shows the results for the overall sample with bundles ranked by highest preference. Minimizing travel, information access high, and fraud protection high obtained the highest share or 27.42%. When information access was kept high, including a requirement to travel and/or removing fraud protection notification the total share surpassed 80% (Bundles A, F, B, and G combined). For the overall sample, this clearly showed the overriding importance

of information content in the directed online shopping experience. When information content was decreased, no matter what the combination of the remaining variables, preference share dropped to below 6%.

Table 17. Overall expected share

Bundle	Min. travel	Info access	Fraud protection	Preference share %
A	High	High	High	27.42
F	Low	High	High	22.0
B	High	High	Low	15.76
G	Low	High	Low	15.24
H	High	Low	High	5.86
D	Low	Low	Low	4.98
E	Low	Low	High	4.52
C	High	Low	Low	4.22

Note: share obtained through maximum utility model

Segmented Preference Results. Results based on the three market segments showed quite different patterns (see Table 18). Time Savers exhibited a nearly 70% share for Bundle A (minimize travel, information access high, and fraud protection high). Bundle F, requiring travel, to pick up the product, while retaining high information content and fraud protection, obtained only a 2.47% share. Members of this segment clearly valued the convenience of not having to travel to obtain the product. General Surfers had less of an emphasis on any single attribute, with all eight combinations obtaining some share. The highest share, 21.41%, Bundle F, included requiring travel, high information access, and high fraud protection. This segment emphasized the information content, with notification of security efforts, but it was only the lowering of information content that made a significant change in share. Information Seekers showed a preference for increased information content and picking up the product themselves with a share of 41.58% held by Bundle F (requiring travel, information access high, and

fraud protection high). Members of this segment could not accept a reduced level of information in any bundle combination.

Table 18. Cluster expected preference share

Bundle	Min. travel	Info access	Fraud protection	Preference share %
Time Savers				
A	High	High	High	69.51
B	High	High	Low	18.13
H	High	Low	High	9.07
F	Low	High	High	2.47
E	Low	Low	High	.82
C	High	Low	Low	0
G	Low	High	Low	0
D	Low	Low	Low	0
General Surfers				
F	Low	High	High	21.41
G	Low	High	Low	19.64
B	High	High	Low	14.32
A	High	High	High	13.39
D	Low	Low	Low	8.91
E	Low	Low	High	7.76
C	High	Low	Low	7.55
H	High	Low	High	7.03
Information Seekers				
F	Low	High	High	41.58
A	High	High	High	22.7
G	Low	High	Low	18.62
B	High	High	Low	17.09
E	Low	Low	High	0
H	High	Low	High	0
D	Low	Low	Low	0
C	High	Low	Low	0

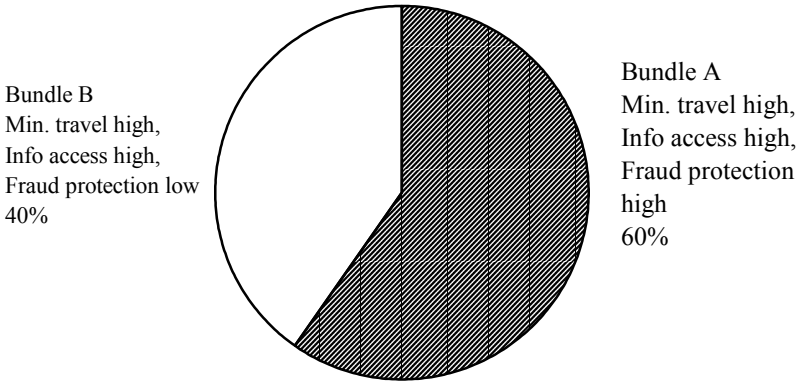
Note: share obtained through maximum utility model

Change in Share

Variation in preferences among the three clusters could normally lead to development of slightly different products in order to capture the maximum share for each segment. In the case of the Internet, however, this is impossible as Web sites are designed to be accessed by everyone simultaneously. This section explores the impact of competing interface designs in the same market, with the overall conjoint experiment data set used to represent the total market.

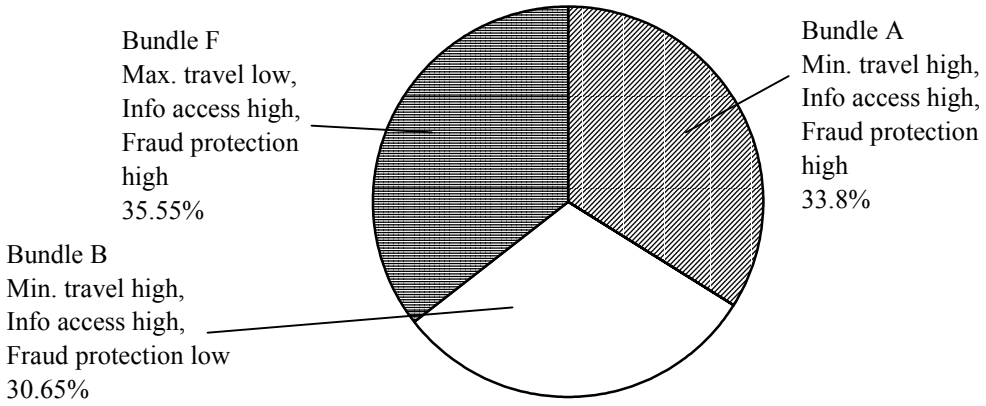
Two Bundle Preference. Adopting the two bundles that captured the most share in the market simulations and had a high level of face validity, i.e., could be implemented by online firms, led to Bundle A and Bundle B splitting the market. In the case of Bundle A, all attributes were at their high level, while Bundle B does not report any fraud protection implementation. Since fraud protection is not just a matter of reporting, there is a substantial associated cost with actually obtaining higher levels of security. It is logical to first understand the market size when this attribute level is dropped. Figure 33 shows the resulting market divisions, with Bundle A capturing 60% share and Bundle B the remaining 40%.

Figure 33. Expected share: two Web shopping interface choices



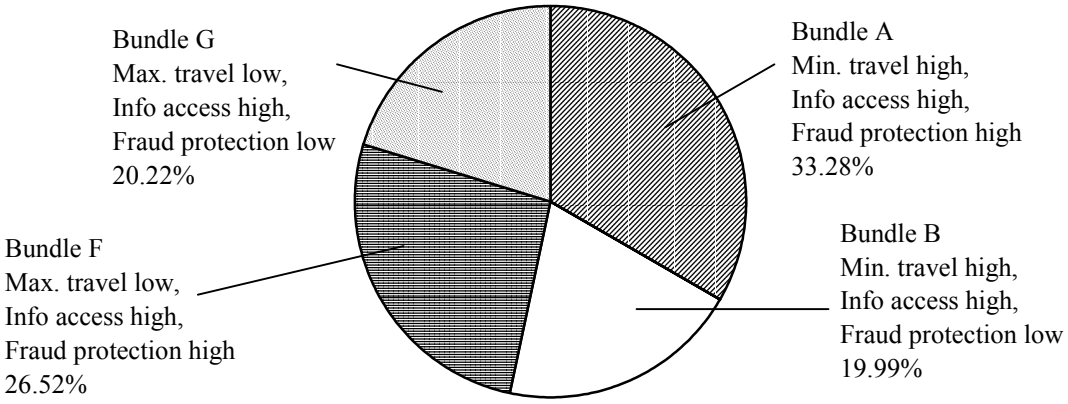
Three Bundle Preference. Introduction of Bundle F, which included a requirement to physically pick up the product, resulted in a share gain of 35.55% for this bundle. Bundle B sustained a marginal loss of 9.35% share, with the main loss coming from Bundle A (26.2% loss). This change in share shows the split between the consumers who placed an emphasis on convenience (Time Savers) and those who preferred a physical opportunity to handle the product (General Surfers).

Figure 34. Expected share: three Web shopping interface choices



Four Bundle Preference. Bundle G was similar to Bundle B in that notification of fraud protection was not included, but also required a physical pickup of the product. Bundle G gained a 20.22% share mostly at the expense of Bundle F (9.03% loss) and Bundle B (10.66% loss). Bundle A held its own with only a 0.52% loss of share.

Figure 35. Expected share: four Web shopping interface choices



CHAPTER 4
CONCLUSION & DISCUSSION

SUMMARY OF RESEARCH RESULTS

The current research describes what actual interface components correspond to generally expressed concerns surrounding online shopping and how such components are received by online shoppers when combined in actual shopping tasks. Specifically, the general concerns of Convenience, Access, and Trust (CAT) can be combined in ways that maximize the shopping experience for online consumers. The experiment presented here demonstrates that online shoppers consist of distinct segments that have somewhat divergent concerns and react differently to combinations of online shopping interface components when completing a shopping task. By combining the components that maximize online consumers' satisfaction with the shopping experience, barriers to online product sales can be avoided. Such a systematic understanding of online components and how consumers perceive combinations of components has the potential to avoid wasteful guessing in online marketing design efforts.

Offhanded opinions, or even consumer surveys, concerning the importance of online shopping components may not accurately reflect online shoppers' motivations during actual online shopping task activity. Although personal data protection and price comparison were features expressed as important to online shopping in both the general literature and this study's pre-test survey, implementation in the actual interface was not valued by participants. It may be the case that certain concerns, such as personal information protection, are cognitively hard to deny as important, but actually play little role in the online shopping task. Consumers who shop online may be more concerned

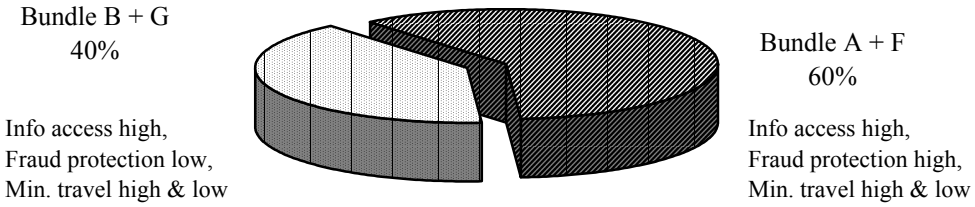
with the quality of the information they find about the product being searched for, such as this experiment's Information Seekers, or saving time by avoiding the travel associated with physical shopping, such as Time Savers. Online shopping interface design can be informed by such findings in order to create an environment in which shoppers feel more comfortable and satisfied.

Simply including any feature one can imagine to improve the online shopping experience may not only be unproductive, it may also be impractical. Some attributes are mutually exclusive, such as including or not including notice about personal information protection. Others have a substantial associated cost, such as fraud protection, and can even have derivative costs. For example, when the fraud protection promise is perceived as being broken, legal action may result against the firm. A cost-benefit analysis should be implemented but can only be performed when consumer reaction to the attribute under consideration is well understood within the actual context of the online shopping experience. Some attributes, nevertheless, can be both included and not included in the online experience dependent on the consumer's personal preference.

Expanded information content, in this experiment, was far less important to Time Savers than for Information Seekers. It is possible to allow consumers to click on buttons, located on the shopping site's interface, which supply expanded information if desired. The convenience attribute can also employ this method, with a firm offering both shipping of product to the consumer and physical pick up depending on the shopper clicking (selecting) which method (s)he prefers. Since the share captured by requiring physical pick up is mostly at the expense of the non-pickup share, it is clear that firms can benefit by offering both options.

The resulting maximum shopping design, based on this study's results, can be exhibited in two implementations of the CAT emphasis. The first is the combination of Bundles A and F, which include high information content and a notification of fraud protection, while allowing the consumer to choose to have the product shipped to his/her home or picked up at the retailer's location. As seen in Figure 36, the expected share for this approach is 60%. The second design is the combination of Bundles B and G, which contain high levels of product information and do not supply any notice of the security procedures, while giving the consumer a choice to have the product shipped or picked up at the retailer's location. This combination leads to an expected share of 40%.

Figure 36. Expected share for maximum design



IMPLICATIONS OF CAT

Returning to the implications based on the ELM, these results show that interface components can play a central role in attitude toward the shopping experience. Within the context of the CAT emphasis, this is especially true for specific market segments. Out of the six CAT interface elements, three have the potential to play a moderating role in the cognitive processing stage of the ELM (minimize travel, information access, and fraud protection). The remaining three CAT elements (accessibility, price search, and personal protection) may only be more useful in moderating peripheral cues (see Figure 37). The

specific direction of the influence (negative or positive thoughts) depends on the market segment the consumer is from (see Table 19 and Table 20).

Figure 37. CAT components' role in the ELM

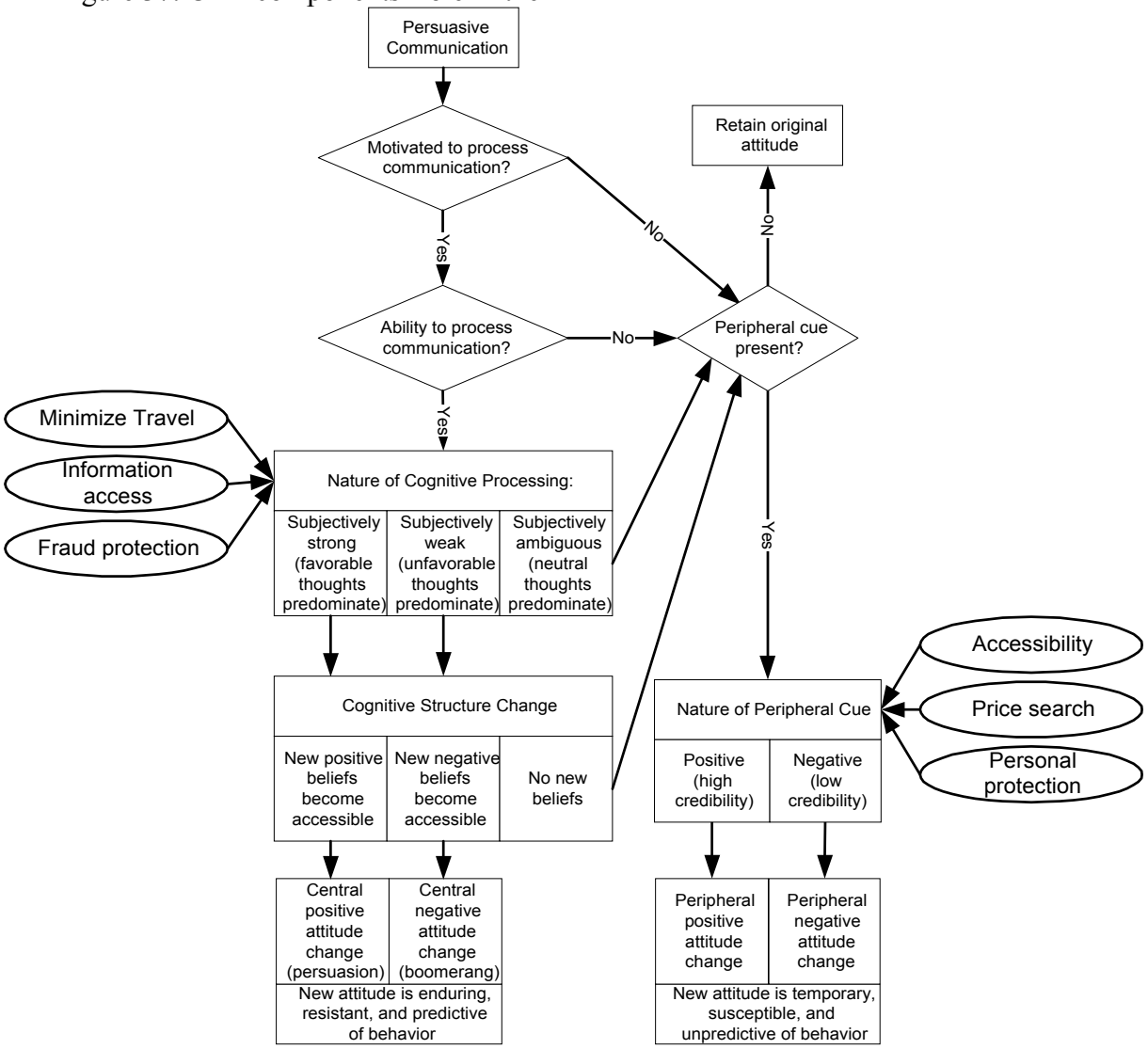


Table 19. Application of CAT components in ELM central route

	CAT component	Importance	Nature of Cognitive Processing: Subjectively strong (favorable thoughts predominate)	Subjectively weak (unfavorable thoughts predominate)	Subjectively ambiguous (neutral thoughts predominate)
Time Savers	Minimize travel	21.65	Include shipping	Require travel	
	Information access	21.41	Include expanded product information	Include condensed product information	
	Fraud protection	20.02	Guaranty server security	Do not mention security	
General Surfers	Minimize travel	14.73	Require travel	Include shipping	
	Information access	23.22	Include expanded product information	Include condensed product information	
	Fraud protection	14.74			Guaranty server security/ Do not mention security
Information Seekers	Minimize travel	8.96			Include shipping/ Require travel
	Information access	51.01	Include expanded product information	Include condensed product information	
	Fraud protection	10.89	Guaranty server security	Do not mention security	

Note: Importance represents averaged part-worth utility importance level

Table 20. Application of CAT components in ELM peripheral route

	CAT component	Importance	Nature of Peripheral Cue: Positive (high credibility)	Negative (low credibility)
Time Savers	Accessibility	11.50	Complex interface on front page	Simple interface on front page
	Price search	12.95	Do not include price comparison data	Include price comparison data
	Personal protection	12.46	Include notification of personal data protection	Do not include notification of personal data protection
General Surfers	Accessibility	17.87	Simple interface on front page	Complex interface on front page
	Price search	14.49	Include price comparison data	Do not include price comparison data
	Personal protection	14.95	Include notification of personal data protection	Do not include notification of personal data protection
Information Seekers	Accessibility	10.53	Simple interface on front page	Complex interface on front page
	Price search	10.24	Include price comparison data	Do not include price comparison data
	Personal protection	8.37	Do not include notification of personal data protection	Include notification of personal data protection

Note: Importance represents averaged part-worth utility importance level

Convenience Results

The convenience of having the product shipped directly was only appreciated by the Time Savers segment. Thus, emphasizing the convenience of home shopping will be valued by Time Savers and increase the likelihood of elaboration for such a Web site. Elaboration likelihood for the same message is also increased for General Surfers, but in this case the result is likely to be negative, as this segment actually prefers to pick up the product. Accessibility design and displaying price search information lacked importance for all the segments when completing the online task. These elements are likely to be part of the peripheral route of persuasion, if they are to play a role at all.

Access Results

Expanded levels of information (product descriptions) was the only variable to elicit positive thoughts among all three segments, and most especially for Information Seekers. This means that Web sites that do not emphasize content run the risk of activating negative thoughts of visitors who are expecting increased levels of information. When visitors find that the information content is low, the experience will be processed through the central route, leading to a negative experience that is potentially intense and long-lasting.

Trust Results

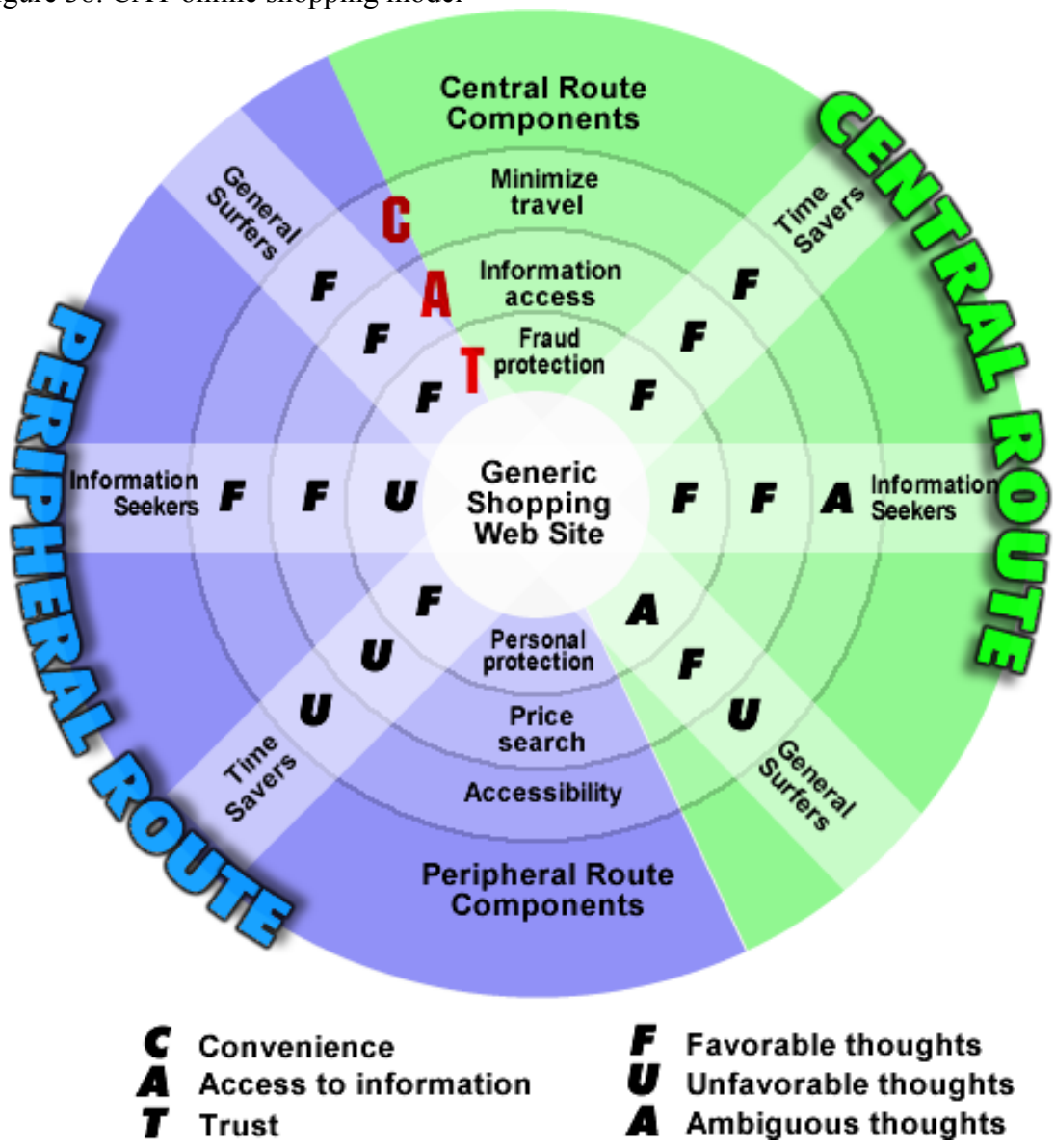
Trust was valued differently by the three segments, with personal data protection not valued by any segment and actually disliked by the Information Seekers. It appears

that this component is best implemented through the peripheral route, by avoiding direct emphasis on the Web page. It is possible that consumers assume the presence of such protection and any specific reporting of how the data will be handled raises the issue cognitively for viewers. This may be especially true for Information Seekers who would prefer to process information rather than give any out. Fraud protection is much more likely to cause elaboration when presented to Time Savers and Information Seekers, while for General Surfers this component makes little difference.

CAT Online Shopping Model

Results are combined and summarized in the online CAT model seen in Figure 38, where the central and peripheral routes split the circle, and each CAT component is concentrically represented in both routes. Market segments are displayed as straight lines crossing over the circles. Differences in attitude, among the market segments, toward the CAT components are represented by favorable, unfavorable, or ambiguous in the central route and favorable or unfavorable in the peripheral route (the three and two cognitive processing possibilities of the central and peripheral routes, respectively).

Figure 38. CAT online shopping model



The new marketing of the Internet may not be so new after all. Marketers will have to reevaluate consumers' preferences for marketing components that have existed for centuries. The convenience catalogs brought to rural Americans in the nineteenth century was bundled with payment systems, product delivery systems, and guarantees of quality in order to create an environment where exchange could occur smoothly. Even issues of interface design are not new. Catalogs, like those from retailers such as Sears,

Roebuck & Company, included product descriptions and graphics that were relevant (central route) to the rural farmers who were suspicious of *city folks* and money scams in the early twentieth century. Those early developments of marketing communication bundles eventually led to a catalog market totaling more than 120 billion USD in annual sales for the year 2000 (DMA, 2001). Through development of the Internet and related Web technologies, the medium of marketing communications is shifting toward electronic network dependence. The good news is that online consumers do not have an endless list of prerequisites before they participate in the new medium. A few vital components, combined correctly, can facilitate an enjoyable online shopping experience and increase the effectiveness of a Web site's marketing message.

LIMITATIONS

Although the use of actual online participants, with Web experience, is helpful to more accurately sample the target population of Web shoppers, subjects joining this experiment may have had less concern with Web security issues than those who did not join the experiment. Analysis of the pre-test survey shows that respondents who have a high level of security concerns were still willing to supply their names and addresses in order to receive a gift for participation in this experiment. While sample demographics closely matched those of Web users in Taiwan, the sample's predisposition toward risk was not investigated and compared to the population of Web users.

Although conjoint experiments generally simulate the choices faced by consumers better than other experimental approaches, the method still may not accurately capture real shopping behavior. This is especially true in the current experiment because the

research nature of the experiment was made clear to participants through a consent form as well as repeating the same shopping task eight times. The actual level of perceived risk may also have been reduced due to an awareness of the simulation's experimental nature. Credit card and shipping information were supplied to the participants, avoiding any real associated risks. Similarly, participants could have exhibited lowered levels of product involvement, since the products searched for were predetermined, lowering the risk of receiving an inferior product.

FUTURE RESEARCH

The current research has just begun to examine the vital components of online shopping. Clearly, this is a beginning step, not an ending. Much more work can be done to clarify the components and their importance in the online shopping experience. A number of possible research directions are described here.

Representing Interactivity

All of the attributes included in this experiment were made up of two levels. This simple binary state may not accurately reflect the interactive ability of the Web. Allowing shoppers to choose picking up the product or having it shipped is an example of how interactivity can combine attributes. Guarantees related to risk could be displayed or hidden based on personalized Web pages. These pages would be created based on previously learned preferences of the shopper or by correlation with demographic data. Accurate predictions of online consumer behavior can be enhanced by designing experiments with more complex conjoint or conjoint-like designs that reflect higher levels of interactivity.

Predicting Attribute Preferences

This study failed to find any relationship between demographic data and preferred online shopping attributes, yet the creation of interactive shopping interfaces depends on finding some indicators of preferences so that the online bundle can be dynamically modified to maximize the fit between consumer preference and the shopping interface. Because Internet usage appears to be spreading across demographic segments, indications of consumer preferences toward the vital components may need to be derived from sources other than demographic variables. The primary candidate is the consumer's actual online behavior. By measuring a person's clickstream, data may be derived that is indicative of certain predisposition toward inclusion or exclusion of vital interface components. In other words, the way a shopper enters, moves about, and clicks within a shopping interface may indicate his/her preference, for such features as fraud protection notification. Further testing may uncover such indicators that can then maximize the interactivity of the Internet avoiding the need to trade-off between vital components.

Convenience, Access, Trust Relationships

The CAT components may have underlying relationships that were not studied in this experiment. The conjoint orthogonal stimuli design excluded any testing of interaction effects. Such interaction could exist, for example, in situations where physical pick up of the product may represent a method to reduce risk through increasing physical inspection of product and allowing return merchandise. Further research can investigate how the online shopping vital components relate to one another in actual online use. This

can lead to development of bundles of components that *fit* together and compliment one another rather than compete for share, as was assumed in the current analysis.

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APPENDIXES

Stage 2 (Search Portal) Real Dot-Com Examples
(All examples are ©Copyrighted by their respective firms)

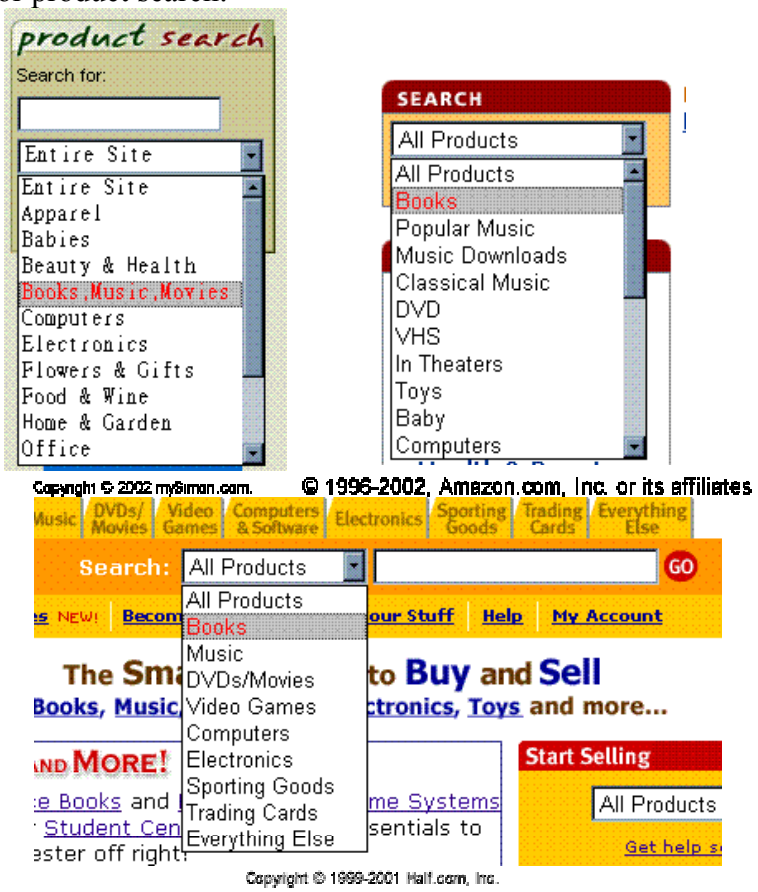
Minimalist approach:

Categorical approach with no graphics (represented in experiment by variable *accessibility high*):

Complex approach (represented in experiment by variable *accessibility low*):

Stage 3 (Search Parameters) Real Dot-Com Examples
(All examples are ©Copyrighted by their respective firms)

Use of menus for product search:



Stage 4 (Search Results) Real Dot-Com Examples
(All examples are ©Copyrighted by their respective firms)

Reduced product information with lowest price indicated (represented in experiment by variables *information access low* and *price search high*):

HP Omnibook 500 P3-700 20G 128MB 98 12XGA Wireless W/EXPANS Base	Lowest Price: $2,445.88	See All Prices
HP Omnibook 500 P3-750 30GB 256MB W2K 12-XGA CD 56K W/EXPANS Base	Lowest Price: $2,864.59	See All Prices
HP Omnibook 500 P3-700 128MB 20G	Lowest Price: $2,319.87	See All Prices
HP OMNIBOOK" 500 Pii 600MHZ 128MB 10GB 12IN XGA TFT 56K 10/100	Lowest Price: $1,140.00	See All Prices
HP Omnibook 500 P3-700 20G 128MB W2K Wlan 56K Expansion Base	Lowest Price: $2,230.41	See All Prices
HP Omnibook 900 P3-500 5GB 64MB 12.1 TFT NT	Lowest Price: $1,299.00	See All Prices
HP Omnibook 500 P3/750 256MB 30GB 56K Modem Wxpp	Lowest Price: $2,493.14	See All Prices

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Reduced product information with price range indicated (represented in experiment by variables *information access low* and *price search high*):

amazon.com Earth's Biggest Selection. Everyday savings up to 50%! Merchant Info	★★★	The Lord of the Rings (BBC Dramatization, Library Edition) [ABRIDGED] [ABRIDGED] Condition: New	See Merchant	$56.00 3.99 S/H	$59.99 3 to 7 business days Standard Shipping
BARNES&NOBLE Free Shipping on books, music, movies and more at BN.com! Merchant Info	★★★	The Lord of the Rings Condition: New	In Stock: Ships within 2-3 days	$64.00 4.48 S/H	$68.48 3-6 business days USPS Standard Ground
half.com an eBay company New, Used, Refurb Merchant Info	★★★	Lord of the Rings Compact Disc Condition: used	In stock	$56.23 2.30 S/H	$58.53 4 to 12 days U.S. Postal Service Media Mail
1bookstreet.com FREE SHIPPING offered to all	★★★	The Lord of the Rings Compact Disk Condition: New	See Merchant	$76.00 0.00 S/H	$76.00 3-14 business days Parcel Post

Copyright© 2002 mySimon.com.

Reduced product information with no price range indicated (represented in experiment by variables *information access low* and *price search low*):


51. **Encyclopedia Brown Finds the Clues** (Encyclopedia Brown Series #3)
In-Stock: Ships within 24 hours.
Donald J. Sobol,Leonard W. Shortall (Illustrator) / Paperback / Bantam Books, Incorporated / January 1978
Our Price: $3.60, You Save 20%
More... Add to Cart

52. **The Illustrated Encyclopedia of Feng Shui:** The Complete Guide to the Art and Practice of Feng Shui
In-Stock: Ships 2-3 days.
Lillian Too / Paperback / Element Books / October 1999
Our Price: $27.96, You Save 20%
More... Add to Cart

53. **The Southern Living Garden Book:** The Complete Encyclopedia of More Than 5,000 Southern Plants
In-Stock: Ships within 24 hours.
Steve Bender (Editor),Foreword by John Alex Floyd / Paperback / Oxmoor House, Incorporated / February 1998
Our Price: $23.96, You Save 20%
More... Add to Cart

Copyright 1997, 1998, 1999, 2000 barnesandnoble.com

Increased product information with no price range indicated (represented in experiment by variables *information access high* and *price search low*):


Men's Regular Traditional Fit Ringspun 5-pocket Jeans

- 100% cotton, yarn-dyed denim
- Prewashed for softness
- Ringspun yarns ensure strength
- Pre-inseamed for better fitting legs
- Or choose custom inseam
- Stock up and save: buy 2 or more, save $5 each!

$29.50

Men's Regular Relaxed Fit Ringspun 5-pocket Jeans

- 100% cotton, yarn-dyed denim
- Prewashed for softness
- Ringspun yarns ensure strength
- Pre-inseamed for better fitting legs
- Or choose custom inseam
- Stock up and save: buy 2 or more, save $5 each!

$29.50

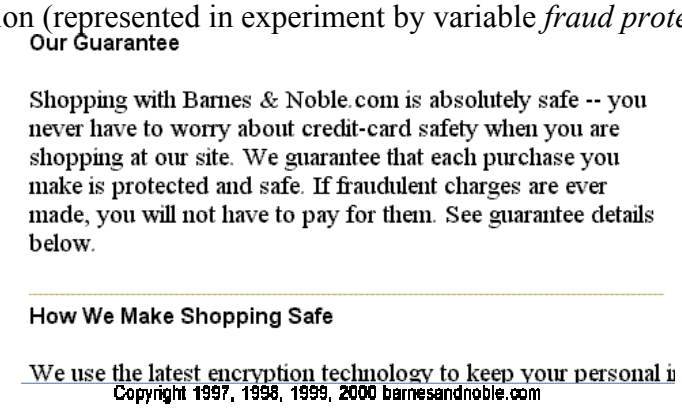
Men's Pre-inseamed Regular Traditional Fit Ringspun 5-pocket Jeans

- 100% cotton, yarn-dyed denim

$29.50

© 2002 Lands' End Inc.

Security notification (represented in experiment by variable *fraud protection high*):


Our Guarantee

Shopping with Barnes & Noble.com is absolutely safe -- you never have to worry about credit-card safety when you are shopping at our site. We guarantee that each purchase you make is protected and safe. If fraudulent charges are ever made, you will not have to pay for them. See guarantee details below.

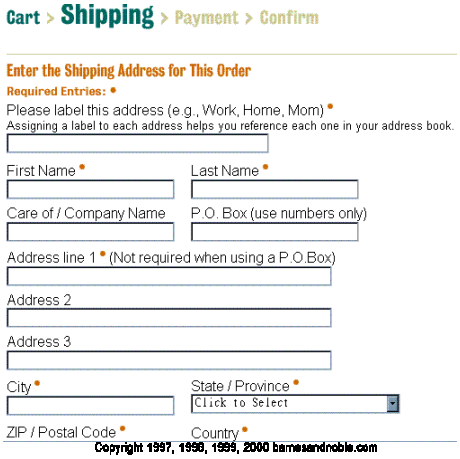
How We Make Shopping Safe

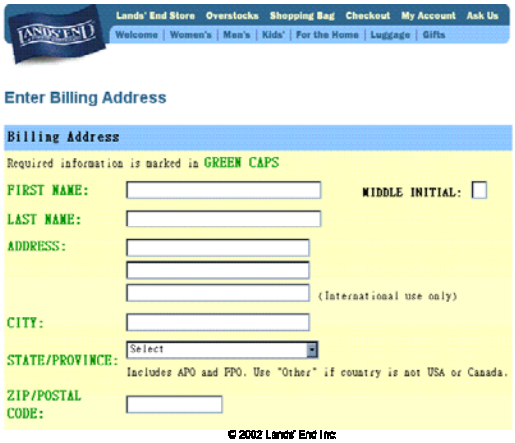
We use the latest encryption technology to keep your personal i

Copyright 1997, 1998, 1999, 2000 barnesandnoble.com

Stage 5 (Online Purchase Form) Real Dot-Com Examples
(All examples are ©Copyrighted by their respective firms)

Shipping and payment data collection:





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