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A usability comparison of e-commerce shopping cart designs

Elisa Ann Taube
San Jose State University

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A USABILITY COMPARISON OF E-COMMERCE SHOPPING CART DESIGNS

A Thesis

Presented to

The Faculty of the Graduate Program in Human Factors and Ergonomics

College of Graduate Studies

San José State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

Elisa Ann Taube

August 2004

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ABSTRACT

THE USABILITY OF THE E-COMMERCE SHOPPING CART TOOL

By Elisa Ann Taube

In this study, data on user performance and subjective satisfaction while using the e-commerce shopping cart tool were collected. Literature (Gordon, 2000 and Lewis, 2002) suggests that users encounter difficulties using the shopping cart on e-commerce sites. Three variables and their effects on the user shopping experience were explored for 32 participants: Cart Type, Add-Item Destination Page, and Continue Shopping Destination Page. Based on the analysis, the benefits of a Persistent Cart (displays number of items and subtotal on each page while shopping) that brings the user to a Separate Cart Page after adding an item were demonstrated. In addition, when the user is on the Separate Cart Page, the benefits of returning the user to the previously viewed product page rather than the homepage were demonstrated. Recommendations for future research are also presented.

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Chapter 1

INTRODUCTION

The World Wide Web has transformed the way people gather information, communicate with others, and purchase products. Because of the Internet, people can find information, communicate, and purchase products faster and easier than ever before without the adversities of crowds and parking. Even the time it takes to shop for a product is reduced by using comparison websites (such as, www.bizrate.com and www.yahooshopping.com) that display product prices at multiple e-commerce sites. Using these sites is an excellent time saver, but it also challenges companies to create websites that encourage users to stay and not go to the competition.

In a 1998 survey of over 10,000 internet users, the Georgia Institute of Technology found that convenience was the most cited reason for why people use the web for personal shopping (65%) followed by availability of vendor information (60%), no pressure from sales people (55%), and saving time (53%) (Tilson, Don, Martin, & Kieke, 1998). A 1999 Danish E-Commerce survey asked 1,780 people who made purchases online to list the five most important reasons to shop the Web. Easy to place an order ranked highest (83%) followed by others including faster service and delivery (52%), and easy payment procedures (36%) (Nielson, 1999).

These surveys can explain why over 39 million American households in 2003 shopped online (Chmielewski, 2003) and the U.S. Census Bureau reports that “retail e-commerce sales in fourth quarter 2003 were 17.2 billion, up 25.1% from fourth quarter 2002” (King & Scheleur, 2004). Even though these data are staggering, surveys show

that 27% of all web transactions are abandoned at the payment screen and 75% of respondents abandon their cart without making a purchase (Gordon, 2000). In 2002, Lewin reported that sites' average abandonment rates are 30% or higher.

The 1999 Danish survey also reported that shoppers only buy 5% of the time when they visit e-commerce sites. The other 95% of the time they are doing product research, cross shopping, and other non-buying tasks. This indicates that vendors need to work hard to support these users and make them repeat visitors (Nielson, 1999). Many online vendors are learning that usability is an essential component to increasing profitability. If customers do not find the products they are looking for on one website, they can move very quickly to another.

Interaction between a human and software is a central component to human factors engineering as represented in the SHEL (Software, Hardware, Environment, and Liveware) concept first developed by Edwards in 1972 with a modified diagram to illustrate the concept developed by Hawkins (1987). The livewire-software interaction encompasses procedures, checklists, symbology, and computer programs. Improving the interaction between humans and software by adapting the software interface to match human requirements can minimize errors and thus, improve usability.

Usability has been defined by many researchers. Lee defined it as the "efficient, effective, and satisfying completion of a specified task by any given webuser" (1999, p. 38). Nielson defines usability as the measure of the quality of the user experience when interacting with something (1998). In this thesis study, Magnenat's definition of e-commerce usability was used: "the extent to which a website enables its users to buy

specific products with efficiency, effectiveness, and satisfaction” (Magnenat, 1999, p. 1).

This study gathered a range of measures that can be grouped into these three main categories (efficiency, effectiveness, and satisfaction) for measuring a positive user shopping experience. The first category, efficiency, consists of performance measures such as optimal path and time to initially navigate to the Separate Cart Page, time to add similar products, and time to add different products.

For the purposes of this study, an effective Cart Type would enable users to accurately accumulate and be aware of what is in their cart. This category measures the effectiveness of the two Cart Types (Persistent and Non-Persistent) from the results of the two awareness probes such as accuracy of responses, response time, deviation of response from actual cart contents, number of self generated trips to the cart, and frequency of incorrect number of items in the cart. This category also includes awareness of staying within a given budget and self-generated notification time when users exceed budget.

The third category, satisfaction, includes subjective assessments from the exit survey and includes measures such as preference for display of cart information, ease of locating cart information, ease of knowing budget, and ease of navigating between the cart and product pages.

The shopping cart tool is a small part of the interaction between the user and an e-commerce site but it is one that has received attention because of the high abandonment rates. After a review of 60 e-commerce websites, it was obvious that the design of the shopping cart tool was inconsistent. Three variables displayed obvious distinctions in

shopping cart design, and thus served as the focus of this study. The three variables are: shopping Cart Type, Add-Item Destination Page, and Continue Shopping Destination Page.

Definition of Terms

For the purpose of this study, some terms may require explanation. Electronic commerce (also called e-commerce, online stores, or cyberstores) can be defined as “any commercial transaction that starts or ends with the Internet” (Dickenson, 1998, p.106) or “browser-based sites created for the purpose of selling goods and services over the Internet, regardless of whether the actual sale takes place on the Internet, via fax, phone, or other means provided by the website” (Rohn, 1998, p.110). Because this study focuses on the shopping cart tool, the proposed working definition for electronic commerce is a combination of these two definitions: browser-based sites for the purpose of selling goods and services over the Internet where the actual sale takes place utilizing the shopping cart tool and checkout process on the Internet site.

The shopping cart tool is defined in this study as the place where users accumulate their shopping list selections. The shopping cart does not include the checkout process.

Some engineering psychology principles and concepts are relevant to this study and warrant some definition. These include: feedback, augmented feedback, navigational awareness, situational awareness, and visual momentum. These terms are described in more detail and in relation to the independent variables in the following paragraphs.

Many sites show different levels of feedback related to the shopping cart. Some sites show dynamic information on every page while the user shops online. This information includes the running subtotal, number of items, product names, and price per item. Other sites display a static shopping cart or basket icon on each page without any cart information. Feedback can be defined as "the automatic furnishing of data concerning the output of a machine to an automatic control device so that errors may be corrected" (Stein, 1980). A form of feedback is quantitative and terminal augmented feedback which provides external information such as numeric values, thus quantitative, after (terminal) the performance of a task (Bryden, 2003). Feedback is incorporated into a usability principle that states:

Keep users informed of actions or interpretations, changes of state or condition, and errors or exceptions that are relevant and of interest to the user through clear, concise, and unambiguous language familiar to users (Constantine & Lockwood, 1999, p. 57).

Constantine and Lockwood also discuss the use of messages to provide feedback that can be intrinsic or extrinsic (similar to augmented feedback) as well as "in-context" or "out of context." In-context, extrinsic feedback applies to the Persistent Cart Type in that it provides dollar amount and number of items on a continuous basis after the addition of a product. The two conditions for the Add-Item Destination factor also incorporate some form of augmented feedback since they either provide a message on the product page that an item has been added or display the result of the addition on a Separate Cart page.

Maintaining a high level of navigation awareness is another engineering psychology principle that applies to the Add-Item Destination Page and Continue Shopping Destination Page factors. Navigation awareness can be defined as having complete navigational knowledge of an environment (Satalich, 1995).

Related to navigational awareness is the concept of situational awareness. To date, situational awareness (SA) research has primarily been focused on the fields of aircraft, air traffic control, large-systems operations, medical, tactical, and strategic systems. Situation awareness is an “understanding of the state of the environment including relevant parameters of the system” (Endsley, 1995, p. 65). The research conducted in the above mentioned fields can be applied to user performance in the operation of any complex and dynamic system.

In 1995, Mica Endsley published a study regarding a tool she has developed called Situation Awareness Global Assessment Technique or SAGAT. Endsley has conducted studies of aircraft pilots and air traffic controllers to objective measure SA using SAGAT metrics. Endsley asserts that SAGAT is an improvement over self-assessment of SA and observer-ratings. SAGAT is a battery of questions asked at a random point in a simulation to determine whether the participant has an accurate understanding of the current status of the system.

Ensley recommends that the battery of questions should be given during a freeze in the simulation to collect real time situational awareness metrics. She has tested the “freeze technique” and its level of intrusion into task performance and found it to be non-intrusive. The freeze technique is used to “overcome the limitations of reporting on

situational awareness after the fact” (Endsley, 1995, p. 70). By freezing the simulation, experimenters can assess the participant’s global situational awareness objectively using SAGAT. Endsley’s research recommends that the timing of each freeze be random so the participant cannot anticipate and prepare for the questions. This method of assessing participants global situational awareness is incorporated into this thesis study through the use of two quasi-random awareness probes discussed later in the Method section.

Maintaining a high level of situational and navigational awareness is an essential component to the user shopping experience. Although the idea of applying these concepts to online shopping may be new, the concept of a user being aware and understanding the spatial environment is not.

Visual momentum is an engineering solution to the problem of becoming cognitively lost in a spatial world. Its objective is to create familiar displays using four basic guidelines: 1) using consistent representations, 2) using graceful transitions, 3) highlighting anchors, and 4) displaying continuous world maps (Wickens, 1992, p. 159). Providing positive visual momentum can be applied to the online environment and to the factors in this study, mainly Add-Item Destination Page and Continue Shopping Destination Page in terms of providing users with graceful transitions or hyperlinks to various pages. For the Cart Type factor, the idea of highlighting anchors (or persistent cart information) through the use of salient and consistent coding may prove useful.

In this study, the first independent factor is Cart Type and is defined by two levels as shown in Figure 1: (a) “Persistent” or the number of items and subtotal is visible on every page, or (b) “Non-Persistent” meaning no shopping cart information is visible on

any page while shopping. Other synonyms for the Persistent Cart include “Integrated Cart” or “Short Cart.” For the purposes of this study, these two conditions will be referred to as Persistent Cart and Non-Persistent Cart.

“Add-Item Destination Page” is defined as the page the user is taken to after selecting the *add to cart* button. Users are most often taken to two places: (a) Same Page meaning when the user selects *add to cart*, the user remains on that product page, and (b) Separate Cart Page meaning when the user selects *add to cart*, the site goes to a separate cart html page showing the list of items stored in the cart. This is shown in Figure 2.

Most e-commerce sites allow users to continue shopping from the Separate Cart Page. The design differences are found when users select the Continue Shopping button and are taken to various destination pages. Continue Shopping Destination Page is defined as the page the user goes from the Separate Cart page. The majority of sites take users to two places as shown in Figure 3: back to the previously viewed product that was just added (Return to Product) or back to the homepage (Return to Home).

Figure 1. Example of the Persistent Cart Condition.

Same Page

Site Stays on
Same Product
Page

Separate Cart Page

Site Goes to
Separate Cart Page

Figure 2. Example of the Two Levels for Add-Item Destination Page.

Continue Shopping Destination Page

From Separate Cart Page

User Selects
"Continue
Shopping" button

From Separate Cart Page

Site Returns to
Previously Viewed
Product Page

"Return to Product"

Site Returns to
Homepage

"Return to
Homepage"

Figure 3. Example of the Two Levels for Continue Shopping Destination Page.

Problem Statement

The purpose of this study will be to determine:

1. What is the effect of the shopping Cart Type on the user shopping experience?
2. What is the effect of the Add-Item Destination Page on the user shopping experience?
3. What is the effect of the Continue Shopping Destination Page on the user shopping experience?

Hypotheses

The following null hypotheses will be made for the purpose of the study:

1. The shopping Cart Type will not affect the user shopping experience.
2. The Add-Item Destination Page will not affect the user shopping experience.
3. The Continue Shopping Destination Page will not affect the user shopping experience.

Limitations

The study will be limited to:

1. The general population (between the ages of 18 and 55 years) therefore individual differences may exist regarding performance and comfort level in regards to using the computer.
2. The sites used in the study are real internet sites. Some participants may have been exposed to some or all of the sites used in this study prior to data collection.

Delimitations

This study will be delimited to:

1. Participants who use the Internet at least three hours a week, have used a Microsoft Windows computer for at least two years, and use the Internet for more than email. Teaching someone how to use a computer or how to purchase an item online is not the intention of this study; therefore, this delimitation will provide a sample of familiar users.

Importance of the Study

This study provides methodological contributions to studying the shopping cart design. Tasks and performance measures were developed to study user efficiency, effectiveness, and satisfaction while interacting with the shopping cart. In addition to gathering performance data in a usability laboratory, this study presents a comprehensive review of 60 websites entitled “Taxonomy of Shopping Cart Design Dimensions and Distinctions” found in the Methods section. The results from the following questions were gathered to guide the experimental design of the current study.

- What is the title of accumulator on each site?
- Is any data in this accumulator presented (or persistent) on every page while shopping?
- Is there an icon, text (such as "cart"), or both on each page?
- Where is the shopping cart icon located on each page (if an icon is used)?
- If there is a Persistent Cart, where is it located on the page? Which items are persistent on every page while shopping?

- How does a user add items to the cart?
- When users leave the Separate Cart Page (which is present for both Persistent and Non-Persistent cart designs), are they returned to the item when they select the continue shopping link? If no, which page does the user end up on?
- How does the user delete an item in the shopping cart?
- How does the user update a quantity that has been changed in the cart?
- Is membership required to either view the cart or continue checking out?

Little data have been collected and published regarding user performance and preference data while shopping online. In addition, a comprehensive review of this magnitude has not been published in the past. Usability professionals, software designers, and companies can benefit from research that will identify online shopping usability problems. This study offers user performance and preference data in an effort to eventually reduce shopping cart abandonment and increase the usability of the shopping cart. This is a first step in improving the user's shopping experience while increasing sales for companies.

Chapter 2

REVIEW OF LITERATURE

Studies have been published on the topics of usability, World Wide Web usability, and e-commerce usability. Performance data and research related to the e-commerce shopping cart in isolation are rarely identified in the literature. The research on these three topics can offer recommendations and suggestions that are applicable to the current study.

Overview of Usability

Previously in the Introduction, some references and definitions were given on usability. Additional papers have been written to further define this term. Hewett and Meadow (1986) tested a theory developed by Gould and Lewis, that proposed four principles for system design: early focus on users, interactive design, empirical measurement, and iterative design. They found that applying these principles played a major role in the design of a computerized database search. Fucella (1997) discussed similar user centered methods in a four-step process: audience definition, object identification, object organization, and validation. She presented surveys and checklists that can be used by software developers to utilize these methods from the first stage of software development. Keevil (1998) also developed a checklist for developers to measure the usability of their website. Yet, the checklist is limited because it depends upon setting design standards within a company and reworking the checklist. These papers have heightened awareness as to the importance of usability in early stages of software development.

Nielson publishes standard usability heuristics on the following website: www.useit.com. Two heuristics found on this website are applicable to this study: (1) visibility of system status and (2) recognition rather than recall. Visibility of system status is defined as "always keeping users informed of what is going on through appropriate feedback within reasonable time" (Nielson, 1994). Recognition rather than recall is defined as "not forcing the user to remember information from one part to another" (1994). These two heuristics are important for the purpose of this; yet, performance data in relation to the shopping cart has not been collected to further validate these heuristics.

Overview of World Wide Web Usability Studies

Most studies on web research focused primarily on navigation, search tasks, download times, and reading online information (Lee, 1999). Some of these findings can be found relevant to the shopping cart tool. Lee (2000) conducted a survey study to assess the effects of website usability on user ratings of site usefulness and site visit frequency. He gathered data from 51 respondents and asked them to rate the usability of five primary website tasks. Comparative ratings were gathered on a five point scale. These tasks included finding information, reading text, viewing maps and graphics, downloading products, and ordering products. Lee found that comparative usability of the site and site usefulness contributed uniquely to site visit frequency, but were not correlated with each other. Data was not published related to "ordering products" portion of his study.

Larson and Czerwinski (1997) studied the depth and breadth issue of hyperlink distribution on a website. They tested 19 users and found that users completed their target searches in the least amount of time on sites with a moderate level of breadth (16 levels on first page, 32 levels on second page) with well organized categories, which allowed the user rapid access to content from a single link.

Nielson (2000) published a book entitled Designing Web Usability in which he covered a broad range of design issues including designing websites for users with disabilities, intranets, and other topics. He referred to the shopping cart as a metaphor that has become an industry standard. He noted that some vendors have tried to change the shopping cart, or even just the name, and ended up causing confusion for users. Yet, he asserted that although people are accustomed to seeing it does not mean all the user's tasks and goals are well supported. This was further motivation for this study.

Overview of E-Commerce Usability

Lohse and Spiller (1998) studied 32 user interface features for 28 online retail stores and their impact on traffic and sales. Instead of testing people and tasks, they used a list of store components such as menu bar consistency that were categorized into functional areas (e.g., merchandise, service, promotion, convenience, and interface variables) and based on the absence or presence of these components, linked them to traffic and sales. Without testing shopper's performance or observing them interacting with these sites, the results seem unclear as to whether these components are truly the reasons why traffic and sales are higher on one site than another. They found, however, that improved browsing and navigation capabilities would have an impact on sales and

that store presentation or "sparkle" was not enough to overcome poor navigation features. This study did not focus on navigation from the shopping cart to other products but rather from the homepage to the products themselves.

In 1998, the IBM Ease of Use Group conducted a usability study on four different e-commerce sites. Sixteen users worked with various functionality such as structure, navigation, feedback to the user, and shopping carts and commented on preferences in the designs. Users ranked 50 factors (e.g., having order buttons that are clear and easy to find, effective page layout, ability to customize products) using a seven level Likert Scale that would affect their decision to purchase. Half of the users in this study had purchased online previously while half of them had not. It seems as though it would be difficult for those who had not shopped online to rank 50 factors related to their decision to purchase when these factors were very specific to e-commerce websites. Yet, in lieu of this, user's rankings and preference comments were very revealing. This study reported three findings that are relevant to the current study:

(1) the sites did not effectively communicate where and how to add an item to the shopping list, (2) the sites did not provide effective feedback when items were and were not saved in the shopping list, and (3) the sites did not facilitate easy navigation from the shopping list to other parts of the site (Tilson, Dong, Martin, & Kieke, 1998).

Rohn (1998) affirms these findings in a white paper entitled "Creating Usable E-Commerce Sites." Although she did not test people, she presented a list of usability heuristics for various aspects of e-commerce sites such as content, navigation, ordering,

product selection, and the shopping cart. She asserted that shopping carts should contain the following functionality in order to obtain increased usability: (1) indicate item quantities, (2) keep running totals viewable at all times, (3) allow customers to add and remove items at any time, (4) provide an obvious “update total” button, and (5) allow customers to print out contents, prices, and totals. These assertions indicate that there continue to be problems with the shopping cart tool that need to be addressed and confirmed with user performance data.

In 1999, a study was conducted in France with 13 regular Internet users who were tasked with buying two specific products on each of nine websites (Magenat, 1999). They measured order conformity to specific instructions and task duration. User satisfaction data was also collected in a survey. Only one user met the objectives on all the sites. Several persons performed many inappropriate actions and made efforts to achieve their goals in the context of the test. Number of errors while performing the tasks were not measured in this test. Data was scaled to three levels: accomplished, accomplished but not according to instructions, and not accomplished. Users reported problems with the shopping carts such as not being able to empty the contents and feedback being inappropriate either because it was not given rapidly or was not understood or perceived.

The Nielson Norman Group published a study in 2000 entitled E-Commerce User Experience: Checkout & Registration. In this study, 62 users tested 20 websites comprised of 7 different industries (e.g., clothing). Although the primary focus of the study was on the checkout process (i.e., billing, shipping, and related costs), a few pages

were devoted to recommendations related to the shopping cart design. Design recommendations included showing one product per line, showing all additional charges, and showing the total based on the cheapest shipping method. These recommendations related to a separate cart page rather than a persistent shopping cart. A tip was given stating that "an integrated shopping cart [or persistent cart as referred to in this study]...seems promising because it avoids the need for the Continue Shopping button and perhaps unnecessary or premature trips to the shopping cart during a shopping session" (Nielson, p. 10). A highly noticeable cart was recommended if persistent on every page. Two comments also published in the study related to the Continue Shopping button. One comment was that the Continue Shopping button should be present on a shopping cart. Participants also commented that upon selection, the button did not go where users expected. A recommendation was not given as to where the user should be taken except to name navigation buttons clearly. Based on this study, it is clear that there is a need to test the presence of a persistent cart as well as where the user will be taken when selecting the Continue Shopping navigation button.

Barbara Chaparo at the University of Wichita Software Usability Research Lab published a study in the April 2, 2002 online issue of Usability News that again points to the importance and focus on shopping cart usability (Chaparro, 2002). Her paper presents what she considers "top ten mistakes" of cart design. These were assimilated based on watching users shop online although the paper does not explain the number of users, their demographics, or their overall performance while shopping. Despite this, it was interesting to note that one of the "design mistakes" presented was "giving little to

no visual feedback that an item has been added to the cart” (Chaparro, p. 2). She states that on persistent cart sites that stay on the same page after adding, visual feedback of the cart update is “too subtle or nonexistent.” She states that in all cases, her users did not believe anything had been added to the cart and so they continue to re-add the same item or go to the separate cart page to verify an item was added. A second “mistake” presented in this paper was “forcing the user to view the shopping cart every time an item is placed there” (p. 3). She states that if there is adequate visual feedback, there is not a need to navigate the user to the separate cart. “Adequate visual feedback” was not defined and examples were not presented.

To further demonstrate the importance of this topic, an entire book was published in 2002 entitled Constructing Usable Shopping Carts. This is another attempt at encouraging developers to create consistent and efficient carts. This book is a step by step guide to creating shopping carts that have a persistent cart, use a continue shopping link, and standardize other design features related to changing quantities, updating, and deleting items.

In December 2003, another article was published entitled “Customer-Centered Rules for Design of E-Commerce Web Sites” (Fang & Salvendy, 2003). The authors conducted 50 interviews to obtain information on what customers liked and what difficulties they had while shopping online. Fang and Salvendy proposed that interviewing experienced online shoppers would result in improved findings because it alleviated testing users with pre-selected web sites and pre-selected tasks. Nineteen design rules were presented in this paper, one of which pertained directly to the shopping

cart. This rule stated that the separate shopping cart page should provide a link that directs the customer back to the page he or she left (Return To Product). The remaining rules related to e-commerce checkout and registration, navigation, product information, and e-commerce customer service availability.

Based on the interest in the literature, there is clearly a need to improve the design of the e-commerce shopping cart. Yet, lack of performance data that corresponds to some of the assumptions presented has not been collected or published. This study serves as the first step to gathering some performance measures related to shopping cart usability issues.

Chapter 3

METHOD

The purpose of this study was to understand how Cart Type, Add-Item Destination Page, and Continue Shopping Destination Page affect the user shopping experience. The null hypothesis is that there is no effect on the user shopping experience during online shopping while interacting with the shopping cart tool featuring various Cart Types (Persistent and Non-Persistent), Add-Item Destination Pages (Same Page or Separate Cart), and Continue Shopping Destination Pages (Return to Product or Return to Homepage).

Taxonomy of Shopping Cart Design Dimensions and Distinctions

Since little information has been published regarding the variety of shopping cart designs and how they interact, an effort was undertaken to review 60 websites currently on the Internet. The data was gathered to guide experimental design decisions for this study. Websites were selected from sites registered with www.mall.com. The review focused on websites that are considered "brick and mortar" sites, i.e., e-commerce sites for stores or buildings that can be found at consumer malls such as Walmart, JCPenney, Bed Bath and Beyond, etc. The main reason for this focus was due to the fluctuating economy, as the researcher wanted this review to remain useful and valid for the long-term.

Questions were developed based on topics mentioned in prior literature and usability studies. Detailed information as well as the list of sites reviewed can be found in Appendix B.

What is the title of accumulator? Of the sites reviewed, 53% named their accumulator the shopping cart. Shopping bag and basket were the second largest categories.

Is any data in this accumulator presented (or persistent) on every page while shopping? Of the 60 sites reviewed, 31 (52%) had a cart that was persistent on every page and 29 (48%) did not. This finding shows the obvious inconsistency in design of the shopping cart and formed the basis of this study.

Is there an icon, text (such as "cart"), or both? Of the sites reviewed, many had persistent carts, so this question was not applicable. For those sites that had links to a separate cart page (33 sites), 27 (45%) had an icon and text label, 29 (48%) had a text label only, and the remaining sites had unlabeled icons.

Where is the shopping cart icon located on each page (if an icon is used)? Twenty-nine sites did not apply because carts on these sites were persistent. Of the remaining sites (31), the locations were surprisingly varied. Twenty-three of the carts (74%) were located somewhere on the top of the page from top right (61%), top middle (30%), and top left (9%). The remaining icons were located either on the bottom of the page (13%) or the left side navigation (13%). One site had an icon on the top right and the bottom left.

Where is the Persistent Cart (or items) located on the page? Of the 60 sites, 29 did not have persistent items. Of the remaining 31 sites, 19 (61%) placed this information at the top with the majority on the top right (42%), 8 (26%) in the left hand navigation area, and 4 (13%) on the right side.

Which items are persistent on every page while shopping? 39% of the sites with persistent shopping carts had number of items and subtotal visible on every page. Many of the remaining carts had number of items or subtotal but not both. Other sites had items in addition to number of items and subtotal including item name, quantity of individual item, price of individual item, size, and / or estimated shipping and handling.

How does a user add items to the cart? After an item was added to the cart, 39 sites took the user to a Separate Cart Page, 19 stayed on the same product page (Same Page), 1 went to a page asking for a zip code, and 1 went to a shipment page. Some form of feedback usually occurred in the form of a text message on the page to indicate that an item had been added. At least 3 sites did not provide much feedback except to change the shopping cart icon which was fairly subtle.

When users leave the Separate Cart Page (which is present for both Persistent and Non-Persistent cart designs), are they returned to the item when they select the continue shopping link? Of the 60 sites reviewed, 34 sites did not return the user to the item just placed in the shopping and 20 sites returned the user to the item. Four sites did not have continue shopping links, one site varied, and one site gave the user three choices of where to return.

If no, which page does the user end up on? Of the sites that did not return the user to the product last selected, 21 returned the user to the home page, and 10 took the user to one category above the most recently purchased item.

How does the user delete an item in the shopping cart? The designs for deleting an item were varied. The largest portion of sites (37%) had a checkbox in a column

labeled delete or remove with an update button either for each product or to refresh the entire page. Other sites had buttons for "remove text," a trash can icon, clear basket, remove item links, cancel button, or delete buttons. One site did not allow the user to delete an item and one site forced the user to change the quantity to "0" and hit the update button to delete an item.

How does the user update a quantity that has been changed in the cart? Forty-seven (78%) of the carts had a text box that allowed the quantity to be changed for the product. Four sites used a drop down box for quantity changes, six sites did not allow the user the option to make quantity changes, and three others made use of text links such as "add another" and "edit item."

Forty-two sites (70%) had one update button somewhere on the page that updates any changes made to the cart. A minority of sites (11) had update buttons or links for each individual item rather than a global update button.

Is membership required to either view the cart or continue checking out? Of the 60 sites reviewed, 32 (53%) did not require the user to be a member to make a purchase, 24 (40%) required membership involving creating usernames and passwords. The remaining 4 (7%) required membership to view more details of a persistent shopping cart.

This review not only forms the basis of this experimental design but could also be valuable to web developers as they embark on design efforts. Various design interactions such as deleting items, changing quantities, and requiring memberships for purchase are all interesting topics, but after careful review of prior literature and close examination of the obvious divisions in the designs, this study focused on the use of a Persistent or Non-

Persistent shopping cart (almost a 50-50 design split in sites reviewed), where the user is taken when adding an item to the cart (in this review, the majority of sites either stayed on the product page or went to the Separate Cart Page), and the destination page after selecting the "continue shopping" link (largest numbers either went to the homepage or back to the product page).

Participants

Thirty-two participants were observed in a usability laboratory. Participants were San Jose State University students consisting of 20 females and 12 males between the ages of 18 and 51 years. They were recruited through the Psychology department human subjects pool and were awarded two hours of research credit for participating in the study. The researcher screened participants as follows:

1. Use of Microsoft Windows computers for at least 2 years
2. Use of the Internet at least 3 hours a week for at least 1 year
3. Use the Internet for more than just email
4. Have not participated in a usability study within the past 6 months

Figure 4 shows participant online shopping experience. Although three participants had not used the web to purchase products (because they did not have a credit card), there were very familiar with the internet and e-commerce sites. Their mean number of years using the computer was 8.77 and the mean number of years using the internet was 6.04. Figure 5 displays the types of products participants purchased on the internet in the past year.

Figure 4. Participant Shopping Frequency on the Internet.

Figure 5. Types of Products Participants Purchased on the Internet in the Past Year.

Equipment

Participants were seated in an adjustable chair at a bi-level adjustable personal computer workstation. A Pentium III personal computer with Microsoft Internet Explorer 5.0TM and a 17" monitor (set at 800 x 600 resolution) was used in this study. The computer was connected to the Internet via a DSL line. The workstation was located in a test room at Interface Analysis Associates Usability Laboratory adjacent to an observation room on the opposite side of a one-way mirror.

CamtasiaTM Software (developed by the Techsmith Corporation www.techsmith.com) was installed on the usability laboratory computer. This software recorded the user's screen activities and audio (dialogue between researcher and user) in real-time while users shopped online. The user was unaware that the activities were being recorded "behind the scenes". After each user completed their tasks for the four websites, the output file was saved in an .exe file format by participant number. Each user file was replayed for the researcher in Windows Media PlayerTM in order to gather task accuracy and time data. The output file displays a time counter and a highlighted circle following user cursor movements. These real time software audio and video recordings using CamtasiaTM software served as a backup to the researcher's real-time data collection log.

Experimental Design

The experimental design was a three factor mixed design. Each factor was defined by two levels. The first independent variable was Cart Type (Persistent and Non-Persistent) which was manipulated between participants. The second independent

variable was Add-Item Destination Page (Same Page and Separate Cart Page) which was manipulated within participants. The third independent variable was the Continue Shopping Destination Page (Return to Homepage and Return to Product page) which was manipulated within participants, and nested within the Add-Item Destination Page factor. Figure 6 displays the experimental design used in this study.

For each of the conditions produced by the combination of factors studied, a total of four websites were utilized in order to counter the effects of the design quality of any single site. With each group of participants, the assignment of sites to conditions was counterbalanced.

The Add-Item Destination Page (Same Page and Separate Cart Page) and Continue Shopping Destination Page were counterbalanced within participants. In order to create a balanced design, each participant saw two sites that met the Add-Item Destination page / Same Page condition and two sites that met the Add-Item Destination page / Separate Cart page condition. Within the Add-Item Destination page / Separate Cart condition, each participant viewed one site that returned to the homepage and one site that returned to the product page. The study design was treated as two parts. The first part investigated the Cart Type and Add-Item Destination Page. The second part focused on the Continue Shopping Destination page.

Figure 6. Experimental Design Used in Study.

Dependent Measures

The dependent measure is the user shopping experience. For the purposes of this study, an optimal user shopping experience is one where the majority of users accurately and quickly complete a set of given tasks, realize when and if they are over budget, provide correct and timely answers to question probes while completing their tasks, rate the shopping cart design and interaction positively, and show the least amount of confusion and hesitation through verbal communication. The following measures correspond to the three categories presented and described in the Introduction: efficiency, effectiveness, and satisfaction.

Efficiency of User Shopping Experience

As stated earlier, an efficient user shopping experience is one that enables users to 1) quickly add similar and different products and 2) optimally and quickly navigate to the Separate Cart Page the first time. Dependent measures related to this category are detailed on the following pages.

Time to Navigate to the Separate Cart the First Time. The time (in seconds) was recorded from when the researcher finished reading the task until the Separate Cart Page loaded. This time includes any attempts to navigate to the Separate Cart using other links or icons.

Use of Optimal Path for Initial Navigation to the Cart. This measure was determined by observing users navigating to the Separate Cart Page for the first time. The user's mouse path was then compared to an optimal path. The optimal path was determined as the path requiring the least number of clicks to navigate to the separate cart

page. Two tasks required users to navigate to the Separate Cart Page: (a) deleting a previously added item in the cart, or (b) changing the quantity of a product already stored in the cart. The result was recorded as either “1” indicating optimal or “0” indicating that the optimal path was not used.

Time to Add a Similar Product to the Cart. This measure was determined by observing users navigating to a similar product page after departing from the Separate Cart Page. The time for this task was measured in seconds and retrieved from the video recordings. Time recording started after the researcher administered the task verbally (from the Continue Shopping Destination Page) and stopped when the user arrived at the page with a similar product. This measure was noted because some separate carts returned the user to the homepage and others returned users to the product page.

Time to Add Different Products to the Cart. This measure was determined by observing users navigating to a different product page after departing from the Separate Cart Page. The task was read after the user clicked on the “continue shopping” link from the Separate Cart Page. The time started after the researcher administered the task verbally and stopped when the user arrived at the page with a different product. The time for this task was measured in seconds and retrieved from the video recordings.

Effectiveness of User Shopping Experience

An effective user shopping experience is one that enables users to accurately accumulate and be aware of what is in their cart. Dependent measures related to this category are described on pages 37 through 38.

Accuracy of Response to First Awareness Probe. This measure was recorded when the user responded verbally to the following question posed by the researcher: “Without going to a different page, how many total items are in your cart right now?” User response was compared to the actual number of items in the user’s cart. The correct answer was determined by reviewing the video capture to ascertain how many items the user had in the cart when the probe was asked, taking into account if a user had not correctly added an item to the cart. For example, even though the researcher asked the user to add three products at the point of the probe, but the user (unbeknownst to them) had only successfully added two items to their cart, the correct answer was noted as “2.” The correct answer was classified and logged as a “1” for optimal and the incorrect answer was logged as “0.”

Response Time to First Awareness Probe. Response time was calculated as the time in seconds from the end of the researcher question “how many total items are in your cart right now” until the participant verbalized a response. Time data was collected for incorrect, correct, and for when the user gives up by verbally making a comment such as “I don’t know.” The response time (in seconds) was collected using the time clock stamp in the lower left corner of the video capture.

Deviation of Response to Probe 1 (actual number of items in cart). The difference between the correct answer and user response was calculated. It was also noted whether the user’s response was over or under actual number of items in the cart.

Response Hesitation. All verbal comments were recorded in real time from the time when the researcher asked the question to when the user offered an answer. This included answers such as “I don’t know” or “I have no idea.”

Retrieval of Response to Second Awareness Probe. This measure was determined by observing users when the question was asked. Response retrieval was classified as “from memory” or “from the persistent cart.” The “from memory” was identified by observing users looking to the side, up to the ceiling, counting to themselves aloud or counting on their fingers. If users retrieved the information from the persistent cart, it was obvious that they leaned in and read the screen. This measure was noted because it might be an indicator of the degree of mental workload to retrieve the answer from memory.

Accuracy of Response to Second Awareness Probe. This measure was recorded when the user responded verbally to a second question (probe) posed by the researcher: “How much have you spent so far?” User response was compared to the total dollar amount stored in the user’s cart at that time. The correct answer was determined by reviewing the video capture. The correct answer was classified and logged as a “1” for correct and the incorrect answer was logged as “0.” Answers scored as correct needed to be the exact dollar amount in dollars and cents. All other answers, including dollar amount ranges such as “between 100 and 200,” were recorded as incorrect.

Response Time. Response time was determined by measuring the time in seconds from the end of the researcher question until the participant verbalized a response. Time data was collected for incorrect, correct, and when the user gives up by making a

comment such as “I don’t know.” The response time was collected using the time clock stamp in the lower left corner of the video capture.

Deviation of Response to Probe 2 (actual dollar amount in cart). The difference between the correct answer and user response was calculated. It was also noted whether the user’s response was over or under the actual dollar amount in the cart.

Response Hesitation. All verbal comments were recorded in real time from when the researcher asked the question until the user offered an answer. This includes answers such as “I don’t know” or “I have no idea.”

Retrieval of Response to Second Awareness Probe. This measure was determined by observing users when the question was asked. Response retrieval was classified as “from memory” or “from the persistent cart.” The “from memory” was identified by observing users looking to the side, up to the ceiling, counting to themselves or using their fingers. If users retrieved the information from the Persistent Cart, it was obvious that they leaned in and read the screen. This measure was noted because it might be an indicator of the degree of mental workload to retrieve the answer from memory.

Self-Generated Trips to Separate Cart Page. This measure developed out of observed user behavior during the current study. Users would add products to the cart and proceed to navigate to the Separate Cart Page to verify an item had been added. Each occurrence of the behavior was documented and tallied.

Frequency of Accumulating an Incorrect Number of Items in Cart. This measure also developed out of observed behavior during the study. Users were observed selecting *add to cart* more than once for the same item and not realizing they added duplicate and

triplicate items to their cart. Each occurrence of the behavior was documented and tallied.

Frequency of Staying within Budget. This measure was collected by observing the dollar amount stored in the user's shopping cart at the completion of the site tasks. This amount was compared to the given budget for each site. If a user stayed within the given budget, the result was classified as yes or "1," if not, it was classified as a no or "0."

Self-Generated Notification Time When Users Exceed Budget. This measure was determined as the number of seconds from when the user added an item that forced them over budget until the users verbally announced they were over budget. If users stated that adding an item would force them to go over budget, the time was recorded as "0" seconds. If a user did not ever notice, the time was recorded from when the item was added to the completion time of the last task for the site.

Satisfactory User Shopping Experience

A satisfactory user shopping experience is one where users rate their preferences for display of cart information, ease of locating cart information, ease of knowing if they were staying within their budget, and ease of navigating between the cart and product pages.

Survey Measures. The survey (see Appendix H) was conducted to assess participant preference for shopping carts used during the study and to gather information related to general shopping cart features and design. The survey asked users to rank the sites viewed during the study against various dimensions / tasks, for example, ease of

knowing what items were in the cart, ease of changing and deleting an item. Users also selected a preference for items such as where they expected to see a total number of items displayed.

Procedures

Participants were given a consent form for signature (see Appendix C) and filled out a demographic survey (see Appendix D) before commencing the study). Standard instructions were read to each participant and can be found in Appendix E. Participants were told that the study was concerned with how easy or difficult web shopping sites were to use and to gather feedback on critical design factors that might affect their shopping experience.

Participants were then taken to the usability lab. Participants were shown four note cards that had budgets for each of the four websites they would be working with. At this point, the researcher left the room and the participant worked alone during the tasks. The researcher read each task through a microphone and speakers while observing from behind a two-way mirror.

Although 60 sites were reviewed, sixteen sites were selected for use in this study. Reasons for not selecting other eligible sites for this study included one or more of the following:

- Requirements to make multiple selections before purchase. These included selecting color, size, who to ship to, quantity, and sometimes zip code prior to adding the item to the cart.
- Poor color contrasts such as red and black or unreadable font size.

- Requirement to register with the site to view the shopping cart.
- Inconsistent navigation after pressing the continue shopping link.
- Constantly changing site or advertisements displaying at random times.

Each person completed shopping tasks on four out of 16 sites selected for this study. Group A viewed sites 1-4, Group B viewed 5-8, Group C viewed 9-12, and Group D viewed 13-16. Table 1 shows the sites used in this study, their corresponding conditions, and main products offered. Screenshots of these sites can be found in Appendix G.

Table 1.

Sites Used in Study

Group A		
Site Name	Type of Site / Conditions	Main Products Offered
JcPenney	Cart Type: Persistent, located on Top Right Add-Item Destination: Same Page	Clothing and Home Items
Zones	Cart Type: Persistent, located on Top Right Add-Item Destination: Same Page	Hardware and Software
Smartbargains	Cart Type: Persistent, located on Top Right Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Back to Homepage	Clothing, Jewelry, Luggage
Skechers	Cart Type: Persistent, located on Top Right Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Returns to Product Page	Shoes for men, women, and kids

Group B		
Site Name	Type of Site	Main Products Offered
Savon	Cart Type: Persistent, located on Left Side Add-Item Destination: Same Page	Cosmetics and Grocery
Officedepot	Cart Type: Persistent, located on Left Side Add-Item Destination: Same Page	Office Supplies
Hmhd	Cart Type: Persistent, located on Top Left Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Back to Homepage	Harley Davidson Products
Bestbuy	Cart Type: Persistent, located on Right Side Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Returns to Product Page	TVs, VCRs, DVD, Home Electronics

Table 1. (continued)

Sites Used in Study

Group C		
Site Name	Type of Site / Conditions	Main Products Offered
Bedbathand beyond	Cart Type: Non-Persistent Add-Item Destination: Same Page	Bedroom and Bath products
Harryanddavid	Cart Type: Non-Persistent Add-Item Destination: Same Page	Fruits and Chocolates
Cdw	Cart Type: Non-Persistent Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Back to Homepage	Hardware, Software, and Networking
Famous footwear	Cart Type: Non-Persistent Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Returns to Product Page	Shoes for men, women, and kids

Group D		
Site Name	Type of Site	Main Products Offered
Chicos	Cart Type: Non-Persistent Add-Item Destination: Same Page	Women's Clothing
Justmysize	Cart Type: Non-Persistent Add-Item Destination: Same Page	Plus size Clothing
Kswiss	Cart Type: Non-Persistent Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Back to Homepage	Shoes and Sportswear
Shopping. discovery	Cart Type: Non-Persistent Add-Item Destination: Goes to Separate Cart Page Continue Shopping Destination: Returns to Product Page	Science and Technology Products

Table 2 shows an example of the tasks for JcPenney.com used in the study.

Appendix F contains the protocols for the sixteen sites used in this study. The participant began each set of tasks by selecting the website from the Internet Explorer Favorites

dropdown in the browser. Each task was read aloud by the researcher. When each task was completed, the researcher read the next task.

Products in the task lists related to specific products found on each website. The second column in the task list shows the goal of each task or what is being tested. The third column states whether or not the task is irrelevant or relevant to the variables manipulated in this study. Each task list represents the following general tasks that participants completed for each site:

1. Addition of five products to the shopping cart. Two products were similar to each other, e.g, same item, different size or color. Three products were different from each other. These tasks were created to force the user to return to a previously viewed product page for similar products and navigate to another part of the website to add different products.
2. Changing the quantity of an item stored in the shopping cart. This task was created to force the user to the Separate Cart Page. Once the user was on the Separate Cart Page and selected “Continue Shopping,” the third factor could be tested (Continue Shopping Destination Page).
3. Deleting an item from the cart. Again, this task was to bring the user to the Separate Cart Page.
4. Finding the customer service number. This task was intended to bring users to the homepage.
5. Completing a distracter question (e.g., locate a bridal registry, locate a store near you). This question was not relevant to the study but was intended to

counter any carryover effect that might result as users shopped on four websites.

The add product tasks were designed to be broad and personal so participants felt as if they were shopping at home. For example, the first task on the JCPenney website was “Buy the light and sound activity table for your friend’s son who is 2 years old.” The second task was “Buy another toy for the same 2 year old that is under \$60.” The nine tasks that the users completed were presented in a varied order but the first task was always to add a product to the cart. Before the awareness probes (described in the next section), users always completed the distracter task. The distracter task (e.g., locate a bridal registry) was not related to buying a product and forced the user to leave the Separate Cart Page before answering the two probes (recalling number of items and dollar amount).

Table 2.

Task List for JCPenney.com.

Task	Goal of Task / What is being tested	Irrelevant / Relevant To Manipulat ed Variables	How Measured
Your budget is: \$ 200.00 not including shipping and handling. Your goal is not to exceed this budget but if you do, let me know immediately.			
Go to "Favorite One" under favorites in your browser.	Beginning at homepage	Irrelevant	n/a
1. Buy*the light and sound activity table for your friend's son who is 2 years old	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N
2. Buy another toy for the same 2 year old that is under \$60	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N
3. Locate the bridal registry for your friend Tom Jones	Distracter Question	Not Relevant	
[make sure they are not on sep html page] 4. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
5. Without going to a different page, how much have you spent so far?		Relevant	Correct? Y / N
6. Buy any color and type of men's dockers in a size 32-32.	Adding a different product to the cart in another category	Relevant	Completion? Y / N Optimal Path? Y / N
7. Buy the same pair of men's dockers for a friend in a different size.	Navigate back to product, add same product (almost)	Relevant	Returns to product? Y / N Completion? Y / N Optimal Path? Y / N
8. What's the customer service number?	Go to homepage	Relevant	Correct? Y / N Went to home? Y / N

Table 2. (continued)

Task list for JCPenney.com.

9. Buy a treadmill for your mom.	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N
10. Change the quantity of the 32-32 size dockers to "2"	Navigate to the separate cart page and update quantity		Completion? Y / N Optimal Path? Y / N
11. You've changed your mind on the children's light activity table. Delete this item from your list. (use continue shopping button)	Removing an item from the cart on the separate cart page	Relevant	Completion? Y / N Optimal Path? Y / N Nav to scart? Y / N
12. Begin the process to pay for these items.	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

While users were shopping, two awareness probes were asked in a quasi-random fashion whereby no probe was asked after the first or last task. The probes were never asked after the first task because more than one item had not been accumulated. Also, they were not asked after the last task because it involved going to the cart to start the check out process. The probes were never asked when users were on the Separate Cart Page. The two probes were: (1) without going to a different page, how many total items are in your cart right now? and (2) without going to a different page, how much have you spent so far?

Users were also given budgets for each individual site. One-third of the budgets would most likely force the user (after adding all the items) to be under budget, one-third would make the user go over budget, and the remaining third was intended to be marginal. The user had to carefully select products for a majority of the sites to stay under budget. Users were unaware which type of budget classification they were shopping with. Users placed the note card (which had site name and dollar amount) next to their keyboard for each site as a reminder to let the researcher know as soon as they went over budget.

Participant spent between 45 minutes to an hour and a half completing the tasks. Once users completed the tasks for all four websites, they completed an exit survey (see Appendix H) regarding shopping cart preferences. As users shopped, the researcher took notes using the data collection log found in Appendix I.

Chapter 4

RESULTS

Part 1 of this study investigates the effects of Cart Type and Add-Item Destination Page on user performance. Recall that the two levels for Cart Type were Persistent (number of items and subtotal on every page while shopping) and Non-Persistent. The Add-Item Destination Page factor refers to where users are taken after adding an item to the cart: Same Page (no page change) or Separate Cart Page (separate html page devoted just to the shopping cart contents). The continuous data were analyzed by a two-way mixed design analysis of variance (ANOVA) with independent measures on Cart Type and repeated measures on Add-Item Destination Page. Frequency data were analyzed using a chi-square analysis unless the cell size was less than 5. Cart Type was manipulated between participants with two levels: Persistent and Non-Persistent. The Add-Item Destination Page was manipulated within participants over two levels: Same Page and Separate Cart Page. Each participant experienced both conditions in a counterbalanced scheme.

Part 2 investigates the effects of Cart Type and Continue Shopping Destination Page on user performance. Recall that Continue Shopping Destination Page is where the user is taken from the Separate Cart Page: Returns to Product (previous product added) or Returns to Homepage. The data were analyzed by a two-way mixed design ANOVA with independent measures on Cart Type and repeated measures on Continue Shopping Destination Page. Cart Type was manipulated between participants with two levels:

Persistent and Non-Persistent. The Continue Shopping Destination Page (Return to Home and Return to Product Page) was repeated and counterbalanced across participants.

Alpha for all ANOVAs was set at 0.05. Finally, subjective survey data on site preferences and shopping cart designs were analyzed.

Part 1: Cart Type and Add-Item Destination Page

The first part of this study investigates the effects of Cart Type and Add-Item Destination Page on performance measures related to awareness of number of items and dollar amount in the cart, budget information, and navigation to the Separate Cart Page.

Accuracy of Response to First Awareness Probe.

Recall that users were asked two awareness probes at random times while shopping on each website. They were first asked to recall how many total items were in their cart. Users of the Persistent Cart were more accurate (98%) in recalling number of items than those using the Non-Persistent Cart (72%) as shown in Figure 7. Of the 28% of Non-Persistent Cart users who gave an incorrect response, three did not give an answer, nine users overestimated the number of items and six underestimated. Participants in both conditions (Persistent and Non-Persistent) were never off by more than one item in their response.

Consistent with the accuracy results, only 6% of Persistent Cart users were documented using hesitation statements such as “I think” and “I believe,” while in contrast, Non-Persistent Cart users were observed using statements seven times as often (42%). Table 3 shows the words used after the question was asked.

User behavior was also recorded while they were recalling the total number of items in their cart. Note that user responses were classified as retrieving their answer “from memory” when they looked to the side, up to the ceiling, or counted to themselves or on their fingers. Users who retrieved the information from the Persistent Cart were observed leaning in and reading from the screen. As expected, Persistent Cart users relied heavily on the data displayed on each page to retrieve the answer to this probe 84% of the time. Non-Persistent Cart users needed to use their memory 72% of the time compared to Persistent Cart users who only used their memory 14% of the time. Non-Persistent Cart users could not offer an answer 28% of the time (e.g. “I have no idea”) while Persistent Cart users could not answer only 2% of the time.

Figure 7. User Accuracy in Recalling Number of Items in the Cart.

Table 3.

Hesitation Words When Asked “How Many Total Items are in Your Cart Right Now?”

Persistent Cart Users	Non-Persistent Cart Users
I think (2)	Ah, wait
Kinda hard to see	I think (3)
From my knowledge	I believe (3)
	I don't see it
	I don't know (4)
	Hum, uh (12)
	I have no idea
	Maybe
	About

Response Time to First Awareness Probe.

Response time was recorded in seconds from when users were asked how many items were in their cart until they gave a response. The ANOVA approached significance for Cart Type and indicates a possible trend, $F(1, 28) = .045$, $p = .079$. Persistent Cart users gave a correct answer faster ($M = 2.51$ seconds, $SD = 1.85$ seconds, $n = 63$) than Non-Persistent users ($M = 3.81$ seconds, $SD = 2.50$ seconds, $n = 46$).

The ANOVA analysis also approached significance for Add-Item Destination Page and indicates a possible trend, $F(1, 28) = 3.49$, $p = .072$. The Same Page condition resulted in faster correct responses for Persistent ($M = 1.88$ seconds, $SD = 1.12$, $n = 31$) and Non-Persistent cart users ($M = 2.90$ seconds, $SD = 2.77$, $n = 25$). Users of the Separate Cart condition responded slower with a correct answer for Persistent ($M = 3.13$, $SD = 3.25$, $n = 32$) and Non-Persistent Cart users ($M = 4.97$, $SD = 3.83$, $n = 2$). In general, when users responded incorrectly, their response time was much slower.

Overall, no main effects or interactions were significant. Table 4 shows a detailed breakdown of response times for correct and incorrect answers by condition.

Table 4.

Mean Response Time (seconds) When Asked “How Many Items in Your Cart”

Condition				
	Persistent Same Page	Non-Persistent Same Page	Persistent Separate Cart	Non-Persistent Separate Cart
Correct	1.88 n = 31	2.90 n = 25	3.13 n = 32	4.97 n = 21
Incorrect	7.00 n = 1	6.17 n = 5	n/a n = 0	7.10 n = 9
No Answer (e.g., I don’t know, I have no idea)	n/a n = 0	11.00 n = 2	n/a n = 0	6.50 n = 2

Accuracy of Response to Second Awareness Probe.

The second awareness probe asked users to recall how much they had spent so far. This question was presented immediately after users were asked the number of items in their cart. Users of the Persistent Cart were far more accurate (92%) than those using the Non-Persistent Cart (2%) as shown in Figure 8.

Consistent with the accuracy results, Non-Persistent Cart users were documented using hesitation statements 80% of the time. In contrast, only 13% of the time Persistent Cart users were observed using words such as “I think” and “I believe.” Table 5 shows the words used after the question was asked.

User behavior was also observed while they were recalling the dollar amount in their cart. Note that user responses were classified as retrieving their answer “from memory” when they looked to the side, up to the ceiling, or counted to themselves or on their fingers. Users who retrieved the information from the Persistent Cart were observed leaning in and reading from the screen. As expected, Persistent Cart users relied heavily on the data displayed on each page to retrieve the answer to this probe (84% of the time).

Figure 8. User Accuracy in Recalling Dollar Amount in Cart.

Table 5.

Hesitation Words Used When Asked “How Much Have You Spent So Far?”

Persistent Cart Users	Not Persistent Cart Users
About, I think	Hum (8)
I don't know	About (8)
I don't think it says on this page	I don't know (4)
It doesn't say, oh, yes it does	Uh (3)
Hum...around this	Like (2)
Um, I mean	I think; I believe (2)
I believe	I think (2)
I have no idea	hum, I think (2)
	hum, about (2)
	about, I think (2)
	uh, I'm under budget (1)
	no idea (1)
	I'd say...close to 300 (1)
	I think about (1)
	I have no idea (1)
	I have no clue (1)
	Ah (1)
	hum, around (1)
	about, I guess (1)
	I don't know, I gave a guess (1)
	I don't do math in my head (1)
	hum; I think; like (1)
	hum; like (1)
	hum, less than, you mean from my memory (1)
	Around (1)
	hum, I'm thinking (1)

Response time was also documented from the time users were asked how much they have spent so far until they responded. Persistent Cart users gave a correct response faster when asked how much has been spent so far ($M = 1.74$ seconds, $SD = 1.24$ seconds, $n = 58$) than the Non-Persistent Cart users ($M = 2.00$ seconds, $n = 1$). An

ANOVA was not conducted because only one Non-Persistent Cart user recalled the dollar amount correctly. In general, when users responded incorrectly, their response time was slower. Response times by conditions are shown in Table 6.

Table 6.

Mean Response Time (seconds) for Within Participants Factor (Add-Destination) When Asked “How Much Have You Spent So Far?”

Condition				
	Persistent Same Page	Non-Persistent Same Page	Persistent Separate Cart	Non-Persistent Separate Cart
Correct	1.56 n = 29	2.00 n = 1	1.91 n = 29	n/a n = 0
Incorrect	8.50 n = 2	6.59 n = 25	2.00 n = 1	5.97 n = 30
No Answer (e.g., I don't know, I have no idea)	4.00 n = 1	4.38 n = 6	25.00 n = 2	3.50 n = 2

Deviation of Participant Response from Actual Cart Value for Second Awareness Probe.

Users responded to the question “How much have you spent so far?” with an amount in dollars and cents. Recall that their response was then compared to the actual dollar amount currently stored in their cart. The ANOVA revealed a significant main effect of Cart Type, $F(1, 28) = 16.96, p < .001$. Of the Persistent Cart users who could not accurately recall their dollar amount, the average deviation was only \$0.82, $SD=2.8$. In contrast, of the 98% of Non-Persistent Cart users who incorrectly recalled the cart total, their deviation was much larger at \$32.06, $SD=\$31.40$. Figure 9 shows the deviation differences by Cart Type. No other main effects or interactions were significant.

Figure 9. Average Deviation of Participant Response from Actual Cart Value.*

* $p < .001$

Number of Self-Generated Additional Trips to the Shopping Cart.

Many users were observed conducting additional and perhaps unnecessary trips to the shopping cart while shopping. This was common after they selected “add to cart” and wanted to confirm that their product was actually added. This behavior predominantly occurred for the Same Page condition (29 times out of 31 documented occurrences). Non-Persistent Cart users were observed going to the cart more frequently (19 times) than Persistent Cart users (12 times). Overall, 19 users (59%) made these frequent and unnecessary trips on half of the sites used in the study. The observed frequencies are presented in Figure 10.

A chi-square analysis was performed on the frequency data. The relationship between the Same Page and Separate Cart conditions met the chi-squared test of statistical significance ($\chi^2 = 21.8$, $p < .0001$). Users of the Same Page condition were more likely to access their cart information in addition to conducting their shopping tasks than users of the Separate Cart condition.

Frequency of Incorrect Number of Items in the Shopping Cart.

During the shopping tasks, seventeen users (53%) were observed accumulating the wrong number of items in their cart and not immediately realizing it, thus deviating from their instructions. Again, this predominantly occurred for the Same Page condition (23 times) versus the Separate Cart condition (8 times) for users of both Cart Types. Persistent Cart users had a higher frequency of this error (18 times) than Non-Persistent Cart users (13 times). Furthermore, this happened on 81% of the sites (13 out of 16). As

mentioned earlier, the only three sites that were immune to this error were from the Separate Cart condition. The observed frequencies are presented in Figure 11.

The relationship of these two conditions met the chi-squared test of statistical significance ($\chi^2 = 6.32$, $p < .01$). Users of the Same Page condition were more likely to not realize they had the wrong number of items in their cart than users of the Separate Cart condition.

Figure 10. Number of Self-Generated Trips to the Shopping Cart.*

* $p < .001$

Figure 11. Frequency of Incorrect Number of Items in the Cart.*

* $p < .01$

Frequency of Staying within Budget.

Recall that before beginning the tasks for each site, users placed a note card with the site name and assigned budget next to their keyboard. They verified the budget by reading the note card while the researcher read the dollar amount aloud. Note that budgets were randomly assigned; one-third of the budgets were intended to be generous, one-third were thrifty, and one-third were marginal. Users of the Non-Persistent Cart condition were more likely to stay under budget (55%) than users of the Persistent Cart condition (44%). Also, users of the Separate Cart condition were more likely to stay under budget (62%) than users of the Same Page condition (38%). Chi-square analyses of both factors did not reveal any significant relationships.

Notification Time When Users Exceed Budget.

Recall that users were instructed to notify the researcher immediately when they went over budget while shopping. Time was recorded in seconds from when their budget was exceeded until they notified the researcher. For the Add-Item Destination Page factor, users of the Same Page condition were much slower to notice they were over budget ($M = 59.83$ seconds) than those using the Separate Cart condition ($M = 10.64$ seconds). This finding approached significance and indicates a possible trend $F(1, 20) = 3.127, p < .092$ (see Figure 12). Non-Persistent Cart users also took longer to notice they were over budget ($M = 45.67$ seconds) than Persistent Cart users ($M = 33.87$ seconds) although this result was not significant.

Figure 12.

Notification Time (in seconds) When Budget was Exceeded by Condition.

Use of Optimal Path for Initial Navigation to the Separate Cart.

All users went to the Separate Cart Page at some point during their tasks. This occurred when they changed a quantity or deleted an item from their cart. Users were observed and timed when asked to navigate to the cart for the first time on each site. Both Persistent and Non-Persistent Cart users identified and utilized the optimal path to navigate to the Separate Cart Page a majority of the time (92% for Persistent Carts and 91% for Non-Persistent Carts).

Users that did not utilize the optimal path were observed clicking on other links or icons such as “my account,” “order status,” or “your account” rather than “view cart” or “shopping cart.”

Time to Navigate to the Separate Cart the First Time.

The time was recorded in seconds from when the researcher asked the user to change a quantity or delete an item until the user landed on the Separate Cart Page. The ANOVA did not reveal a significant main effect of Cart Type $F(1, 30) = 2.47, p = .127$ (see Figure 13), however it did indicate a possible trend towards Persistent Cart users navigating faster to the cart initially ($M = 3.75$ seconds) than Non-Persistent Cart users ($M = 6.05$ seconds). No other main effects or interactions were significant.

Figure 13. Time (in seconds) to Navigate to Cart for the First Time.

Part 2: Navigation from the Separate Cart to Homepage or Product Page

The second part of this study investigated the effects of Cart Type and Continue Shopping Destination Page on user performance. Recall that the data were analyzed by a two-way mixed design ANOVA with independent measures on Cart Type and repeated measures on Continue Shopping Destination Page. This analysis was conducted for navigation times to add similar and different products to the cart.

Time to Add a Similar Product to the Shopping Cart.

Time (in seconds) was recorded when users were asked to add a second product (similar to the previous product) to their cart. The ANOVA revealed a significant main effect of Cart Type on the Non-Persistent condition, $F(1, 24) = 5.27, p < .05$. Non-Persistent Cart users were more likely to add similar products faster ($M=23.46$ seconds) than Persistent Cart users ($M=58.75$) as shown in Figure 14.

The ANOVA also showed a significant main effect of Continue Shopping Destination Page on the Return to Product condition, $F(1, 24) = 9.34, p < .05$. Users who returned to the product page from the Separate Cart Page took less time to add a similar product ($M=18.85$ seconds, $SD = 24.57$) than those that returned to the homepage ($M=59.29$ seconds, $SD = 76.87$). A significant interaction effect was also revealed, $F(1, 24) = 6.85, p < .05$. Since Cart Type should not have an affect on navigation between product pages and the Separate Cart Page, this interaction cannot be considered operationally meaningful or interpretable.

Mean times for the Add-Item Destination Page were also reviewed. There were twice as many users for the Same Page condition versus the Separate Cart / Return to

Product condition, so only a review of mean times was conducted. These two conditions can be considered comparable because they result in the user being on the product page after adding an item to the cart, yet the Separate Cart condition arrives at the product Separate Cart Page. Interestingly, both conditions had very similar mean times: Same Page (19.25 seconds) and Separate Cart / Return to Product (18.85 seconds).

Figure 14. Time (in seconds)* to Add Similar Product by Condition.

* $p < .05$

Time to Add Different Products to the Shopping Cart.

Users were also asked to add unrelated items to their cart while shopping at each site. The ANOVA revealed a main effect that approached significance for the Continue Shopping Destination Page on the Return to Product condition, $F(1, 27) = 3.65$, $p = .067$. Users who were directed to the Homepage were more likely to take longer ($M = 50.93$ seconds) than those who Returned to the Product page ($M = 36.00$ seconds) as shown in Figure 15. A significant interaction effect was also revealed for Cart Type and Continue Shopping Destination Page, $F(1, 27) = 5.50$, $p < .05$. The ANOVA did not reveal a significant main effect of the Cart Type.

Mean times for the Add-Item Destination Page were also reviewed. There were twice as many users for the Same Page condition (8) versus the nested Separate Cart / Return to Product (4) condition, so only a review of mean times was conducted. The researcher was curious whether one condition took longer to add a similar product. These two conditions can be considered comparable because they result in the user being on the product page after adding an item to the cart, yet the Separate Cart condition arrives there via the Separate Cart Page. Interestingly, both conditions had very similar mean times: Same Page (31.90 seconds) and Separate Cart / Return to Product (36.00 seconds).

Figure 15. Time (in seconds)* to Add Different Products.

* $p < .05$

Survey Data

At the conclusion of the tasks, users were given an exit survey (see Appendix H).

The first question on the survey asked users to select the site that was the most efficient for purchasing, modifying and checking out. The second part of the survey asked users to rank the four sites they used for ease of:

- 1) Knowing What Items are in the Cart
- 2) Adding More Items
- 3) Knowing Budget
- 4) Knowing Number of Items in the Cart

The third part of the survey asked their preference for:

- 1) Overall Design of the Cart
- 2) Display of Total Amount Due
- 3) Display of Total Items Added
- 4) Which icon / graphic was representative of a cart
- 5) Ease of navigation between the Separate Cart Page and product pages.

The fourth part of the survey asked users to select general preferences for the design of the shopping cart.

Question 1: Of the websites that you worked with, which one allowed you to purchase, modify, and check out items in the easiest, most intuitive, and efficient manner?

Recall that sites can be selected eight times. Half the users could select from Persistent Cart sites and the other half select from Non-Persistent Cart sites since this was the between participants factor.

Figure 16 displays the conditions users preferred. Persistent Cart users preferred the Same Page condition (70%) over the Separate Cart Condition selecting the following sites most frequently: jcpenny (4), savon (4), and officedepot (3). Non-Persistent Cart users selected the Separate Cart / Return to Product condition (53%) over the Same Page and Separate Cart / Return to Homepage conditions preferring the following sites: famousfootwear (4), discovery (5), and bestbuy (1). Table 7 presents the reasons why users selected each site.

Figure 16. Preferences for Ease of Purchasing, Modifying, and Checking Out.

Table 7.

Reasons Why Users Selected Site for Best Purchase, Modification, and Check Out

Persistent Cart Users	Not Persistent Cart Users
List of items & cost consistently in view	Lets you add more of the same item and delete it easier than the others. Easier to navigate.
Well organized, view cart, see purchases w/description	Easy to find an item because items were very accessible on drop down menus
I didn't have to look for the cart since number of items and due charges were already in view. The yellow bar & cart icon made it easy to locate my items.	Had a remove button unlike other sites which made you change your quantity and then press update.
Could see items that I purchased on the left side of the screen. This would help me keep track of the items I was buying.	Because I don't shop for much except shoes.
Able to know how many items, how much being spent. Out of the four stores this was the easiest to check out	This website made it clear and easy to deal with all the items and process.
Colors bright, Easy to Add Items, Well Spaced Out Layout	It was extremely user friendly. All hyperlinks were in quick site of the eye creating a faster pace.
Large, bright buttons to easily manage items	All the icons and categories were easy to see and find
Went through it quickly	Easy to find links I was looking for. Easy to checkout, remove, and search for an item
Small picture of items, and price in cart	Everything was very specific and easy to read.
It listed all products on the page in each category on the same page which made it easier to compare and choose	Easy to shop and find all options.
Options of deleting & adding are bold and easy to find	It allowed easy modification and editing such as changing sizes or colors
Always on the side & to change the # of items only had to click on + or -	Best links. Had a nice layout
Made buttons easier to see, so I could modify my purchases any way I wanted to easier.	They had a search available the whole time. The way they split up the merchandise was easy to navigate through.
View Cart and Checkout Links right next to running subtotal and were easy to find on left side of screen	Easiest to navigate through
Everything was near each other and easier to locate	Most detailed shopping cart; Very clear and detailed button layout
Cart stood out more with a nice color making it easy to look at but bright enough to notice	Very basic without a lot of clutter

Survey Data: Part Two

Ease of Knowing What Items are in the Shopping Cart.

Recall that for this area of the survey, users were asked to rank sites they used from most to least preferred. Data was analyzed based on the most preferred sites and their corresponding conditions. Persistent Cart users preferred the Same Page condition (67%) selecting the following sites: savon (6), jcpenny (4), officedepot (1) and zones (1). Non-Persistent Cart users preferred the Separate Cart / Return to Product condition (45%) and most frequently selected the following sites: famousfootwear (5) and shopping.discovery (4). Note that some users selected more than one site as their most preferred. Table 8 displays the preference data by condition for ease of knowing what items are in the cart.

Table 8.

Preferences for Ease of Knowing What Items are in the Cart

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	12*	7
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	1	9*
Return to Homepage	5	4

*Bold numbers indicate the highest frequency selection.

Ease of Adding More Items.

Persistent Cart users preferred the Same Page condition (73%) selecting the following sites: savon (4), jcpenny (4), officedepot (2), and zones (1). Non-Persistent Cart users also preferred the Same Page condition (47%) selecting the following: bedbathandbeyond (4), justmysize (2), harryanddavid (1), and chicos (1). Note that one of the users selected two sites for this question. Table 9 displays the preference data by condition for ease of adding more items to the cart.

Table 9.

Preferences for Ease of Adding More Items

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	11	8
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	3	6
Return to Homepage	1	3

Ease of Knowing Budget.

Persistent Cart users preferred the Same Page condition (74%) selecting the following sites most frequently: savon (7), jcpenny (5), and officedepot (2). Non-Persistent Cart users preferred the Same Page condition (43%) and Separate Cart / Return to Product Page condition (43%) equally. Sites selected for the Non-Persistent / Same Page condition were: harryanddavid (4), bedbathandbeyond (3), justmysize (2), and chicos (1). Sites selected for the Non-Persistent / Separate Cart / Return to Product Page were: shopping.discovery (5) and famousfootwear (5). Note that many users selected more than one site for this question. Table 10 displays the preference data for ease of knowing if staying within the budget.

Table 10.

Preferences for Ease of Knowing if within Budget

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	14	10
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	2	10
Return to Homepage	3	3

Ease of Knowing Number of Items in the Cart.

Persistent Cart users preferred the Same Page condition (64%) selecting the following sites most frequently: jcpenny (5), savon (5), and officedepot (4). Consistent with earlier preferences, Non-Persistent Cart users preferred the Separate Cart / Return to Product condition (47%) and selected the following sites: famousfootwear (5) and shopping.discovery (3). Note that some users selected more than one site. Table 11 displays the preference data for ease of knowing the number of items in the cart.

Table 11.

Preferences for Ease of Knowing the Number of Items in the Cart

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	14	6
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	2	8
Return to Homepage	6	3

Survey Data: Part Three

Overall Design of the Shopping Cart.

Persistent Cart users preferred the Same Page condition (63%) and Non-Persistent Cart users preferred the Separate Cart / Return to Product condition (61%). In regards to overall design of the cart, Persistent Cart users preferred Same Page sites such as jcpenny (4), savon (4), and officedepot (2). Non-Persistent Cart users preferred the Return to Product sites such as famousfootwear (6) and discovery (5). Note that some users selected more than one site for this question. Table 12 displays preference data for overall design of the shopping cart.

Table 12.

Preferences for Overall Design of the Shopping Cart

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	10	4
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	2	11
Return to Homepage	4	3

Display of Total Amount Due.

Persistent Cart users preferred the Same Page condition (75%) selecting the following sites: savon (6), jcpenny (4), officedepot (1) and zones (1). Non-Persistent Cart users preferred the Separate Cart / Return to Homepage condition such as kswiss (5) and cdw (2) just slightly more than the other two conditions. Note some users selected more than one site for this question. Table 13 displays the preference data for display of total amount due.

Table 13.

Preferences for Display of Total Amount Due

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	12	5
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	1	6
Return to Homepage	3	7

Display of Total Items Added.

Persistent Cart users preferred the Same Page condition (75%) selecting the following sites: jcpenny (5), savon (4), officedepot (2), and zones (1). Non-Persistent Cart users equally preferred the Same Page sites such as bedbathandbeyond (3), chicos (3), justmysize (2) and Separate Cart / Return to Product sites such as shopping.discovery (4) and famousfootwear (4) for display of total items (see Table 14).

Table 14.

Preferences for Display of Total Items Added

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	12	8
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	2	8
Return to Homepage	2	5

Icon/Graphic representative of the Shopping Cart?

Persistent Cart and Non-Persistent Cart users both preferred the Same Page condition when asked this question. Persistent Cart users selected the following sites: savon (3), officedepot (2), jcpenney (1), and zones (1). Non-Persistent Cart users selected: bedbathandbeyond (5), chicos (4), and justmysize (3). Table 15 displays the preference data for icon representation of the shopping cart metaphor.

Table 15.

Preferences for Icon Representation of the Shopping Cart

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	7	12
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	4	4
Return to Homepage	5	2

Ease of Navigating between the Separate Cart Page and Product Pages?

Persistent Cart users preferred the Same Page condition (63%) selecting the following sites: jcpenny (4), savon (4), and officedepot (2). Non-Persistent Cart users preferred the Same Page condition (39%) and Separate Cart / Return to Product Page condition (39%) equally. Sites selected for the Non-Persistent / Same Page condition were: bedbathandbeyond (3), harryanddavid (2), and justmysize (2). Sites selected for the Separate Cart / Return to Product Page such as discovery (4) and famousfootwear (3). Note that many users selected more than one site for this question. Table 16 displays the preference data for ease of knowing if staying within the budget.

Table 16.

Preferences for Ease of Navigating Between the Separate Cart and Product Pages

	Persistent Cart	Non-Persistent Cart
Add-Item Destination Page		
Same Page	10	7
Continue Shopping Destination Page (after going to Separate Cart)		
Return to Product	3	7
Return to Homepage	3	4

Survey Data: Part Four

Recall that the second page of the exit survey asked users to select general preferences for location of Persistent Cart information, name of the accumulator (or cart), whether or not users wanted to view subtotal and dollar amount on each page, and preference for what happens after an item is added to the cart.

Availability of Amount Due Information.

Figure 17 shows subjective data for displaying the total dollar amount due. Twenty-six (81%) participants preferred seeing the total dollar amount in the cart on every screen while shopping, three (9.5%) did not have a preference, and three (9.5%) preferred to view this information only on a separate screen.

Availability of Total Items.

Figure 18 shows participant preference for displaying the number of items in the cart. Twenty-six (81%) participants preferred seeing the total number of items in the cart on every screen while shopping, four (13%) did not have a preference, and two (6%) preferred to view this information only on a separate screen.

Figure 17. Preferences for Availability of Total Amount Due.

Figure 18. Preferences for Availability of Number of Items in the Cart.

Location of the Shopping Cart.

Figure 19 displays participant preference for the shopping cart location on a page. Twenty-two participants (69%) selected the Top Right, four (13%) chose the left side (in a column), three (9%) selected the top left, three (6%) preferred right side (in a column), and one (3%) did not have a preference.

Preference for Destination Page After Adding An Item.

Figure 20 shows participant response when asked their preference for destination page after adding an item to the cart. Fourteen participants (44%) wanted the site to take them to the Separate Cart Page, twelve (37%) wanted to stay on the Same Page, and six (19%) did not have a preference.

Figure 19. Preference for Location of the Shopping Cart.

Figure 20. Preferences When Asked What Happens When an Item is Added to the Cart.

Summary of Results

The results revealed potential benefits in terms of efficiency, effectiveness, and satisfaction for the Persistent Cart Type as shown in Table 17. In terms of efficiency, users of the Persistent Cart condition exhibited the following benefits: faster time to initially navigate to the Separate Cart Page, and 2) use of optimal path to Separate Cart Page. In terms of effectiveness of the user shopping experience which represents accurate accumulation and awareness of cart contents, users of the Persistent Cart condition exhibited the following: 1) more accurate response to probe 1 (# of items in cart), 2) faster response time to probe 1, 3) least deviation of response to probe 1, 4) least amount of response hesitation, 5) more accurate response to probe 2 (\$ amount in cart), 6) faster response time to probe 2, 7) least deviation of response to probe 2, 8) least amount of response hesitation, 9) fewer of self-generated trips to Separate Cart Page, 10) highest frequency of staying within budget, and 11) faster notification time when over budget. ANOVA results revealed significant main effects of the Cart Type for deviation of response (actual cart value) from actual dollar amount in cart. Responses from users of the Non-Persistent Cart condition were much more likely to deviate from the actual cart value when asked the second probe.

In terms of overall user satisfaction related to the Cart Type, a higher number of users stated that they preferred to have the dollar amount and number of items displayed on every page while shopping, thus preferring the Persistent Cart condition.

The results also revealed potential efficiency benefits of the Add-Item Destination Page / Separate Cart condition for: use of the optimal path when initially navigating to

the Separate Cart Page. In terms of effectiveness, users of the Separate Cart condition exhibited the following beneficial results: 1) fewer self-generated trips to Separate Cart Page, 2) lower frequency of accumulating incorrect number of items in the cart, 3) higher frequency of staying within budget, and 4) faster notification time when over budget. Chi-squared results reached statistical significance benefiting the Separate Cart condition for number of additional trips to the shopping cart and frequency of incorrect number of items in the cart (see Table 17). For users of the Same Page condition, users experienced higher effectiveness for awareness of cart information including: 1) more accurate response to probe 1 (# of items), 2) faster response time to probe 1, 3) least deviation of response to probe 1, 4) more accurate response to probe 2 (\$ amount), 5) faster response time to probe 2, and 6) least deviation of response to probe 2. In terms of satisfaction, a larger percentage of users preferred the Separate Cart condition, yet the ratings were very close.

For the Continue Shopping Destination Page, the ANOVA results revealed significant main effects of the Continue Shopping Destination Page for adding similar products to the cart. Users who Returned to Product Page from the Separate Cart Page were more efficient in adding a similar product ($M=18.85$ seconds) than users of the Return to Homepage condition ($M=59.29$ seconds). The ANOVA results did not reveal significant main effects for adding different product to the cart although users of the Return to Product condition were more efficient at adding different products (36.00 seconds) than users of the Return to Homepage condition (50.93 seconds). For the

Continue Shopping Destination Page, users preferred the Return to Product condition over Return to Homepage.

Figure 21 displays the three conditions that showed some benefits for efficiency, effectiveness, and satisfaction: Cart Type / Persistent Cart, Add-Item Destination Page / Separate Cart Condition, and Continue Shopping Destination Page / Return to Product condition. Although results were mixed for the Add-Item Destination Page, users preferred the Separate Cart condition and it revealed two significant relationships for: 1) fewer self-generated trips to the separate cart page and 2) lower frequency of accumulating incorrect number of items in cart, therefore it shows some promise.

Table 17.

Summary of Results

Measure	Cart Type	Add-Item Destination Page	Continue Shopping Destination Page
Most Efficient Shopping Experience			
Faster Time to Navigate to Cart, Initially	Persistent	Same Page	N/A
Use of Optimal path to Cart, Initially	Persistent	Separate Cart	N/A
Faster Time to Add Similar Products	N/A	N/A	Return to Product*
Faster Time to Add Different Products	N/A	N/A	Return to Product
Most Effective Shopping Experience			
More Accurate Response to Probe 1 (# of items)	Persistent	Same Page	N/A
Faster Response Time to Probe 1	Persistent	Same Page	N/A
Least Deviation of Response to Probe 1	Persistent	Same Page	N/A
Least Amount of Response Hesitation	Persistent	No Difference	N/A
More Accurate Response to Probe 2 (\$ amount)	Persistent	Same Page	N/A
Faster Response Time to Probe 2	Persistent	Same Page	N/A
Least Deviation of Response to Probe 2	Persistent*	Same Page	N/A
Least Amount of Response Hesitation	Persistent	No Difference	N/A
Fewer Self-Generated Trips to Separate Cart	Persistent	Separate Cart*	N/A
Lower Frequency of Accumulating Incorrect Number of Items in Cart	Non-Persistent	Separate Cart*	N/A
Higher Frequency of Staying within Budget	Non-Persistent	Separate Cart	N/A
Faster Notification Time When Over Budget	Persistent	Separate Cart	N/A

*Results were statistically significant

Table 17.

Summary of Results (continued)

Most Satisfying Shopping Experience			
Preferred Display of Cart Information	Persistent	N/A	N/A
Preferred Add-Item Destination	N/A	Separate Cart	N/A
Preferred Continue Shopping Destination	N/A	N/A	Return to Product Page
Count by Condition	Persistent = 12	Same Page = 6	Return to Product = 3
	Non-Persistent = 2	Separate Cart = 7	Return to Home = 0

User is taken to Separate Cart

User is "Returned to Product"

Item added to Persistent Cart

Figure 21. Condition Specific Results from User Testing

Chapter 5

DISCUSSION

The main purposes of this study were to determine whether three factors affect user shopping experience: 1) Cart Type, 2) Add-Item Destination Page, and 3) Continue Shopping Destination Page. Recall that for the purposes of this study, an optimal user shopping experience is one where the majority of users accurately and quickly complete a set of given tasks, realize when and if they are over budget, provide correct and timely answers to question probes while completing their tasks, rate the shopping cart design and interaction positively, and show the least amount of confusion and hesitation through verbal communication. The individual measures discussed on the following pages correspond to the three higher level categories presented and described in the Introduction as defining e-commerce usability: “the extent to which a website enables its users to buy specific products with efficiency, effectiveness, and satisfaction” (Magnenat, 1999, p. 1).

Cart Type

The main findings offer some support for the use of a Persistent Cart that displays, at a minimum, the total number of items in the cart and the subtotal dollar amount. The use of quantitative and terminal augmented feedback by the Persistent Cart condition resulted in a reduction of mental load on running or short-term memory. Users did not have to use their memory to answer the awareness probes because of the continuous display of cumulative totals. As a result of this augmented feedback, users were able to respond faster to the probes and were faster at notifying the researcher when

they went over budget. Specifically, users of the Persistent Cart condition exhibited the following beneficial behaviors compared to Non-Persistent Cart users.

Efficient User Shopping Experience

1. Slightly faster initial navigation to the Separate Cart Page (over 2 seconds on average). This is understandable since users were frequently attending to the Persistent Cart, they were aware of its location and therefore the direct route to viewing the Separate Cart Page.

Effective User Shopping Experience

1. Greater accuracy in recalling the number of items (probe 1) and dollar amount in the cart (probe 2) with less verbal hesitation and little need to use memory. As expected, users of the Persistent Cart were given constant feedback enabling them to respond more accurately to the two awareness probes.
2. Somewhat faster correct response time when asked to recall number of items in cart and total dollar amount in cart (2.51 seconds versus 3.81). Again, as expected, Persistent Cart users could quickly respond to these questions since the information was always available on the page.
3. Somewhat fewer self-generated trips to the Separate Cart page while shopping (12 for Persistent, 19 for Non-Persistent). Since Persistent Cart users had the items and total amount viewable on every page, they did not need to navigate to the Separate Cart Page to view their items as frequently.
4. Somewhat faster notification time when users went over budget (an average of 12 seconds). As expected, users could monitor their budget when the total

amount due was continuously displayed; therefore, they could quickly determine when they went over budget.

Satisfying User Shopping Experience

1. Over 80% of users (nearly half of which had not used a Persistent Cart in the present study) stated that they preferred seeing the total number of items and total dollar amount due on every screen while shopping.

Users of the Persistent Cart did, however, have a higher frequency of not realizing they had an incorrect number of items in the cart at some point while shopping on the site than Non-Persistent Cart users (18 versus 13). That is, they sometimes missed updates to the shopping cart because the updates were subtle and happened rapidly. In contrast, half of the users of the Non-Persistent Cart were made well aware of the number of cart items since they were forced to view the cart page after adding each item. Some considerations for improving this aspect of a Persistent Cart include making it more salient on the page, not refreshing the page too quickly when an item is added, and giving explicit feedback to the user that an item has been added.

All the sites used in this study gave users some form of feedback when an item was added. The majority of sites used textual feedback (e.g., “this item has been added to your cart”) and sometimes used text font colors that matched other text on the page. The text feedback was frequently placed on the top left of the page under the navigation. Users were often looking at the Persistent Cart, frequently located at the top right, or at the “add” button which is usually in the middle of the page. Therefore, textual feedback on the top left of the page was often overlooked (see Figure 22). Addressing some of

these site design issues might lessen the likelihood of users being unaware they had the wrong number of items in their cart.

Based on these findings, it may seem obvious that Persistent Carts are a favorable option, but it begs the question as to why 50% of the websites reviewed did not implement a Persistent Cart. Is there a chance that companies do not want consumers to realize what they are spending? Unfortunately, this logic does not benefit the user or the vendor if competitor's sites implement Persistent Carts. If it is a technological impediment or coding constraint, there are plenty of resources available for developers to learn how to create this design. In fact, a book titled Constructing Usable Shopping Carts (2002) presents detailed instruction for creating a Persistent Cart (they refer to it as a "short cart"). Based on the analysis, the null hypothesis that there is no effect of the shopping Cart Type on the user shopping experience can reasonably be rejected.

Figure 22. Example of Textual Feedback After Item is Added to the Cart.

Add-Item Destination Page

For the Add-Item Destination Page factor, the main findings are not significant or compelling enough to reject the null hypothesis. However, the Separate Cart condition is promising and worth further investigation. Users of the Separate Cart condition, relative to the Same Page condition, displayed the following beneficial behaviors.

Effective User Shopping Experience

1. Faster self-generated notification time if over budget (10.64 seconds) than users of the Same Page condition (59.83 seconds). Since users were continuously sent to the Separate Cart Page, they could quickly ascertain whether or not they were over budget.
2. Significantly fewer additional trips (2 times) to the shopping cart to verify items in their cart than the Same Page condition (29 times). Understandably, users were given continuous feedback that items were added to their cart because they were brought to a Separate Cart Page each time. Users did not find it necessary when using the Separate Cart condition to make additional trips to the Separate Cart while shopping. The effort to make these additional trips is obviously significant and noteworthy.
3. Significantly lower frequency of users who were unaware that they had the incorrect number of items in their shopping cart (8 times) than the Same Page condition (23 times). Only three sites in this study were immune to this behavior and they were all part of the Separate Cart condition. Again, this is

statistically significant and if users of the Separate Cart condition are making fewer errors, then this is obviously beneficial.

4. Fewer times users went over budget while shopping (.39) than users of the Same Page condition (.63). Recall that users could only exceed their budget on two thirds of the sites. This finding does demonstrate careful budget monitoring by users of the Separate Cart condition. Nevertheless, the focus should be on notification time when users went over budget rather than if they exceeded it.

Efficient User Shopping Experience

1. More frequent usage of optimal path to initially navigate to the cart. This was a difference of one occurrence and cannot be considered operationally meaningful.

For users of the Same Page condition, the following beneficial behaviors were documented:

Effective User Shopping Experience

1. Somewhat more accurate response when asked number of items in their cart (deviation of only 5 items for all users compared to 10 for the Separate Cart condition).
2. Slightly more accurate response when asked how much was spent so far (\$13.37 vs. \$15.18).

3. Somewhat faster time to navigate to the cart for the first time (4 seconds vs. 5 seconds). This finding is only a difference of 1 second and cannot be considered operationally meaningful.

Although users of the Same Page condition were more aware of the items in their cart when asked the probes, they oftentimes accumulated the wrong number of items and frequently verified that an item was added by going to the Separate Cart page. This behavior could reveal that the Same Page condition may have suffered from poor salient and terminal augmented feedback. Although sites in the Same Page condition gave textual feedback that an item was added, this often went unnoticed. Visual momentum may have been compromised by not “highlighting anchors” and contributing to users becoming cognitively lost as they attempted to find out if items successfully made it to their cart. The results of this study support this by the high number of times users checked the Separate Cart and inaccurately accumulated the incorrect number of items.

It is also highly possible that users’ knowledge and awareness of shopping cart information (dollar amount and items in cart) was heightened by these frequent self-generated additional trips to the cart (23 times by users of the Same Page condition). In addition, users of the Same Page condition experienced less interruption to their shopping cart tasks since they were not taken to the Separate Cart each time. This offers a second explanation as to why they were more aware of the number of items in their cart and dollar amount spent than users of the Separate Cart condition. Third, the deviation of user response from the actual dollar amount in the cart only differed by \$1.81 on average and was not statistically significant. Therefore response accuracy for both of these

probes should not be weighted too heavily. Yet, in order to fully reject the null hypothesis, additional data should be collected regarding user awareness of number of items and dollar amount in cart without allowing any self-generated trips to the shopping cart.

In Neilson's paper entitled "E-Commerce User Experience: Checkout & Registration" (2000), he made a general comment that an integrated shopping cart [referred to as the Persistent Cart in this study] could perhaps reduce premature or unnecessary trips to the cart. This assertion is supported by these findings since Persistent Cart users did access the Separate Cart less frequently while shopping. Yet, this comment could also be expanded since there were significantly fewer additional trips to the Separate Cart for users of the Separate Cart condition (2) compared to users of the Same Page condition (29).

In addition, the Same Page condition did not result in a time savings for users while shopping (see Figure 23). This was documented when users added similar and different products. Since the mean times were similar and the Same Page condition did not reveal a significant time difference, it is promising to bring users to the Separate Cart after adding an item. These findings demonstrate that taking users to the Separate Cart Page is likely to reduce additional trips to the cart, increase awareness of going over budget, and lessen the frequency of having an incorrect number of items in the cart.

User preference data revealed that fourteen participants (44%) wanted the site to go to the Separate Cart Page, twelve (37%) preferred that the site stayed on Same Page, and six (19%) did not have a preference. When users were asked about the ease of

knowing what items were in their cart, the number of items in the cart, and the overall design of the cart, Persistent Cart users preferred the Same Page condition and Non-Persistent Cart users preferred the Separate Cart condition. Based on survey responses, one could conclude that users desired some form of feedback and the feedback seemed to vary by Cart Type condition. If a site does not display cart information on every page, then at a minimum, the site should bring the user to a Separate Cart. This could potentially increase user confidence that an item has been added.

Figure 23. Mean Time (in seconds) to Add Similar and Different Products for Continue Shopping Conditions.

Continue Shopping Destination Page

Recall that the Continue Shopping Destination Page factor was manipulated within participants across two levels (Return to Homepage and Return to Product) and nested within the Add-Item Destination Page factor. The measures related to this portion of the study fell under the efficiency category, primarily the quick addition of similar and different products to the cart from the Separate Cart page (location of the “continue shopping” link). Based on the analysis, the null hypothesis that there is no effect of the Continue Shopping Destination Page on the user shopping experience can reasonably be rejected. The main findings offer support for the Return to Product condition over the Return to Homepage condition when users selected “continue shopping” on the Separate Cart Page. Users who returned to the product page were:

1. Significantly faster when adding similar products (35 seconds on average), and
2. Somewhat faster at adding different products (18 seconds on average).

The implementation of the Return to Product condition is also supported by the exit survey. Users of both Cart Types preferred the Return to Product condition (60%) over the Return to Homepage condition (40%) for ease of purchasing and modifying, ease of knowing what items were in their cart, ease of adding more items, ease of knowing budget, ease of knowing number of items in cart, overall design of cart, display of total items added, and ease of navigating between cart and product page.

It seems obvious that returning users to the product page rather than the homepage would result in faster shopping times because they are closer to other product

destination pages. Users do not have to navigate through the entire structure of the site if they are returned to the previously viewed product page. One can reasonably conclude that more screens on an e-commerce site are devoted to navigation pages than actual product pages. Thus, even though users may want to buy a completely different product, they are one step closer than if they were returned to the homepage.

These results confirm the design rule suggested by Fang and Salvendy (2003) that stated users should be returned to the product page from the Separate Cart page. The existence of a continue shopping link provides adequate visual momentum by using “graceful transitions”; yet, links that specifically state “return to product” or “return to category” may be an even better solution. By unambiguously stating a destination page, navigation awareness and situational awareness could be heightened. Further research is needed to learn whether these links may prove useful.

Even though returning users to the product page may decrease shopping time and seem like an obvious choice, recall that over 30% of the sites reviewed still returned users to the homepage. Since user preference data has not been previously published, this study is the first step in demonstrating the potential benefits of returning users to the previously viewed product page.

Implications

Based on the review of 60 websites and findings from this study, it is obvious that shopping carts still widely vary in design. Developers as well as companies should be knowledgeable in creating a shopping cart that is efficient and effective in communicating how to purchase items, how to continue shopping, and what is contained

in the shopping cart at all times. These guidelines are presented based on the observations of shopping cart users during this study.

Guidelines for Creating a User Friendly Shopping Cart

1. Place total number of items and subtotal on every page, preferably on the top right. Ensure that the total number of items includes duplicates counted individually.
2. Do not hide the Persistent Cart under the navigation bars. Put it above the global and secondary navigation.
3. Consider displaying the products in the cart in addition to the number of items and subtotal.
4. Words such as “my account” or “order status” proved to conflict with user attempts to navigate to the shopping cart the first time. Consider eliminating these features or placing them at the bottom of the page.
5. Buttons such as “Add to List” that are collocated with “Add to Cart” proved confusing to users. Consider removing the “Add to List” option or placing the button in a different location (see Figure 24).
6. Allow users to continue shopping from the Separate Cart Page. Returning users to the homepage proved to take longer than returning them to the product. Consider letting users choose where they want to go from the Separate Cart Page. Present options such as “return to home,” “return to product,” or “return to category [e.g., shoes]” might be helpful.

7. Provide salient user feedback when products are added to the cart. If the user stays on Same Page after adding, textual feedback was sometimes difficult for users to notice. Taking the user to the Separate Cart Page after adding each item could reduce the number of self-generated trips to the shopping cart.
8. Allow users to easily change quantity on the Separate Cart Page without having to repurchase the same item a second time.

My Bank of America Barnes_Noble.com - T... No page to display

Address http://www.officedepot.com/ddMain.do?level=FM&id=177917&location_info=SG_2_CT_801_FM_177917

Home > Furniture > Bookcases & Shelving > Safco® Value Mate® Steel Bookcase Collection

Safco® Value Mate® Steel Bookcase Collection

These strong bookcases (sold individually) feature steel exterior and shelf construction as well as a solid fiberboard back. They are available in a medium oak faux woodgrain finish or a black, gray, or sand baked-enamel finish on steel. Features include attractive, plastic radius corners, quick-lock design for easy assembly, and 12-inch-deep shelves that adjust at one-inch intervals (at time of assembly) to easily accommodate ring binders and large publications. Shelf count includes the bottom of the bookcase, and each shelf holds up to 70 lb. evenly distributed. Patented. Assembly required.

• Each piece is sold individually.

Compare Selected Items

Item Number	List Price	Our Price	Units	Availability	Compare
784361	\$96.00	\$79.99	each	Low Availability	☐
Safco® Value Mate® Steel Bookcase, 2 Shelves, 28"H x 31 3/4"W x 13 1/2"D, Black					
✓ Delivery only					
Quantity	Add To Cart Add To List				
Item Number	List Price	Our Price	Units	Availability	Compare
701799	\$96.00	\$79.99	each	Low Availability	☐
Safco® Value Mate® Steel Bookcase, 2 Shelves, 28"H x 31 3/4"W x 13 1/2"D, Gray					
✓ Delivery only					
Quantity	Add To Cart Add To List				
Item Number	List Price	Our Price	Units	Availability	Compare
701815	\$96.00	\$79.99	each	Low Availability	☐
Safco® Value Mate® Steel Bookcase, 2 Shelves, 28"H x 31 3/4"W x 13 1/2"D, Sand					

Done

Figure 24. Collocation of “Add to List” and “Add to Cart.”

Limitations

The sites used in this study were public websites that, although they met the criteria for inclusion in this study, had varying navigational structures, locations of persistent cart information, and feedback after adding an item to the cart. While it was attempted to counterbalance for this effect, these varied site designs may have had an effect on time to complete given tasks and awareness of cart information.

This study also focused on shopping behavior related to adding five items to each

shopping cart. Varying user goals can result in different online shopping behaviors and preferences. For example, one consumer may want to buy just one item. Another consumer may be restocking an entire inventory. If these various goals were included in this study, there might be an effect on behavior and preferences. For example, users may want to be taken to the Separate Cart if they are buying one to five items, but if they are restocking an entire inventory, going to a Separate Cart may be considered too much of an interruption.

Recommendations for Future Research

Previous literature recommends that shopping cart designs need to “facilitate easy navigation from the list [Separate Cart Page] to other parts of the site” (Tilson, Dong, Martin, & Kieke, 1998). Presenting three options to the user on the Separate Cart Page (back to home, back to product, and return to a category like shoes) would be an interesting area for further investigation. It is unknown whether returning users to a category level after they select “continue shopping” would be beneficial.

Understanding user goals while shopping is another important topic for further research. The findings in this study could be considered specific to shopping for multiple items on a site. Yahoo! mail gives users an option for reading and moving mail that allows them to choose whether to go to the next message or go back to the original folder after reading an email (see Figure 25). This is an option that can be set by the user. This same feature could be studied for e-commerce sites. Users could set their shopping carts to either return to the homepage, return to a category, or return to the product based on

their goal at that time. Users could also decide whether they want to stay on the product page or go to a separate cart after adding a product.

Further research on displaying the product list in addition to total number of items and subtotal in the cart is also warranted. In addition, research on the optimal type and location of feedback presented to the user when an item is added would be very useful. More research on requiring site registration to purchase items, the optimal method to update quantities, and delete items is also needed. Site registration alone could have an effect on shopping cart abandonment rates since over 40% of the sites reviewed required registration in order to purchase items.

Figure 25. Option Preferences for Mail Users on Yahoo!

Conclusion

The shopping cart is the conduit between the user and the vendor. It should function efficiently, effectively, and consistently to meet user expectations. If usability issues are present, the potential for shopping cart abandonment can increase and vendors will lose money.

This study provided a preliminary investigation into potential improvements to the shopping cart tool that could increase consistency and efficiency using quantitative augmented feedback and increased visual momentum and navigation awareness. The data suggests that the Persistent Cart that displays, at a minimum, the number of items and subtotal on every page, could be beneficial. Bringing the users to a Separate Cart Page after adding a product to the cart rather than staying on the Same Page also showed promise. In addition, when the user is on the Separate Cart Page, the benefits of returning the user to the previously viewed product page rather than the homepage were demonstrated.

This study also highlights the need for additional research on returning the user to a category level from the Separate Cart Page, changing quantity and deleting items in the cart, and site requirements for registration to purchase a product. Investigation into these remaining areas could reveal additional shopping cart improvements.

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**San Jose State University Institutional Review Board Approval
and Extensions**

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To: Elisa Ingebretson
1309 Fairway Entrance Drive
San Jose, CA 95131

From: Nabil Ibrahim,
AVP, Graduate Studies & Research

Date: May 17, 2001

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"The Usability of the E-Commerce Shopping Cart Tool."

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Nabil Ibrahim, Ph.D., immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information. This approval is in effect for one year, and data collection beyond May 16, 2002 requires an extension request.

Please also be advised that all subjects need to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at
(408) 924-2480.

San José State
UNIVERSITY

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**Office of the Academic
Vice President**

**Associate Vice President
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To: Elisa Ingebretson
1309 Fairway Entrance Drive
San José, CA 95131

From: Nabil Ibrahim
Acting AVP, Graduate Studies & Research

Date: May 15, 2002

This letter acknowledges that the Human Subjects-Institutional Review Board has received the request for extension of the following proposed study entitled:

“The Usability of the E-Commerce Shopping Cart Tool.”

Since there are no major changes to the protocol, the Human Subjects-Institutional Review Board has granted this project a one-year extension effective from the date of this letter.

If you have any questions, please do not hesitate to contact me at (408) 924-2480.

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To: Elisa Taube
828 Opal Drive, # 2
San Jose, California 95117

From: William Nance
Vice Provost

Date: July 29, 2003

This letter acknowledges that the Human Subjects-Institutional Review Board has received the request for extension of the following study:

"The Usability of the E-Commerce Shopping
Cart Tool."

Since there are no major changes to the protocol, the Human Subjects-Institutional Review Board has granted this project a one-year extension effective from the date of this letter. Data collection beyond July 29, 2004 requires an extension request.

If you have any questions, please do not hesitate to contact me at (408) 924-2480.

Appendix B:
Review of 60 Web Sites

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
800flowers.com	basket	y	# of items and subtotal	n/a	n/a	top right	n/a (no return to shopping link)	no continue shopping link	x button, remove text	qty text box	n, update button each row	n	separate html page	"basket is empty" displays at first; "state" and "zip" code
amazon.com	cart	n	n/a	top right	icon and text	n/a	n	one level above	delete button	qty text box	y, update	y	separate html page	no indication that there is anything in your cart, very slow
ballystore.com	cart	y	# of items and subtotal	n/a	n/a	top right	y	n/a	remove text	qty text box	n, update text in each row	y	separate html page	
bath-and-body.com	basket	n	n/a	bottom middle (towards left)	icon and text	n/a	n	home page	no option to remove	qty text box	y, recalculate	n	separate html page	•
bedbathandbeyond.com	cart	n	n/a	top right (third from right)	icon and text	n/a	y	doesn't tell you its in cart on a separate page	trash can icon	qty text box	y, update	n	stays on page	NO feedback, last minute items are showing on the right side
bestbuy.com	cart	y	# of items and subtotal	n/a	n/a	top middle	y	n/a	checkbox and delete checked button at bottom	qty text box	y, update qty	y	separate html page	if you select the checkbox and hit update quantity- the item deletes- so either button will work...hum...AND only icon at top is clickable-not the text and they are spaced apart

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
bn.com	cart	y	# of items, subtotal, item, view contents link	n/a	n/a	left side nav	y	n/a	checkbox	qty text box	y, update	y	stays on page	white splash screen, feedback states by item: "item added to cart" in red; icon sparkles after
bombaycompany.com	cart	y	subtotal	n/a	n/a	left nav (bottom)	n	varies	trash can icon	qty text box	n, update button each row	n	separate html page	interesting icons; says-place order instead of checkout; tried to put 0 under qty and page gets lots of errors! ; entire billing address and list of items in cart are all on one scrolling page
buy.com	basket	n	n/a	top right	icon and text	n/a	n	home page	clear basket	qty text box	y, update	y	separate html page	select shipping method in dropdown on this page
buypcsoft.com	basket	n	n/a	top middle	text	n/a	n	home page	checkbox	qty text box	y, update	y	separate html page	
cdw	cart	n	n/a	top right	text	n/a	n	homepage	(-) icon	qty text box	y	y	separate html page	
chefsatalog.com	cart	y	subtotal	n/a	n/a	top right	n	home page	checkbox	qty text box	y, recalculate	n	stays on page	a lot of text on separate html page! not clickable-only shopping cart icon and checkout links are clickable and they take you to the cart-\$ amt is also persistent on shopping cart page

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of Icon (if applicable)	Icon, Text or Both?	Location of Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
Chicos.com	bag	n	n/a	top right	icon and text	n/a	y	product page	remove button	add second item	n/a	y (to view cart)	stays on page	
coach.com	bag & Order	n	n/a	top middle (towards right)	text	n/a	n	home page	remove text	qty text box	y, update	n	separate html page	(after select color), continue shopping is a drop down in bottom center-other items include various shopping departments
computers4sure.com	cart	y	qty, subtotal, item	n/a	n/a	left side nav	n	home page	change qty to 0	qty text box	y, update	n	separate html page	select shipping method in ddown on this page
crateandbarrell.com	order	n	n/a	left side nav (below fold)	text	n/a	n	one level above	remove text	qty text box	y, update	n	separate html page	(choose qty first), very small font; gift box checkbox column, very hard to find! When on shopping cart page-view order button is red
disneysfore.com	cart	y	# of items	n/a	n/a	left side	y	n/a	remove button	qty text box	n, update needed but not present	n	separate html page	there were 3 items in the cart (2 were the same) and the # of items indicated on persistent cart was incorrect!!!!
drugstore.com	bag	y	qty, price, item, view details	n/a	n/a	left side nav	y	n/a	trash can icon	qty text box	y, update quantity text link (above cart)	y	stays on page	persistent cart updates VERY quickly, shopping "bag"; changes color depending on page you are on

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
eddiebauer.com	cart	n	n/a	top middle	icon and text	n/a	n	home page	remove text	edit item text	n	n	separate html page	
famousfootwear.com	cart	n	n/a	top right	text	n/a	y	product page	remove text	add second item	n/a	n	separate html page	
fingerhut.com	cart	y	# of items	n/a	n/a	top right	n	one level above	delete button on left	qty is drop down	y, recalculate	n	separate html page	
gap.com	bag	y	# of items	n/a	n/a	top right	n	high level category	checkbox	no option to change qty	y, update	n	separate html page	have you select "ship this item to ME" or others, makes you select size, qty before hitting add to shopping bag
guess.com	bag	n	n/a	bottom middle	text	n/a	n/a (no return to shopping link)	no continue shopping link	remove text	qty text box	y, apply changes	n	stays on page	feedback: "this item has been added to your shopping bag" appears in red font above size chart, no continue shopping link; happens very quickly, if you hit checkout, it takes you to another shopping cart page with a continue shopping link
harryanddavid.com	basket	n	n/a	top middle (towards right)	text	n/a	n	home page	delete item button	*add another button	n	n	stays on page	select who to ship to before adding; feedback: red text feedback stating "xxx has been added to your shopping basket"

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Location of icon, text or both?	Location of persistent items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
illuminations.com	basket	n	n/a	top right (left of search)	icon	n/a	n	one level above	remove text	qty text box	y, recalculate	n	separate html page	(choose qty before hitting add (qty is set to 0!))
jpenney.com	bag	y	# of items and subtotal	n/a	n/a	top right	n	home page	checkbox	qty text box	y, update	y	stays on page	only arrows and icons are clickable - not text, pick a size range, then pick a size, then add to cart; feedback: item added to shopping bag in red print shows where add to bag button
justmysize.com	bag	n	n/a	top middle	text	n/a	n/a (no return to shopping link)	no continue shopping link	remove button	qty text box	n, update button each row	n	stays on page	feedback: states "item added" on that page, deflated bag turns into full bag picture, very quick, "enter items from a printed catalog now"
ktoys.com	shop cart	n	n/a	top left	text	n/a	n	home page	delete red "x" in delete column;	qty text box	y, update	n	separate html page	cute cartoony design
KSwiss	cart	n	n/a	left side	text	n/a	n	homepage	checkbox	qty text box	y	y	separate html page	
lbean.com	cart	n	n/a	top right & bottom and left	icon	n/a	n/a (no return to shopping link)	no continue shopping link	cancel button each row	no option to change qty	n	n	separate html page	select size, color, and qty

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
longs.com	cart	y	price, subtotal, item	n/a	n/a	left side nav	n	home page	checkbox, remove selected items buttons	qty text box	y, update	y (before viewing cart)		before you can view your cart, you have to register-with BIRTHDATE and email address (and no where to check-don't send me anything!)
macys.com	bag	n	n/a	top right	icon and text	n/a	y	n/a	checkbox	qty is drop down	y, update	n	separate html page to select who to ship to	for who to ship to, back to product page - NO feedback, below fold is continue shopping, update bag and checkout buttons
ninewest.com	bag	y	subtotal	n/a	n/a	top right	n	home page	checkbox	qty text box	y, update	n	stays on page	white splash screen, top right cart updates, additomybag is on left side of page and navigation is on the right-shows a shipping estimate!!
nordstrom.com	bag	y	# of items	n/a	n/a	top middle (towards right)	n	one level above	remove button	qty text box	y, update	y	separate html page	itemizes each item even if they are the same

Site Name	Title of Cart	Persistent?	Which items are persistent? # of items and subtotal	Location of Icon (if applicable)	Icon, Text or Both?	Location of Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
officedepot.com	cart	y	# of items and subtotal	n/a	n/a	top middle	n	home page	checkbox	qty text box	y, update	y	separate zip code HTML page (first time); 2nd time: stays on page	clicked add to cart; asks for zip code first on a separate page...EMPTY CART button is unique! feedback: across middle top stating "1 item has been added to your shopping cart"
officemax.com	cart	y	# of items and subtotal	n/a	n/a	top right	n	home page	checkbox	qty text box	y, recalculate	y	separate html page	(choose qty first), continue shopping button is above the cart list-hard to find
oldnavy.com	bag	y	# of items and subtotal	n/a	n/a	top middle (towards left)	n	one level above	checkbox and remove checked button at bottom	no option to change qty	?, remove checked item	n	separate html page	have to click on item to change qty-on another page, "1 for \$28.00"-nice!
oshkoshbgoesh.com	cart	y	size, qty, price, subtotal, item, x (for remove)	n/a	n/a	right side nav	n	home page	x button	qty text box	n, update button each row	y (before viewing cart)	stays on page	persistent card updates quickly NO feedback (except the updated info)
outpost.com	cart	n	n/a	top right	icon and text	n/a	n	home page	remove item link	qty drop down	n	n	separate html page	gives shipping estimate "ups ground starts at 9.95"

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
potterybam.com	basket	n	n/a	bottom right	icon	n/a	n	one level above	remove button	qty text box	y, recalculate	n	separate html page	this is a very confusing shopping cart-overly complex and stuff seems very hidden-edit and remove buttons, continue shopping is on left top/middle; select qty, size, color, and who to send to then hit add to basket
restorationhardware.com	bag	y	qty, est. S&H, add'l freight, grand total	n/a	n/a	left side nav	y	n/a	delete text	qty text box	y, update	y (before viewing cart)	slays on page	white splash screen, cart on left updates, doesn't show individual total for each item-just the grand total, gift wrap checkbox available
rockport.com	bag	n	n/a	left side nav	icon and text	n/a	y	n/a	delete text	qty text box	n, update needed but not present	y	separate html page	bag is low on page-location is confusing; picture of each item is shown in row in shopping bag
servicemerchandise.com	cart	n	n/a	top middle towards left	icon and text	n/a	n	home page	checkbox	qty text box	y, update	n	separate html page	

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
sharperimage.com	basket	y	subtotal	n/a	n/a	top right	y	n/a	x button	qty text box	y, update at top	n	separate html page	very clean design-with four boxes at top-back to shopping-clear-update-checkout; SHIPPING METHOD is in a drop down column on main page!!! and \$ amt is update on top right (first choose color and qty)
shopping.discountery.com	cart	n	n/a	top middle	text	n/a	varies	n/a	checkbox	qty text box	n, update needed but not present	y	separate html page	very slow
skechers.com (shoes)	cart	n	n/a	bottom right (third button in)	text	n/a	y	n/a	checkbox	qty text box	y, update	n	separate html page	location of button is different; changing size within cart is nice
staples.com	cart	y	qty, # of items, subtotal, item, view cart details	n/a	n/a	right side nav	y	n/a	checkbox	qty text box	y, update	y	stays on page	
starbucks.com	cart	y	# of items	n/a	n/a	right side nav	y	n/a	checkbox	qty text box	y, recalculate	y	stays on page	white splash screen, feedback: "item added" next to add to cart button
							Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes

talbots.com	bag	y	# of items	n/a	n/a	top right corner (under global nav)	n	one level above	checkbox	no option to change qty	y, refresh	n	stays on page	select who to ship to, quantity, size, color, gift? Then click on bag; Feedback: another page comes up replacing that area with "item has been added" and a "view bag" iconnot only is there a shopping bag text."
target.com	cart	y	# of items	n/a	n/a	top right corner	y	n/a	x button	qty text box	y, update	n	stays on page	html page for cart is a different color, white on part of screen, # of items changes in top right corner, feedback: red text appears in middle: "items added to your order" and a button (quickly)

Site Name	Title of Cart	Persistent?	Which items are persistent?	Location of icon (if applicable)	Icon, Text or Both?	Location of Persistent Items / Cart?	Returns you to item from separate html page?	If no, where does it take you?	How to delete?	How to Update Quantity?	One Update Button for Entire Site?	Site required membership?	How to add items to cart?	Notes
thesportsauthority.com	cart	y	# of items and subtotal	n/a	n/a	top right corner	y	n/a	remove link on right	qty text box	n, update button each row	y	separate html page	
walmart.com	cart	n	n/a	top right	icon and text	n/a	n	one level above	delete button on right	qty text box	y, update quantity	n	separate html page	estimated shipping shown
williams-sonoma.com	basket	n	n/a	top right	text	n/a	n	one level above	remove text	qty text box	y, recalculate	n	separate html page	they show item number (of no use to user really); gift wrap checkbox; once in a while it asks for send to "you" and size up front-other times, it comes up on a separate page
omahasteaks.com	bag	y	qty, item, subtotal	n/a	n/a	right side	y	n/a	delete button	qty drop down	n/a	n	stays on page	from html page, goes to homepage
smartbargains.com	cart	y	# of items and subtotal	top right	text	left side	y	n/a	checkbox	qty text box	y	y	stays on page	from html page, goes to homepage
zones.com	cart	y	# of items and subtotal	top middle	icon and text	top middle	y	n/a	delete text	qty text box	y	y	separate html page	
Zgallery.com	bag	n	n/a	top right	icon	n/a	n	search page	remove text	qty text box	y	y	separate html page	

Question 1. What is the title of the accumulator?

Title of Accumulator?	
	Total
cart	32
bag	16
basket	9
bag & Order	1
order	1
shop cart	1
Grand Total	60

Question 2. Is the cart have items that are persistent on every page while shopping?

Persistent?	
	Total
y	31
n	29
Grand Total	60

Question 3. Is the shopping cart denoted by text (e.g., "cart"), an icon (e.g., picture of a grocery cart), or both?

Icon, Text, or both?	
	Total
text	16
n/a	27
icon and text	15
icon	2
Grand Total	60

Question 4. Where is the shopping cart icon / text located on each page (if an icon is used?)?

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Location of Icon / Text?	
	Total
No icon / text	27
top right	12
top middle	5
top middle (towards right)	2
top left	2
left side nav	3
top right (third from right)	1
top right (left of search)	1
top right & bottom left	1
top middle towards left	1
left side nav (below fold)	1
bottom right (third button in)	1
bottom right	1
bottom middle (towards left)	1
bottom middle	1
Grand Total	60

Question 5. Where is the persistent cart (or items) located on the page?

Location of Persistent Items / Cart	
	Total
n/a	29
top right	10
left side nav	5
right side nav	3
top middle	3
left side	2
top right corner	2
left nav (bottom)	1
top middle (towards left)	1
top middle (towards right)	1
top right corner (under global nav)	1
right side	1
top left	1
Grand Total	60

Question 6. Which items are persistent on every page while shopping?

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Which items are persistent?	Site	Total
# of items	disneystore.com	1
	fingerhut.com	1
	gap.com	1
	nordstrom.com	1
	starbucks.com	1
	talbots.com	1
	target.com	1
	cdnow.com	1
<i>Subtotal</i>		8
# of items and subtotal	savon.com	1
	ballystore.com	1
	bestbuy.com	1
	jcpenny.com	1
	lambsdream.com	1
	officedepot.com	1
	officemax.com	1
	oldnavy.com	1
	thesportsauthority.com	1
	smartbargains.com	1
	zones.com	1
	hmhd.com	1
<i>Subtotal</i>		12
subtotal	bombaycompany.com	1
	chefscatalog.com	1
	sharperimage.com	1
<i>Subtotal</i>		3
qty, item, subtotal	omahasteaks.com	1
# of items, subtotal, item, view contents link	bn.com	1
qty, subtotal, item	computers4sure.com	1
qty, price, item, view details	drugstore.com	1
price, subtotal, item	longs.com	1
size, qty, price, subtotal, item, x (for remove)	oshkoshbgosh.com	1
qty, est. S&H, add'l freight, grand total	restorationhardware.com	1
qty, # of items, subtotal, item, view cart details	staples.com	1
Grand Total		31

How does it add items to cart?	Site	Total
separate html page	800flowers.com	1
	amazon.com	1
	ballystore.com	1
	bath-and-body.com	1
	bestbuy.com	1
	bombaycompany.com	1
	borders.com	1
	buy.com	1
	buypcsoft.com	1
	coach.com	1
	Computers4sure.com	1
	crateandbarrell.com	1
	disneystore.com	1
	eddiebauer.com	1
	fingerhut.com	1
	gap.com	1
	illuminations.com	1
	kbtoys.com	1
	llbean.com	1
	Nordstrom.com	1
	officemax.com	1
	oldnavy.com	1
	outpost.com	1
	Potterybarn.com	1
	rockport.com	1
	servicemerchandise.com	1
	sharperimage.com	1
	shopping.discovery.com	1
	skechers.com (shoes)	1
	thesportsauthority.com	1
	walmart.com	1
	williams-sonoma.com	1
	zones.com	1
	hmhd.com	1
	cdnow.com	1
	zgallery.com	1
	famousfootwear.com	1
	cdw.com	1
	kswiss.com	1
	<i>Subtotal</i>	39

Question 7. How does a user add items to the cart? (Continued)

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How does it add items to cart?	Site	Total
stays on page	bedbathandbeyond.com	1
	bn.com	1
	chefscatalog.com	1
	drugstore.com	1
	guess.com	1
	harryanddavid.com	1
	jcpenny.com	1
	justmysize.com	1
	longs.com	1
	ninewest.com	1
	oshkoshbgosh.com	1
	restorationhardware.com	1
	staples.com	1
	starbucks.com	1
	talbots.com	1
	target.com	1
	omahasteaks.com	1
	chicos	1
	smartbargains.com	1
	<i>Subtotal</i>	19
separate zip code HTML page (first time); 2nd time: stays on page	officedepot.com	1
separate html page to select who to ship to	macys.com	1
Grand Total		60

Question 8. When the user leaves the separate html shopping cart page (present for both persistent and nonpersistent cart designs), is the user returned to the item when the user selects the continue shopping link?

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Returns you to item when you continue shopping from shopping cart html page	Site	Total
No, does not take you back to Product Page	amazon.com	1
	bath-and-body.com	1
	bombaycompany.com	1
	borders.com	1
	buy.com	1
	buypcsoft.com	1
	chefscatalog.com	1
	coach.com	1
	computers4sure.com	1
	crateandbarrell.com	1
	eddiebauer.com	1
	fingerhut.com	1
	gap.com	1
	harryanddavid.com	1
	illuminations.com	1
	jcpenny.com	1
	kbtoys.com	1
	longs.com	1
	ninewest.com	1
	nordstrom.com	1
	officedepot.com	1
	officemax.com	1
	oldnavy.com	1
	oshkoshbgosh.com	1
	outpost.com	1
	potterybarn.com	1
	servicemerchandise.com	1
	talbots.com	1
	walmart.com	1
	williams-sonoma.com	1
	hmhd.com	1
	zgallery.com	1
	cdw.com	1
	kswiss.com	1
<i>Subtotal</i>		34

Question 8 (continued). When the user leaves the separate html shopping cart page (present for both persistent and nonpersistent cart designs), is the user returned to the item when the user selects the continue shopping link?

133

Returns you to item when you continue shopping from shopping cart html page	Site	Total
Yes, returns you to Product Page	ballystore.com	1
	bedbathandbeyond.com	1
	bestbuy.com	1
	bn.com	1
	chicos.com	1
	disneystore.com	1
	drugstore.com	1
	famousfootwear.com	1
	macys.com	1
	omahasteaks.com	1
	restorationhardware.com	1
	rockport.com	1
	sharperimage.com	1
	skechers.com (shoes)	1
	smartbargains.com	1
	staples.com	1
	starbucks.com	1
	target.com	1
	thesportsauthority.com	1
	zones.com	1
<i>Subtotal</i>		20
n/a (no return to shopping link)	800flowers.com	1
	guess.com	1
	justmysize.com	1
	llbean.com	1
<i>Subtotal</i>		4
varies	shopping.discovery.com	1
gives you three options	cdnow.com	1
Grand Total		60

Question 9. If the cart does not take you to the product, where does the user end up?

134

Where does the site take you?	Site	Total
Home page	bath-and-body.com	1
	borders.com	1
	buy.com	1
	buypcsoft.com	1
	cdw.com	1
	chefscatalog.com	1
	coach.com	1
	computers4sure.com	1
	eddiebauer.com	1
	harryanddavid.com	1
	hmhd.com	1
	jcpenny.com	1
	kbtoys.com	1
	kswiss.com	1
	longs.com	1
	ninewest.com	1
	officedepot.com	1
	officemax.com	1
	oshkoshbgosh.com	1
	outpost.com	1
	servicemerchandise.com	1
<i>Subtotal</i>		21
One level above	amazon.com	1
	crateandbarrell.com	1
	fingerhut.com	1
	illuminations.com	1
	nordstrom.com	1
	oldnavy.com	1
	potterybarn.com	1
	talbots.com	1
	walmart.com	1
	williams-sonoma.com	1
<i>Subtotal</i>		10
No continue shopping link	800flowers.com	1
	guess.com	1
	justmysize.com	1
	llbean.com	1
<i>Subtotal</i>		4

Question 9. If the cart does not take you to the product, where does the user end up?
(continued)

135

Doesn't tell you its in cart on a separate page	bedbathandbeyond.com	1
Varies	bombaycompany.com	1
	cdnow.com	1
<i>Subtotal</i>		2
High level category	gap.com	1
Search page	zgallery.com	1
Grand Total		40

Question 10. How does the user update a product quantity in the cart?

Interaction for updating qty	Total
qty text box	47
no option to change qty	4
qty drop down	4
"add another' button	1
edit item text	1
change qty text	1
manually add another product to cart	2
Grand Total	60

Question 11. Is membership required to view the cart or continue checking out?

Is membership required to view cart?	Total
No	31
Yes (To continue checking out after view cart)	24
Yes (Before viewing cart contents)	4
Grand Total	60

Agreement to Participate in Research

Responsible Investigator: Elisa Taube

Title of Protocol: The Usability of Web Commerce Sites.

I, _____, volunteer to participate in the research study entitled: The Usability of Web Commerce Sites, to be conducted at the office of Interface Analysis, under the direction of Elisa Taube and Professor Anthony Andre.

The procedures have been explained to me and I understand them fully. They are as follows: 1) The purpose of the study is to evaluate the usability of the Internet. 2) The study will last approximately 1 hour. 3) No risks to me are expected from my participation in this study.

I understand that this consent and data may be withdrawn at any time without penalty. No service of any kind, to which I am otherwise entitled, will be lost or jeopardized if I choose to not participate in the study. I am also free to withdraw at any time without prejudice to my relations with San Jose State University. No discernable benefits are expected from participating in this study.

I will not be compensated for participating in this study. Questions about the research may be addressed to Elisa Taube at 408-244-7315. Complaints about the research may be presented to Kevin Corker, Ph.D., Director, Human Factors / Ergonomics Program, SJSU, at 408-924-3988.

Questions about research, subjects' rights, or research related injury may be presented to Pam Stacks, Interim Academic Vice President, Grad Studies and Research, at (408) 924-2480. I have been given the right to ask questions, and my questions, if any, have been answered to my satisfaction. I understand that the data will be reported in group form and individual data will be kept confidential. I have received a signed and dated copy of this consent form.

Participant's Signature

Date

Investigator's Signature

Date

Appendix D

Demographic Survey

Date: _____

Participant #: _____

Name: _____

Age: _____

Gender: Male / Female

Years/months of Computer Experience: _____

Years/months of Web Experience: _____

Hrs per week using Web (average in the past year) _____

How often do you use the Web for shopping?

☐ Daily	☐ Weekly	☐ Monthly	☐ Once or twice a year	☐ Never
--------------------------------	---------------------------------	----------------------------------	--	--------------------------------

What type(s) of products have you bought on the Web in the last year?

☐ Apparel	☐ Travel, entertainment
tickets
☐ Electronics	☐ Toys
☐ Books	☐ Other
☐ Music	

How many products have you purchased online in the last year?

☐ 1-5	☐ 6-10	☐ 11-15	☐ 16-20	☐ 20+
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Appendix E

Participant Instructions

Today I'm going to ask you to interact with several Web commerce sites. The goal of this study is to learn about how easy or difficult different Web shopping sites are to use and to gather feedback on critical design factors that might affect your shopping experience.

In a moment I'm going to bring you to another room across the hall, where you will be seated at a computer workstation. I'll be in an adjoining room and will be talking to you through a microphone and speakers. I'll ask you to go to a particular site and then to shop for various products and to perform other common shopping tasks, then we'll repeat the process a few times. Finally, I'll have you fill out a survey.

Any questions?

Protocol by Group

Group A: Persistent

1. JcPenney.com (PSOP)

140

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 200.00 not including shipping and handling. Your goal is not to exceed this budget but if you do, let me know immediately.			
Go to "Favorite One" under favorites in your browser.	Beginning at homepage	Irrelevant	n/a
1. Buy the light and sound activity table for your friends son who is 2 years old	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy a another toy for the same 2 year old that is under \$60	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Locate the bridal registry for your friend Tom Jones	Distracter Question	Not Relevant	
[make sure they are not on sep html page] 4. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
5. Without going to a different page, how much have you spent so far?		Relevant	Correct? Y / N
6. Buy any color and type of men's dockers in a size 32-32.	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
7. Buy the same pair of men's dockers for a friend in a different size.	Navigate back to product, add same product (almost)	Relevant	Returns to product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
8. What's the customer service number?	Go to homepage	Relevant	Correct? Y / N Went to home? Y / N
9. Buy a treadmill for your mom.	Adding a different product in a	Relevant	Completion? Y / N Optimal Path? Y / N

	different category		Time: _____ seconds	141
10. Change the quantity of the 32-32 size dockers to "2"	Navigate to the separate cart page and update quantity.		Completion? Y / N Optimal Path? Y / N	
11. You've changed your mind on the children's light activity table. Delete this item from your list. (use continue shopping button)	Removing an item from the cart on the separate cart page.	Relevant	Completion? Y / N Optimal Path? Y / N Navigate to scart? Y / N	
12. Begin the process to pay for these items.	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N	

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N

Notice right away? Y / N

How Obtain Answer? _____

2. zones.com (PSOP)

142

Task	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 350.00. Your goal is not to exceed this budget but if you do, let me know immediately.	Went over budget? Y / N		
Go to "Favorites xx" under Favorites in your browser	Beginning at homepage	Irrelevant	
1. Buy a Macintosh computer Game for your personal computer	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy another Macintosh game for under \$50	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. What's the number for technical support?	Navigate to homepage	Relevant	Correct? Y / N Went to home? Y / N
4. Buy a flatbed scanner for under \$1000	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Change the quantity of the second PC game (the one under \$50) to "2".	Navigate to the separate cart page and update quantity.	Relevant	Completion? Y / N Optimal Path? Y / N Navigate to scart? Y / N
6. View all digital cameras that are on sale.	Distracter Qtn	Not Relevant	
[make sure they are not on sep html page] 7. Without going to a different page, how many total items are in your cart right now?	Relevant		Correct? Y / N
8. Without going to a different page, how much have you spent so far?	Relevant		Correct? Y / N
9. Buy a Brother printer for under \$200	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
10. Buy a Lexmark laser Printer	Navigate back to product, add same product	Relevant	Returns to Product? Y / N Completion? Y / N

	(almost)		Optimal Path? Y / N Time: _____seconds	143
11.You've changed your mind on the flatbed scanner. Delete this item from your list. (use continue shopping button)	Remove an item from the cart.	Not Relevant	Completion? Y / N Optimal Path? Y / N	
12. Begin the process to pay for these items.	Going to separate cart page	Irrelevant	Completion? Y / N Optimal Path? Y / N	

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

3. Smartbargains.com

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 220.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
Go to Favorites xx in your browser	n/a	Irrelevant	n/a
1. Buy an American Tourister Rolling backpack	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy an American Tourister duffle bag	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Buy a second American Tourister duffle bag of a different size	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Say you previously purchased an item a week ago and you want to track your order. Go to the area where you can track your order	Distracter Qtn	Not Relevant	
5. Without going to a different page, how many total items are in your cart right now?	Relevant		Correct? Y / N
6. Without going to a different page, how much have you spent so far?	Relevant		Correct? Y / N
7. Buy a down comforter for your bed that is under \$200 (use continue shopping button)	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
8. You decided you don't need a backpack. Delete the American Tourister rolling backpack from your list.			Navigate to SCart? Y / N Correct? Y / N

9. What's the number for customer service?	Navigating to the homepage	Relevant	Correct? Y / N Goes to homepage? Y / N
10. Change the number of down comforters from "1" to "2"	Navigate to the separate html shopping cart page and update quantity.	Relevant	Navigate to Scart? Y / N Completion? Y / N Optimal Path? Y / N # of clicks? _____
11. Buy a piece of artwork for a children's bedroom for under \$250 (use continue shopping button)	Adding a different product in a different category	Relevant	Completion? y/n Optimal Path? y/n Time: _____seconds
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

145

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer? _____

4. Skechers.com (PGTP)

146

Task	Goal	Relevant	How Measured
Your budget is: \$ 300.00. Your goal is not to exceed this budget but if you do, let me know immediately.			
Go to Favorites in your browser	Beginning at homepage	Irrelevant	N/a
1. Buy a pair of women's boots in black for in a size 8 for under \$70	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy a brown pair of women's boots over \$50, also in a size 8	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Buy another pair of the same brown boot, but in a different size	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Buy a pair of size 4 boys roller skates (use continue shopping button)	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Change the number of pairs of black boots to "2"	Navigate to the separate cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
6. Buy a pair of men's sandals for your dad (use continue shopping button)	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
7. Locate the closest skechers store near you. Go ahead and click on the skechers logo	Distracter Qtn	Not Relevant	
8. Without going to a different page, how many total items are in your cart right now?	Relevant	Correct? Y / N	
9. Without going to a different page, how much have you spent so far?	Relevant	Correct? Y / N	
10. Delete the first pair of women's black boots that you added to your list	Removing an item	Not Relevant	Completion Y / N Optimal Path? Y / N

11. Email customer service to ask about their return policy	Navigate to the homepage	Relevant	Correct? Y / N Navigate to homepage? Y / N
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

147

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

Group B: Persistent

5. Savon.com (PSOP)

149

Task	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 15.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
Go to Favorites xx in your browser	n/a	Irrelevant	n/a
1. Buy a bag of dry cat food for your friend's cat	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy a can of Iams dog food	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Buy a bottle of Cover Girl light colored nailpolish	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Buy a darker color of Cover Girl nailpolish	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Go to the area to search for a product?	Distracter Qtn	Not Relevant	
6. Without going to a different page, how many total items are in your cart right now?	Relevant	Correct? Y / N	
7. And, how much have you spent so far?	Relevant	Correct? Y / N	
8. Change the quantity of the dog food to "2"	Navigate to the separate html shopping cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
9. Delete the bag of dry cat food from your list.	Removing an item	Not Relevant	Completion? Y / N Optimal Path? Y / N
10. What is the customer service number?	Adding a different product in a different category	Relevant	Correct? Y / N Goes to homepage? Y / N

11. Buy a jar of baby food peaches	Add a different product to the cart from different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

150

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

6. Officedepot.com (PSOP)

151

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 300.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
1. Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	N/a
Use your own zip code if asked			
2. Buy a Cambridge Banker's Desk lamp	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Buy a padded folding chair in black	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Buy a blue school backpack	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Go to the area to track an order.	Distracter Qtn	Not Relevant	
6. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
7. And, how much have you spent so far?		Relevant	Correct? Y / N
8. Change the quantity of the desk lamps to 2	Navigate to the separate html shopping cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
9. What is the customer service number?	Navigate to the homepage	Relevant	Correct? Y / N Navigate to homepage? Y / N
10. Delete the backpack from your list	Navigate to the separate cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
11. Buy a Kodak digital camera that is at least	Adding a different product in a	Relevant	Completion? Y / N Optimal Path? Y / N

4.0 megapixel for yourself	different category and returning to that product.		Time: _____seconds	152
12. Buy a 2.0 megapixel Kodak digital camera for a friend	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds	
13. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N	

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

7. Harley Davidson.com (PGTH)

153

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 150.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
Go to Favorites xx in your browser	n/a	Irrelevant	n/a
1. Buy a piece of harley davidson jewelry for your friend that is less than \$100	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy a key chain that is less than \$15.00	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Buy a second key chain that has a built in flashlight	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Go ahead and click on continue shopping and find the place to search by stock number.	Distracter Qtn	Not Relevant	
5. Without going to a different page, how many total items are in your cart right now?	Relevant		Correct? Y / N
6. And, how much have you spent so far?	Relevant		Correct? Y / N
7. Continuing the tasks, buy a pair of women's motorcycle gloves for your mom	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
8. Delete the jewelry from your list.			
9. What is the customer service number.	Navigating to the homepage	Relevant	Correct? Y / N Goes to homepage? Y / N
10. Change the quantity of the flashlight key chain to "2"	Navigate to the separate html shopping cart	Relevant	Navigate to scart? Y / N Completion? Y / N

	page and update quantity.		Optimal Path? Y / N Time: _____seconds
11. Buy a fuel tank decal for a harley	Adding a different product in a different category	Relevant	Completion? y/n Optimal Path? y/n Time: _____seconds
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

154

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

8. Bestbuy.com (PGTP)

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 200.00. Your goal is not to exceed this budget but if you do, let me know immediately.		Went over budget ? y/n	
Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	N/A
1. Buy a 2.4 GHZ cordless phone for your office	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
2. Buy a headset to go with the phone.	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N # of clicks? _____
3. Find the area to buy a gift card.	Distracter Qtn	Not Relevant	
4. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
5. And, how much have you spent so far?		Relevant	Correct? Y / N
6. Buy a GE Optical mouse for your PC computer.	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
7. Buy a Logitech optical mouse for your PC.	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? y/n Time: _____ seconds
8. Change the number of cordless phones that you bought before that you already purchased to "2" instead of "1".	Navigate to the separate html shopping cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____ seconds

9. What's the contact number.	Navigate to homepage	Relevant	Correct? Y / N Navigate to homepage? Y / N
10. Delete the Logitech mouse that you purchased before	Remove item from cart		Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N
11. Buy a portable CD player	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N

Notice right away? Y / N

How Obtain Answer?

Group C: Non-Persistent

9. Bedbathandbeyond.com (NPSOP)

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
1. Your budget is: \$ 140.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
2. Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	n/a
3. Buy a bath towel to match your bathroom that is over \$10.00	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Buy a bathroom scale for yourself over \$50	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Buy a shoe rack for your mom that will hold 20 or more pairs of shoes	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
6. Go to the area to view a bridal registry.	Distracter Qtn	Not Relevant	
7. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
8. And, how much have you spent so far?		Relevant	Correct? Y / N
9. Buy a smaller shoe rack that holds less then 20 pairs	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
10. Recall that you bought a towel before. Change the number of towels to "2"	Navigate to the separate cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds

11. Delete the small shoe rack.	Removing an item		Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N
12. What's the number for customer service.	Navigate to homepage	Relevant	Correct? Y / N Find # on bottom in grey on homepage Y / N
13. Buy two placemats for your dining room table	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
14. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

159

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

10. Harryanddavid.com (NPSOP)

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 520.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	n/a
1. Buy an all occasion fruit gift basket for your mom that is over \$50	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy a cheaper all occasion gift basket for your aunt	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. What's the phone number to call and place your order?	Navigate to homepage	Relevant	Correct? Y / N Navigate to homepage? Y / N
4. Buy a gift box of chocolate truffles for yourself.	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Find the place to buy a gift certificate?	Distracter Qtn	Not Relevant	
6. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
7. And, how much have you spent so far?		Relevant	Correct? Y / N
8. Change the number of the less expensive gift basket to 2	Navigate to the separate html shopping cart page and update quantity.	Relevant	Navigate to shopping cart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
9. Sign yourself up for the 12-box fruit of the month club that starts as soon as possible.	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds

10. Sign your mom up for a 3-month fruit of the month club	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
11. Delete the chocolate truffles from your list	Removing an item		Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

161

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer? _____

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 1550.00. Your goal is not to exceed this budget but if you do, let me know immediately.		Went over budget? y/n	
Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	N/a
1. Buy a Kodak 3.0 MPixel digital camera for your dad for Christmas	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Buy a Kodak Easyshare camera dock	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Buy a CD storage case for your CDs	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. What's the customer service number?	Navigate to the homepage	Relevant	Correct? Y / N Navigate to home? Y / N
5. Change the number of CD cases to "2"	Navigate to the separate html shopping cart page and update quantity.	Relevant	Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
6. Delete the Kodak Easyshare camera dock from your list.	Removing an Item		Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N
7. Subscribe to the online newsletter	Distracter Qtn	Not Relevant	
8. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
9. And, how much have you spent so far?		Relevant	Correct? Y / N
10. Buy Adobe Photoshop software for your PC computer	Adding a different product in a different	Relevant	Completion? Y / N Optimal Path? Y / N # of clicks? _____

	category		
11. Buy Adobe Photoshop for your Macintosh computer	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____ seconds
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

12. famousfootwear.com (NPGTP)

164

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 210.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	n/a
1. Buy a pair of women's sandals in black for your friend in size 9	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
2. Buy a pair of women's sandals that are on sale in size 8	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
3. What's the customer service number?	Navigate to homepage	Relevant	Correct? y/n Navigate to homepage? Y / N
4. Buy a pair of boy's basketball shoes in size 6.	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
5. Buy the same pair of boy's tennis shoes in a full size smaller for your cousin	Navigate back to product, add same product (almost)	Relevant	Returns to Product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____ seconds
6. Pretend you've shopped at this site before and ordered some items. Go to the area to track your order?	Distracter Qtn	Not Relevant	
7. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
8. And, how much have you spent so far?		Relevant	Correct? Y / N
9. Change the sale sandals quantity to "2"	Navigate to the separate cart page and update	Relevant	Navigate to scart? Y / N Completion? Y / N

	quantity.		Optimal Path? Y / N Time: _____seconds
10. Buy a pair of men's athletic rockport shoes in size 9	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
11. Delete the pair of women's sandals in black that were the size 9.			Navigate to scart? Y / N Completion? Y / N Optimal Path? Y / N
12. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N

Notice right away? Y / N

How Obtain Answer?

Group D: Non-Persistent

13. chicos.com (NPSOP)

167

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
Your budget is: \$ 180.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
Please sign in to this site: eingy@earthlink.net ; password: testsite			
	Beginning at homepage	Irrelevant	n/a
1. Buy a pair of black pants in a size two for your friend	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
2. Now buy that friend a different pair pants in a different color.	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
3. Locate the chicos store nearest you.	Distracter Qtn	Not Relevant	
4. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
5. And, how much have you spent so far?		Relevant	Correct? Y / N
6. Buy a pair of earrings for your mom.	Adding a different product to the cart in another category.	Relevant	Correct? Y / N Goes to Homepage? Y / N
7. Change the number of the black pants you already purchased from 1 to "2" (use continue shopping button)	Navigate to the separate html shopping cart page and update quantity.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
8. What's the customer service number?	Navigate to the homepage	Relevant	Goes to scart? Y / N Completion? Y / N

			Optimal Path? Y / N Time: _____seconds
9. You changed your mind on the earrings. Delete the pair of earrings from your list. (use continue shopping button)		Adding a different product to the cart in another category. Going to the homepage after adding a product to the cart	Goes to scart? Y / N Completion? Y / N Optimal Path? Y / N
10. Buy a black tank top in size three for a friend.	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
11. Buy the same black tank top in a size 1.	Navigate back to product, add same product (almost)	Relevant	Returns to product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
13. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

14. Justmysize.com (NPSOP)

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
1. Your budget is: \$ 260.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? Y / N
2. Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	
3. Buy a red women's top in size 2X for your cousin	Adding an item to the shopping cart	Relevant	Completion? Y ./ N Optimal Path? Y ./ N Time: _____seconds
4. Now buy your cousin a blue sweater	Navigate to a Different Product in the same Category	Relevant	Completion? Y ./ N Optimal Path? Y ./ N Time: _____seconds
5. Buy a dressy shirt for your aunt to wear to her Christmas party in size 3x	Adding a different product to the cart in another category.	Relevant	Completion? Y ./ N Optimal Path? Y ./ N Time: _____seconds
6. What's the number to order by phone?	Navigate to the homepage	Relevant	Correct? Y ./ N Goes to homepage? Y ./ N
7. Find a store near you.	Distracter Qtn	Not Relevant	
8. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
9. And, how much have you spent so far?		Relevant	Correct? Y / N
10. Change the number of sweaters purchased from "1" to "2"	Navigate to the separate html shopping cart page and update quantity.	Relevant	Goes to scart? Y ./ N Completion? Y ./ N Optimal Path? Y ./ N Time: _____seconds
11. Buy a pair of pants in the petite section in size 1X.	Adding a different product in a different category and returning	Relevant	Completion? Y ./ N Optimal Path? Y ./ N

	to that product.		Time: _____seconds
12. Buy the same pair of pants in size 2X.	Navigate back to product, add same product (almost)	Relevant	Returns to product? Y . / N Completion? Y . / N Optimal Path? Y . / N Time: _____seconds
13. Remove the blue sweater from your list.	Removing an item.		Goes to scart? Y . / N Completion? Y . / N Optimal Path? Y . / N
14. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y . / N Optimal Path? Y . / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

15. kswiss.com (NPGTH)

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
1. Your budget is: \$ 140.00. Your goal is not to exceed this budget but if you do, let me know immediately.			Went over budget? y/n
2. Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	
3. Buy a classic KSwiss men's t shirt under \$20.00	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Buy a pair of men's KS Collection shoes in size 11	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. What's the number for customer service?	Navigating to the homepage	Relevant	Correct? Y / N Goes to homepage? Y / N
6. Buy a women's tennis skirt-size medium.	Adding a different product to the cart in another category.	Relevant	Completion ? Y / N Optimal Path? Y / N Time: _____seconds
7. Buy the same tennis skirt for another friend in size L.	Navigate back to product, add same product (almost)	Relevant	Returns to product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
8. Change the quantity of the men's shoes you bought to "2"	Navigate to the separate html shopping cart page and update quantity.	Relevant	Goes to scart? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
9. Buy a gift certificate.	Distracter Qtn	Not Relevant	
10. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N

11. And, how much have you spent so far?		Relevant	Correct? Y / N
12. Buy a pair of shoes for your young male cousin in size 10.5	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
13. Remove the men's t-shirt from your list.	Remove an item		Goes to scart? Y / N Completion? Y / N Optimal Path? Y / N
14. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer?

16. Shopping.discovery.com (NPGTP)

TASK	GOAL of TASK / What is being tested	Irrelevant / Relevant To Manipulated Variables	How Measured
1. Your budget is: \$ 1800.00. Your goal is not to exceed this budget but if you do, let me know immediately.		Went over budget? Y / N	
2. Go to Favorites xx in your browser	Beginning at homepage	Irrelevant	n/a
3. Buy yourself a set of digital camera binoculars	Adding an item to the shopping cart	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
4. Buy your friend a digital camera binocular that is a little cheaper or at least the same price	Navigate back to product, add same product (almost)	Relevant	Returns to product? Y / N Completion? Y / N Optimal Path? Y / N Time: _____seconds
5. Buy a telescope under \$500	Navigate to a Different Product in the same Category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
6. Is there a place to track your order?	Distracter Qtn	Not Relevant	
7. Without going to a different page, how many total items are in your cart right now?		Relevant	Correct? Y / N
8. And, how much have you spent so far?		Relevant	Correct? Y / N
9. Buy a recommended gift idea under \$100 for a 6 year old	Adding a different product to the cart in another category.	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____seconds
10. What is the customer service number?	Navigate to homepage.	Relevant	Correct? Y / N Goes to homepage? Y / N
11. Change the number of telescopes purchased to "2"	Navigate to the separate html shopping cart page	Relevant	Goes to scart? Y / N Completion? Y / N Optimal Path? Y / N

	and update quantity.		Time: _____ seconds
12. Buy a "baby development" toy/item for your friends child that is under \$25	Adding a different product in a different category	Relevant	Completion? Y / N Optimal Path? Y / N Time: _____ seconds
13. Remove the telescope from your list of items	Removing an item		Goes to scart? Y / N Completion? Y / N Optimal Path? Y / N
14. Begin the process to pay for these items	Going to separate shopping cart html page	Irrelevant	Completion? Y / N Optimal Path? Y / N

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Please rate this site from 1-5, 1 being very hard to 5 being very easy. 1 2 3 4 5

Go over budget? Y / N
right away? Y / N

Notice

How Obtain Answer? _____

Screenshots of Websites Used in Study

Zones: Connecting Businesses and Technology - ADOBE PHOTOSHOP 7 CLASSROOM IN A BOOK - Micro...

File Edit View Favorites Tools Help

Back Home Search Favorites Media

Address http://www.zones.com/cgi-bin/zones/site/product/index.html?pid=000579027&referrer=cart

Search Web Sign In Mail Games Yahoo! My Yahoo! Basketball Go

ZONES

→ Login My Account Order Status Checkout

Connecting Businesses & Technology
800-408-9663

Search GO

Stores	Brands	Systems	Hardware	Software	Networking	Storage/Media	Items	Subtotal	\$34.99
ADOBE PHOTOSHOP 7 CLASSROOM IN A BOOK									
<p>Price: \$34.99 Mfr: 0321115627 Item: 00158917</p> <p>This item has been added to your cart Click to Checkout</p> <p>View Similar Products Add to Shopping List</p>									
Related Items									

Product Alert

When it comes to digital imaging software, Adobe Photoshop has long set the standard. Thus, when a new version of the popular program appears, designers tend to stand up and take notice-- then get down to the serious business of learning about it! And for that, there's no better place to turn than the book from the people behind the product: Adobe Press' Adobe Photoshop 7.0 Classroom in a Book.

Using the same style of self-paced instruction employed in the best-selling previous edition, this comprehensive set of Photoshop lessons provides everything you need to dive into the world of print, Web, and graphic design with Photoshop 7.

Completely revised to cover all of Photoshop 7's new features (including the new Healing Brush, color correction commands, and file management tools), the book starts with an introductory tour of the software and then progresses on through 16 lessons, covering everything from Photoshop's interface to more complex topics like color management, Web graphics, and photo retouching. You'll find step-by-step instructions for a variety of projects (from beginning to advanced) and review questions at the end of each chapter to reinforce what you've learned. Easy-to-use project files on the accompanying CD-ROM complete the package.

Help Your Account About Us 1 item in cart: \$29.99 checkout

bed & bath search: All Bargains Find

Welcome! Existing customers please sign in

home > bed & bath > bath towels & rugs

April 29th 10:33 pm ET

Two Piece "Essence" 100% Cotton Loop Bath Rug Set

- » Home
- » Art & Wall Decor
- » Bed & Bath
 - Bath Accessories
 - Bath Towels & Rugs
 - Bed-in-a-Bag
 - Blankets & Throws
 - Comforter Sets
 - Down Bedding
 - Duvet Covers
 - Flannel Bedding
 - Kids Bedding
 - Luxury European Linens
 - Mattress Pads
 - Personal Care
 - Pillows
 - Quilts & Bed Skirts
 - Sheets
- Recent Markdowns
- Details:

Retail Value: \$70.00
Our Price: \$29.99
You Save 57%!

Select Color

Qty: 1 Add To Shopping Cart

Tell a friend about this bargain

view larger image >

Super Saver Shipping \$4.95

Two thick bath mats, one tiny price! These two "Essence" bath rugs have sturdy all-cotton loops, able to stand up to serious foot traffic and still look good. The non-skid backs are a smart detail. Set includes one large and one small rug!

also available

Frette Men's Velour Bathrobe
Retail Value: \$120.00
Our Price: \$60.00

SKECHERS

MEN WOMEN KIDS ACCESSORIES STORE FINDER CUSTOMER SERVICE SIGN IN REGISTER

Boys : S-Lights - Energy 2 - Electric Ray (style: 90200)

Price: \$43.00

Color: Charcoal Trubuck / Black Mesh-Lime Trim

Size: 12 - L : \$43.00

Note: The H in size represents a half size

Kids Size Chart

BUY NOW

SEARCH advanced search

your shopping cart contains 1 items subtotal: \$43.00

SHOPPING CART

Description:
Beam me up! Spark into action in our cool lighted slip-ons. Made with easy zipper closure so you can get up and go! Leather or trubuck upper.

Alternate Colors:

Other styles within this category:

More Pages: 1

View all Sort By Price Sort By Popularity

	SKECHERS!	SKECHERS!	SKECHERS!
Price: \$43.00	Price: \$33.00	Price: \$38.00	Price: \$40.00

Discovery Channel Store - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back

Search

Media

Favorites

Go

Address

http://shopping.discovery.com/

Go

Search Web

Sign In

Mail

Games

Yahoo!

Personals

My Yahoo!

Basketball

Discovery Channel

STORE

Sign Up for Special Email Offers

Enter Email Address

DISCOVERY.COM

STORE LOCATOR

CUSTOMER SERVICE

ORDER TRACKING

SHOPPING CART

DVD, VHS & BOOKS

TELESCOPES & BINOCULARS

TOYS & GAMES

HOME & OFFICE

ELECTRONICS & GADGETS

CLOTHING & GEAR

OUTDOOR & TRAVEL

FITNESS & SPA

GIFT IDEAS

FAN SHOPS

SALE ITEMS

CATALOG QUICK ORDER

All Products

60!

Engaging GIFTS for Kids!

Find the very best toys for your young explorer or creative genius - from award winning exclusives to the wild and wacky but always smart and fun!

Shop Gifts for Kids

Sky & Land Telescope

\$149.95

DVD, VHS & Books

Captivate your family and friends with the best in real world entertainment - all your Discovery favorites.

Navy SEALs Training DVD Set

\$44.95

Telescopes & Binoculars

Explore the universe with our premier selection of Meade telescopes and binoculars for all skill levels.

Meade ETX-70AT Telescope

\$299.00

Home & Office

Make playtime a cool adventure for your budding scientist, explorer or little creative genius.

Remote Control Hovercraft

\$80.00

Electronics & Gadgets

Enjoy state-of-the-art tools and unique conversation pieces to simplify your life at home and at work.

Discovery Digital Caller ID Globe with Clock

\$49.95

VOTE for your favorite Discovery Store commercial!

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K-Swiss Store Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address: <https://www.kswiss.com/cgi-bin/kswiss/storehome>

Search Web Sign In Mail Games Yahoo! Personals My Yahoo! Basketball

Home StoreHome Classics Training Tennis Apparel What's New

Welcome to K-Swiss!

- Promotions
- Lounge
- About K-Swiss
- Site Map
- Order Tracking
- Customer Service
- Member Sign In
- Gift Certificates
- Search
- Shopping Cart

CLASSICS

SHOP K-SWISS.com

Classics Training Tennis Apparel What's New

LIVE HELP

Questions? Chat for live help

Lace Camisole

Buy 2 of this style, pay only \$29.99 each!

Why spend a fortune on party wear? Team our stunning lace top with pant or skirt for a festive, affordable outfit. So versatile – wear it year 'round for daytime and dress-up alike. Lovely on its own or layered under a jacket.

- Lush floral lace covers every inch for feminine allure.
- Silky fabric lines bodice (except for sleeves). Opaque for modesty...smooth against skin.
- Flattering u-neck frames your face nicely.
- 27 inches long...skims your figure for sleek effect.

100% stretch nylon. Made in USA or Imported.

Style 18201C

Price \$ 34.99 each.

1. Make selections

Size

Color

Quantity

2. Add to Shopping Bag

**Lace Camisole
Added to Shopping Bag**

Add to Shopping Bag

LARGER VIEW

Product - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Favorites

Go

Address http://www.famousfootwear.com/product.asp?p=1003787%7EVomens%7CCasual&sc=CASUALW&variant_id=92688

Y!

Search Web Sign In Mail Games Yahoo! Personals Basketball

Privacy Policy Track Your Order Customer Service REWARDS Login View Cart

Women Men Kids Athletics Brands Sale

Back to Previous Page

SKECHERS!

Zoom In

Find This Shoe

Want to try this shoe on?
We may have it in one of our over 900
retail stores nationwide. Enter your zip
code below, click "find this shoe" and
we'll tell you if a store near you has it.

Zip Code:

FIND THIS SHOE

1 Blue

2 Select a Size

Add to Cart

Go back to shopping

Skechers, Skechers Bebop.
On Sale! \$39.99 (was \$54.99)

This item is now in stock.
Usually ships same day.

Free Shipping!

Simply spend \$75 or
purchase 3 pairs.

Product Description

An athletic shoe with a kick. Smooth Skechers style, glittery accents and
loads of fashion on the go.

Cute stripe detailing and clean styling

Lace-up design

Two-tone traction-worthy outsole

May we also suggest:

185

Search Results - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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History

Address

http://www.cdw.com/shop/search/Results.aspx?grp=CAP

Go

Sign In

Search Web

My Yahoo!

Personals

Games

Mail

Yahoo!

Basketball

CDW

The Right Technology
Right Away

Software License

TRACKER

Brands

Hardware

Software

Networking

Accessories

Services

Category: Cables > Miscellaneous Cables > Power and Y Splitter Cables

☐ Show ready to ship products only (Shipping Definitions)
 ☐ Hide product images

Sort By: BEST MATCH GROUP BRAND LOWEST PRICE HIGHEST PRICE

Showing 1 - 25 of 228 Products

Filter YOUR Search Results

Filter BY BRAND

- Belkin Cables
- Compaq Computer
- APC
- Black Box
- Cisco Systems

View More

Filter BY PRICE

- Under \$100
- \$100-\$500

Filter BY KEYWORD

Search within your results

GO

☒ Include product descriptions

Hints and Help

Take Our Survey

Was this new search engine helpful?

Let us know.

CDW

Image not Available

Compaq IEC to IEC AC Power 8' cable

IEC to IEC AC Power 8 foot cable

CDW# 178214

Shipping 4-6 Days

Price \$13.99

Cart

APC Standard AC Power 10' Cord

Standard AC Power 10 foot Cord

CDW# 245749

Shipping Same Day

Price \$8.93

Cart

Hubbell Four Pair Y adapter

The BR851D splitting Y adapter converts a T568B wired RJ-45 jack to two 10BASE-T wired jacks

CDW# 254867

Shipping Same Day

Price \$17.37

Cart

186

Harry and David - Chocolates & Bakery - Royal Chocolates - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address: <http://www.harryanddavid.com/cgi-bin/ncommerce3/ProductDisplay?Krypto=9wMfE5NE8elmyaMsswZSqsOwplZx2Be322gls62d1YboUWoYGeeO5Duc8> Go

Search Web Sign In Mail Games Yahoo! My Yahoo! Personal Basketball

Harry and David
Delicious Since 1934

Home Gift Finder Gift Services View Basket My Account Sign In Checkout

You are here: [Chocolates & Bakery](#) >>> [Chocolates & Truffles](#)

The Royal Chocolates has been added to your shopping basket.

Royal Chocolates
The Grand Collection: Eagerly anticipated – a triumph of taste.
The smoothest fondants and cremes. The crispest, tastiest nuts. Buttery, kettle-cooked caramels, tender hand-cut toffees, the flavors of luscious fruits and ripe berries. And then there's the chocolate itself: Blended from the purest ingredients, expertly tempered and finished. Each piece is a unique and remarkable creation – passionately conceived, flawlessly sculpted, elegantly presented. Net wt. 1 lb.

Available to ship year round.
Item No. 161127 ... \$79.95

For a similar great product, click an image or link below:

Shop Gifts:
by Price
by Holiday
& Occasion

Our Specialties:
Gift Baskets
Gift Towers
Gift Boxes & Tins
Fresh Fruit
& Vegetables
Fruit of the Month
Club@
Chocolates
& Bakery
Gourmet Foods
Floral Gifts
Home Decor
SALE

Search
By Item # or Keyword

Go

Catalog Quick Order
Online Catalog
My Giftlist™
International APO/FPO
Harvest Report & Recipes
Store Locator
Business Gifts

File Edit View Favorites Tools Help

Back Search Favorites Media

Address: <http://www.hmhd.com/webstore/store.asp>

Search Web Sign In Mail Games Yahoo! Personals My Yahoo! Basketball

Harley-Davidson Call us Toll Free (800) 828-2875

Welcome to hmhd.com

Express Cart

Add an item to your cart

Website Tip: When viewing Categories, click the "Show Thumbnail Picture" and click "Go" to replace the camera icon with a thumbnail picture of the item.

Service Tip: Check out our Winter Service Specials. You will need Acrobat Reader to view this pdf file.

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A quick link to the top 10 search queries by other users.

1. helmet
2. 100th
3. engine guards
4. handlebars
5. shocks
6. helmet
7. oil cooler
8. sportster
9. 100th bar
10. 100th anniversary

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Chemicals
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Decals
Driveline
Electrical
Engines/Cams/Pistons
Exhaust
Fenders
Footpegs/Floorboards
Frames
Gas Tanks
Handlebars
Hardware/Nuts/Bolts
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fitment list.
Your Price: \$204.95

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Electronic Compass
Kit
Fits 96-later
Electra Glide® and
Road Glide® models

12

Post-Study Survey

Participant #: _____

Final Survey (Group A)

1. Of the web sites that you worked with today, which one allowed you to purchase, modify, and check out items in the easiest, most intuitive, productive and efficient manner?

Jcpenney.com

Zones.com

Smartbargains.com

Skechers.com

Why? (briefly justify your answer)

2. Please rank the sites from 1 (most preferred) to 4 (least preferred) along the following dimensions/tasks:

	Jcpenney	Zones	Smartbargains	Skechers
Easily knowing what items were in my shopping cart/bag/basket.				
Easily shopping for more items after having added an item to the cart/bag/basket.				
Easily removing an item from the cart/bag/basket.				
Easily changing the quantity of the products I was buying.				
Easily knowing whether I was staying within my budget.				
Easily knowing how many items I had in my cart/bag/basket.				

3. Please select the site you prefer for each item listed below. (Place one check in each row).

	Jcpenney	Zones	Smartbargains	Skechers
Overall design of shopping cart/bag/basket on home page				
Display of total amount due				
Display of total items added				
Icon/Graphic representative of cart/bag/basket				
Ease of navigating between cart and product pages				

Participant #: _____

Final Survey (Group A)

Ease in updating quantities				
Ease in removal of items				

4. Below is a list of common Web site shopping elements, some of which you experienced today and some that you did not. In each row, please circle the feature/design that you would most prefer to be a part of Web shopping site designs. (Circle one per row)

Display of Total Items Added	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
Display of Total Amount Due	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
What happens after you add an item to your cart/bag/basket	Stays on the same product screen	Goes to a separate cart/bag/basket screen	No Preference		
Shopping metaphor	Cart	Bag	Basket	Other: _____	No Preference
Location of shopping cart information on screen	Top right	Top Left	Left side	Right side	No Preference

Additional Feedback:

Participant #: _____

Final Survey (Group B)

1. Of the web sites that you worked with today, which one allowed you to purchase, modify, and check out items in the easiest, most intuitive, productive and efficient manner?

officedepot.com

savon.com

hmhd.com

bestbuy.com

Why? (briefly justify your answer)

2. Please rank the sites from 1 (most preferred) to 4 (least preferred) along the following dimensions/tasks:

	officedepot.com	savon.com	hmhd.com	bestbuy.com
Easily knowing what items were in my shopping cart/bag/basket.				
Easily shopping for more items after having added an item to the cart/bag/basket.				
Easily removing an item from the cart/bag/basket.				
Easily changing the quantity of the products I was buying.				
Easily knowing whether I was staying within my budget.				
Easily knowing how many items I had in my cart/bag/basket.				

3. Please select the site you prefer for each item listed below. (Place one check in each row).

	officedepot.com	savon.com	hmhd.com	bestbuy.com
Overall design of shopping cart/bag/basket on home page				

Participant #: _____

Final Survey (Group B)

Display of total amount due				
Display of total items added				
Icon/Graphic representative of cart/bag/basket				
Ease of navigating between cart and product pages				
Ease in updating quantities				
Ease in removal of items				

4. Below is a list of common Web site shopping elements, some of which you experienced today and some that you did not. In each row, please circle the feature/design that you would most prefer to be a part of Web shopping site designs. (Circle one per row)

Display of Total Items Added	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
Display of Total Amount Due	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
What happens after you add an item to your cart/bag/basket	Stays on the same product screen	Goes to a separate cart/bag/basket screen	No Preference		
Shopping metaphor	Cart	Bag	Basket	Other: _____	No Preference
Location of shopping cart information on screen	Top right	Top Left	Left side	Right side	No Preference

Additional Feedback:

Participant #: _____

Final Survey (Group C)

1. Of the web sites that you worked with today, which one allowed you to purchase, modify, and check out items in the easiest, most intuitive, productive and efficient manner?

bedbathand
beyond.com

Harryandddavid.com

Cdw.com

famous
footwear.com

Why? (briefly justify your answer)

2. Please rank the sites from 1 (most preferred) to 4 (least preferred) along the following dimensions/tasks:

	Bedbathandbe yond	harryanddavi d	cdw	famousfootwe ar
Easily knowing what items were in my shopping cart/bag/basket.				
Easily shopping for more items after having added an item to the cart/bag/basket.				
Easily removing an item from the cart/bag/basket.				
Easily changing the quantity of the products I was buying.				
Easily knowing whether I was staying within my budget.				
Easily knowing how many items I had in my cart/bag/basket.				

Please select the site you prefer for each item listed below. (Place one check in each row).

	Bedbathand beyond	harryanddavid	cdw	famous footwear
Overall design of shopping cart/bag/basket on home page				

Participant #: _____

Final Survey (Group C)

Display of total amount due				
Display of total items added				
Icon/Graphic representative of cart/bag/basket				
Ease of navigating between cart and product pages				
Ease in updating quantities				
Ease in removal of items				

3. Below is a list of common Web site shopping elements, some of which you experienced today and some that you did not. In each row, please circle the feature/design that you would most prefer to be a part of Web shopping site designs. (Circle one per row)

Display of Total Items Added	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
Display of Total Amount Due	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
What happens after you add an item to your cart/bag/basket	Stays on the same product screen	Goes to a separate cart/bag/basket screen	No Preference		
Shopping metaphor	Cart	Bag	Basket	Other: _____	No Preference
Location of shopping cart information on screen	Top right	Top Left	Left side	Right side	No Preference

Participant #: _____

Final Survey (Group D)

1. Of the web sites that you worked with today, which one allowed you to purchase, modify, and check out items in the easiest, most intuitive, productive and efficient manner?

Chicos.com

justmysize.com

kswiss.com

Shopping.discovery.com

Why? (briefly justify your answer)

2. Please rank the sites from 1 (most preferred) to 4 (least preferred) along the following dimensions/tasks:

	Chicos	Justmysize	Kswiss	Shopping. discovery
Easily knowing what items were in my shopping cart/bag/basket.				
Easily shopping for more items after having added an item to the cart/bag/basket.				
Easily removing an item from the cart/bag/basket.				
Easily changing the quantity of the products I was buying.				
Easily knowing whether I was staying within my budget.				
Easily knowing how many items I had in my cart/bag/basket.				

Participant #: _____

Final Survey (Group D)

3. Please select the site you prefer for each item listed below. (Place one check in each row).

	Chicos	Justmysize	Kswiss	Shopping. discovery
Overall design of shopping cart/bag/basket on home page				
Display of total amount due				
Display of total items added				
Icon/Graphic representative of cart/bag/basket				
Ease of navigating between cart and product pages				
Ease in updating quantities				
Ease in removal of items				

4. Below is a list of common Web site shopping elements, some of which you experienced today and some that you did not. In each row, please circle the feature/design that you would most prefer to be a part of Web shopping site designs. (Circle one per row)

Display of Total Items Added	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
Display of Total Amount Due	Always visible on every screen	Viewable when I go to a separate screen	No Preference		
What happens after you add an item to your cart/bag/basket	Stays on the same product screen	Goes to a separate cart/bag/basket screen	No Preference		
Shopping metaphor	Cart	Bag	Basket	Other: _____	No Preference
Location of shopping cart information on screen	Top right	Top Left	Left side	Right side	No Preference

Appendix I

Data Collection Log Example

Person # _____

Site Name _____

Use of Optimal Path to Add First Item (1.00/yes or 0.00/no)	
Use of Optimal Path to Delete Item (1.00/yes or 0.00/no)	
Use of Optimal Path to Change Quantity (1.00/yes or 0.00/no)	
Use of Optimal Path to Check Out (1.00/yes or 0.00/no)	
Know how much spent so far (1.00/yes or 0.00/no)	
Retrieval of Answer (memory=1, sep html page=2, pcart=3, no answer=4)	
Time from qtn to Answer (seconds/60)	
Hesitation Words	
Know how many items in cart (1.00/yes or 0.00/no)	
Retrieval of Answer (memory=1, sep html page=2, pcart=3, no answer=4)	
Time from qtn to Answer (seconds)	
Hesitation Words	
Went over budget? (1.00/yes or 0.00/no)	
Time from when user goes over budget and realizes it (seconds)	
How realize over budget (memory=1, sep html page=2, pcart=3, did not realize=4)	
# of x User Verifies Item Added (sep html page)	

# of x User has Incorrect Number of Items (does not realize)	
Total Time to Complete Tasks on Site	
Optimal Path Navigating to Shopping Cart First Time (1.00/yes or 0.00/no)	
Time to navigate to Shopping Cart for First Time (seconds)	
Deviation – Delete Item	
Deviation – Change Quantity	
Deviation – Check Out	
Items in Cart: Difference in guess vs. actual amount	
Spent so far: Difference in guess vs. actual amount	
Adding similar item / same group	
TIME: FROM INSTRUCTION TO LANDING ON PAGE	
Adding similar item / same group OPTIMAL	
Adding product different category TIME: FROM INSTRUCTION TO LANDING ON PAGE	
Adding product different category OPTIMAL	