

# Aesthetics and Web Site Design<sup>1</sup>

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# Aesthetics and Web Site Design

## ABSTRACT

While usability is key to the long-term success of a Web site, there are other issues that factor into a user's total Web experience. This research investigates what role aesthetics play in Web site design and how they affect user interaction with a Web site. Data was collected from users who browsed three different Web sites. Subjects were asked how attractive they found the sites, how they felt while using the sites, and how easy the sites were to use. They also ranked the sites, and answered questions about their overall Web preferences. The results of the study provide insight into the concept of Web aesthetics, how aesthetics relates to usability, and how it shapes a user's overall opinion about a Web site.

**Keywords:** aesthetics, Web site design, Web experience, usability

## INTRODUCTION

Organizations are putting more and more effort into the design of their Web sites. It is not enough just to have a Web site, but one that is designed such that the user can navigate it easily and will return to it in the future. These goals have been achieved in many cases through an increasing emphasis on Web site usability. But usability is not the only issue that needs to be addressed in creating effective Web sites. People should *enjoy* the experience of using a Web site. Aesthetics, in addition to usability, could play an important role in the overall perception and use of Web sites.

Marketing long ago identified the quality of the consumption experience for both physical products and intangible service products as important to consumer behavior (Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982; Holbrook and

Gardner, 1998; Wakefield and Blodgett, 1999; Mano, 1999; Fiore, Yah and Yoh, 2000). Among other propositions, Hirschman and Holbrook (1982) suggested that consumers seek sensory, emotional and cognitive stimulation from the product consumption experience. They also suggested that “consumers imbue a product with a subjective meaning that supplements the concrete attributes it possesses”. Based on Maslow (1968) they also suggested, that in some instances, “emotional desires dominate utilitarian motives in the choice of products”. More recently, marketing researchers have shown that the actual and expected shopping experience does, indeed, influence purchase behavior for physical products (Fiore et al. 2000; Mano 1999) and service products (Wakefield and Blodgett, 1999). Holbrook and Gardner (1999) showed that the delivery of a pleasurable consumption experience was related to the duration of consumption for experiential products. This could mean that the quality of the experience enjoyed by a Web site user is a powerful component of the choice to remain at the site longer, return to it, or recommend it to a friend.

In light of the range of benefits that can be provided via Web technology, it can clearly be argued that a Web site is a product. Holbrook (1995) has suggested that advertising, in its own right, is an experiential product. So even a Web site that exclusively provides consumer information, as opposed to other consumer services or products, serves a role similar to that of advertising. It can be argued then that a substantial portion of the benefits delivered by a Web site for many people are experiential in nature, making Web sites, to varying degrees, experiential products. It would seem that the aesthetics of a Web site could contribute substantially to the overall consumption experience with it. This could, in turn, influence user loyalty,

recommendations, usage time, and other important consumer behaviors while visiting the respective site and thereafter.

While usability is key to effective design, there is evidence that the user experience goes well beyond ease of use. Alben (1996) defines aesthetics as one of the many criteria (which also include usability) that contribute to a user's overall quality of experience when interacting with a product. Jordan (1997) also found that the issue of pleasure in product use involves more than just usability. Stolterman (1994) said that information systems need to look beyond usability to other dimensions such as aesthetics to judge their success. Tractinsky et al. (1999) found a strong correlation between the perceived aesthetics and perceived usability of a information system application.

There is even a recent call in the human-computer interaction (HCI) community for a more comprehensive approach to good Web design. Rather than looking at usable and visually stimulating sites as conflicting entities, Hudson (2000) calls for meeting the needs of a changing Web environment. He states that current usability testing techniques may lack relevance to Web sites meant for entertainment purposes. Hudson notes that, in reality, "usability is a small part of the complete user experience or of a Web site's success. Highly usable Web sites can still fail if attractive prices, service, security, entertainment, and trust are not present in appropriate proportions." He calls for "working with graphic designers and marketers to produce elegant sites that also happen to be usable."

This study takes the first steps in seeking the part that aesthetics plays in the overall Web experience. It attempts to define what aesthetics means in terms of the

Web environment and how it relates to usability. The study seeks to determine how perceptions of aesthetics are related to the perceived usability of a site. It also investigates how the aesthetic features of a Web site influence the site's usability and the overall experience of using the site.

This paper is organized as follows. Section 2 presents some background on aesthetics and its relationship to information systems and interface design. Section 3 describes the methodology used to perform an experiment that investigated Web site aesthetics. Section 4 presents the results of the study. Section 5 discusses the results and presents some directions for future research.

## **BACKGROUND**

This section first defines aesthetics in the general context of design. It then discusses the relationship between aesthetics, information systems, and interface design through a review of previous research.

### Aesthetics and Design

Aesthetics can be a difficult concept to define or understand. At a basic level, aesthetics is the philosophy that deals with the nature and expression of beauty. However, there are two conflicting viewpoints on aesthetics (Eysenck, 1983). One viewpoint sees aesthetics as being completely subjective, and claims that beauty, or why something is beautiful, cannot be shown to someone. The other viewpoint regards aesthetics as being absolute, and believes that people can agree with respect to aesthetic judgments because they are objective. Eysenck (1983) believes that there is at least some objectivity in aesthetic judgments, and has conducted experiments to

support this. These experiments control for extraneous factors that may influence preference judgments, and look at very simple stimuli such as colors and shapes.

If a designer is to be successful, he/she must not only create a product that is functional, but also pleasing to the eye. Pye (1978) said that a designer must ask two questions about aesthetics. The first is what makes things that are “good” in appearance that way, and what separates them from things that appear “bad”. Second, if things are “good” in appearance, who benefits from them, and why does it matter? Pye went on to argue that “the power of design to make for human happiness rests not directly on its useful results, which only serve a man’s needs and can do no more; but on its power to beautify the environment: on the fact that design is an art, not simply a problem-solving activity and no more.” (p. 106)

In an investigation into product use, Jordan (1997) concluded that aesthetics, in addition to usability, influences how pleasurable or not a person finds a product to use. This suggests that a product designer might seek a better understanding of the link between aesthetic properties (such as color) and particular emotional responses to products. Jordan found that pleasurable feelings associated with product use include security, confidence, pride, excitement, satisfaction, entertainment, freedom, and nostalgia. Displeasurable feelings were aggression, feeling cheated, resignation, frustration, contempt, anxiety, and annoyance.

The issue of aesthetics has also been studied recently from the viewpoint of marketing and consumer behavior. A Study by Darden and Babin (1994) supported the notion that a consumer’s perceived affective (emotion-inducing) quality of a store is associated with their representation of a store’s more functional aspects (e.g. prices or

personnel). A store's affective quality is based to a large extent on its physical characteristics, including aesthetics.

Bloch (1995) calls "the physical form or design of a product an unquestioned determinant of its marketplace success" (p. 16). If two products are equal in terms of all other attributes, consumers will purchase the one that is more attractive to them. Bloch goes on to say that a product's form or design can contribute to its success in many ways. A product's form can attract a consumer's attention and gives a consumer his/her first impression of attributes such as quality and strength. Beautifully designed products can affect the quality of a person's life through sensory pleasure similar to works of art. "It is possible to conclude that products can elicit at least a moderate level of aesthetic responses in consumers, including an engagement of attention and strong positive emotions. Aesthetic responses derive from the design and sensory properties of the product rather than its performance or functional attributes." (Bloch, 1995, p. 20)

### Aesthetics and Information Systems

There is some research that has looked at how aesthetics relates to information systems. Stolterman (1994) stated "we have to acknowledge that the question of whether an information system adds value to an organization or not is to be found in an analysis of the individual and social reactions and experiences that the system creates." (p. 2) He went on to say that these experiences cannot be explained simply through factors of system functionality, efficiency, or usability, but through other dimensions that influence their overall judgment of the system. One reason that a supposedly well-designed information system is not accepted within an organization might be that the system is not perceived as aesthetically pleasing to the users.

A study by Tractinsky et al. (1999) found a strong correlation between the perceived aesthetics and perceived usability of a computerized application (simulated ATM), both before and after using the application. This research builds upon findings presented in Kurosu and Kashimura (1995) and Tractinsky (1997). Tractinsky et al. concluded that since users associate aesthetically appealing interfaces with usable systems, interface design should take into account both usability and aesthetics simultaneously. They hypothesized that the positive affect created by aesthetically appealing interfaces may also improve a user's performance with the system as well. One question left unanswered by their research was: what makes an aesthetic interface? Some research that might begin to answer that question was conducted by Veryzer and Hutchinson (1998), who provided evidence that visual design factors such as unity and prototypicality have a positive impact on aesthetic response.

### Aesthetics and Web Site Design

Web sites are a type of information system, and a Web browser combined with HTML code forms an interface to that information system. Previous research in the areas of information systems and interface design, therefore, seems like a good starting point when looking at Web sites. This study seeks to expand upon the aesthetics research already performed by beginning to address the following questions:

- Is there a relationship between the perceived aesthetics and the perceived usability of a Web site?
- What makes a Web site aesthetically pleasing?
- Can the aesthetics of Web sites be measured?
- How do people feel when they use a Web site?

- What part do aesthetics play in the overall Web experience?
- Are Web aesthetics important?
- How important are Web aesthetics compared to Web usability?

The primary goal of this study is to provide some insight into whether or not aesthetics is a factor, above and beyond usability, which influences a person's overall experience with a Web site.

### **METHODOLOGY**

A study was performed to address the questions that have been raised above concerning Web site aesthetics, design, and usability. Twenty-three graduate and forty-nine undergraduate students from the researcher's School of Business were recruited for this study. Subjects were given extra class credit as an incentive to participate. The group consisted of thirty-nine males and thirty-three females ranging in age from eighteen to forty-nine. Most (68/72) of the subjects used a computer almost every day, and many (60/72) used the Web almost every day as well.

Three Web sites – Contax Cameras, Jennair, and Starbucks Coffee – were chosen based on design ratings from an independent organization, the Internet Professional Publishers Association (IPPA). The organization's stated goals are to "set the standard for commercial design" and to "identify the most effective sites on the Internet." ([www.IPPA.org](http://www.IPPA.org)). The organization has been evaluating Web sites since 1995, and the sites are rated both on design and content.

Three consumer product sites were chosen. All three sites have similar ratings for content and different ratings for graphic design. Content ratings were kept similar for each site since the study's goal was to focus on aesthetic and usability issues. The sites

used for this study were rated by the IPPA as follows (10 being the highest possible score):

**Contax Cameras** (<http://www.contaxcameras.com/>)  
Graphics Design 9.5  
Content and Copy 9.2

**Jennair** (<http://www.jennair.com/home.asp>)  
Graphics Design 9.1  
Content and Copy 9.2

**Starbucks Coffee** (<http://www.starbucks.com/>)  
Graphics Design 8.6  
Content and Copy 9.0

The study was conducted in a computer laboratory in the Business School equipped with identical Pentium III machines, high-speed Internet access, and Netscape 4.7. Monitor resolution was set to 600 x 800. The subjects first answered a few demographic questions (see Appendix A). The subjects were then asked to browse one of the sites for 5 minutes. After this, a questionnaire (Appendix B) was administered pertaining to the subjects' experiences with the site. Each subject answered specific questions regarding their reaction to the Web site and on the aesthetics and usability of the site. These two steps were repeated for the other two Web sites. The viewing order of the sites was randomly determined for each subject. After filling out a questionnaire for the third site, a final set of questions on the overall experience was given (Appendix C). This last questionnaire had subjects compare the sites and provide importance rankings and opinions.

To determine the final format of the questionnaire, and to test the methodological approach, a pilot study with fourteen subjects was performed prior to this experiment. The same three Web sites were investigated, but most of the questions were left open-

ended in an attempt to broadly define how people thought of aesthetics and usability. The responses in the pilot study were used to further refine the questionnaires used in this study. Details of the pilot study can be found in Tarasewich and Cobo-Lewis (2000).

## **RESULTS**

This section presents a summary and analysis of the experimental data collected. Nonparametric statistical analyses were used where the distribution of points was not normal.

Table 1 summarizes the average of the subjects' responses to the general questions about each Web site. For each site, a Pearson test shows significant (at the .01 level) correlations between the responses for each question. This is not unexpected, and seems to suggest that the issues of likeability, attractiveness, enjoyment, usability, and navigation are related in the minds of the subjects. For each question, subjects on average rate the Starbucks site the best, followed by the Contax Cameras site and then the Jennair site. Friedman tests show that the differences in the means are significant (.027 and .037) for the second and third questions. There seem to be definite preferences for attractiveness and enjoyment of one site over another.

A closer look is now taken at the responses to the more qualitative questions that were asked about each site. Table 2 summarizes the number of times each subject chose a word from a list of possible responses to the question "what makes the site attractive to you?" Animation factored heavily into the attractiveness of the Contax site, but it was the only one of the three sites that had any animation in it. Graphics in general seem to add to attractiveness. Colors seem to influence attractiveness for many people, especially on the Starbucks site.

Table 3 summarizes the responses to the question “how do you feel when you use the site?” The Starbucks site drew the most positive responses for users feeling interested, comfortable, happy, satisfied, good, amused, and curious. The Contax site drew more positive responses for confident and impressed. Very few people felt certain or sure about any of the three sites. Jennair received the majority of the negative responses, with many users feeling tired, disengaged, bored, dissatisfied, or nothing at all. And no one was amused by the Jennair site. Contax beat out the other sites in terms of making users feel confused, lost, or unsure. An interesting observation with Starbucks is that, even with all its positive remarks, many people still felt overwhelmed. This comment also holds for the Contax site.

The question “what makes the site easy to use?” is summarized in Table 4. Looking across all three Web sites, the responses that seem to be chosen most often are pictures, hyperlinks, layout, icons, and speed. The instructions on the Contax site appears to contribute to its ease of use for many people. The simplicity of the Jennair site seems to aid in its usability. The usability of the Starbucks site looks like it comes primarily from its favorable use of hyperlinks, fonts/text, and colors, and its perceived speed advantages over the other sites.

Table 5 addresses the question “what makes the site easy to navigate?” The possible responses for this question were identical to that of the previous question, and the question was included to see if there was a difference in the way people viewed navigation versus usability. The responses to this question were very similar to those received regarding site usability. The only exception to this seems to be for the Starbucks site, where structure was selected by almost twice as many people as an aid

to navigation versus as an aid to usability. Looking at the correlations between the responses to the two questions, almost all are significant at the .01 level. One exception to this is “content” for the Contax and Starbucks sites, which is significant for both sites at the .05 level. The only response that was not significantly correlated between the two responses is “site map” for the Contax site.

Responses to the question “which of the following would you use to describe the site?” are summarized in Table 6. Based on the number of each response given, each site was judged by many subjects to be informational, but the Contax site more so than the others. The Contax site, overall, was seen as sleek and cool, but complex. The Jennair site is looked upon as simple and clear by many, but as uninviting and even worthless by quite a few people. Many people thought the Starbucks site was worthwhile, fun, and the fastest of the sites, but some thought it was cluttered, and five people chose to rate the site as childish.

Subjects were then asked to rank each site according to a set of six attributes. The total number of responses ranking each site from best to worst is shown in Table 7. Weights were assigned to each response (3 for the best down to 1 for the worst) and the sum of the weighted responses for each attribute was calculated. Starbucks has the highest totals for ease of use, ease of navigation, content, and speed. Contax comes out on top for the design and attractiveness attributes, although Starbucks is very close. It is interesting to note that while the Jennair site was rated second of the three sites by the IPPA in terms of graphics design, it ended up a distant third in terms of both the design and attractiveness attributes in this experiment.

Finally, subjects ranked the importance of the six different Web site attributes. The results of this task are shown in Table 8. Weights were assigned to each response (6 for the most important down to 1 for the least important) and the sum of the weighted responses for each attribute was calculated. The attribute with the greatest sum (the one rated the most important overall) is ease of use, followed by content, speed, ease of navigation, attractiveness, and design.

## **DISCUSSION**

This study is a starting point in determining the role that aesthetics plays in the design and use of Web sites. There are, however, limitations to the current study. The number of subjects is limited, and the students used in the study may not accurately represent the general user population. Since Web sites change, the sites that were rated may not be the same as the ones that were used in this study, although one would hope that the sites would improve in terms of design and content rather than become worse. While the sites studied were similar in that they dealt with consumer products, the products were all different, and the content and functionality of each site varied. There was also no measure collected on the level of interest that each subject had in the sites studied.

The research has, however, begun to answer the questions that were posed at the beginning of the study, although there is still much to be investigated. Aesthetics do seem to play a part in the overall Web experience, although it seems to be less important than issues such as usability, speed, and content. Factors such as graphics, animation, color, and overall appearance seem to influence how attractive people find a Web site. Factors that are related to aesthetics, such as pictures, layout, style,

simplicity, and colors, seem to play a part in the perceived usability of a site. People experience a range of emotions, both positive and negative, as they interact with a Web site.

Next steps in this research include narrowing the focus of any experiments, and trying to find more precise answers to questions on Web aesthetics. It could be interesting to have subjects rate individual factors related to aesthetics (such as color, style, and graphics) rather than just choosing which factors are important. Subjects could also rate the intensity of different emotions as they browse the site. A rating of interest in a particular site would also be useful. Perhaps an experiment could be developed that gathers opinions on several versions of the same Web site, which differ in terms of aesthetic design, but not content or other features.

There are many reasons why people use Web sites, including content, usability, navigation, sense of community, personalization, customer service, search capabilities, and aesthetics. Other factors such as trust, privacy, and security also play a role in the level of interaction between a user and a Web site. While aesthetics may not be the top priority in terms of design, it is something that can keep the user coming back by making the experience more enjoyable. It may also promote interactivity within the site, keep the user there longer, and promote a feeling of security and well-being that can lead to trust in the Web site and in the organization.

Assuming that future research demonstrates that the quality of the Web site experience, facilitated by the aesthetics of the site, influences managerially relevant consumer behavior, there will be several marketing questions to address in future research. What is the appropriate balance of emotional stimulation vs. functionality to be

delivered by a Web site? On what contingencies would the determination of such a balance depend? Given the trade-offs currently imposed by the bandwidth available for delivering a rich user experience, are there segments of Web site users who favor different combinations of functional quality and experiential quality?

These three questions are clearly related to each other in that the balance of functionality and experiential quality that is deliverable by a Web site is currently constrained by the bandwidth available with traditional household internet connections. Bandwidth constrains the delivery of rich experiences, e.g., streaming audio and video, via the web. This forces users to trade-off experiential quality for functionality. This is a trade-off or balance that is idiosyncratic to the user, leading to the development of segments of consumers that would represent target markets for Web site products featuring different balances of experiential quality and functionality. Such segmentation could, to some extent, be driven by the motivation of the user for visiting the site. Marketing researchers (Eastlick and Feinberg, 1999; Holbrook and Gardner, 1998; Pham, 1998) have suggested that the consumer's motives for contact with a service provider or the purchase of a product moderates the impact of the quality of the consumption experience on evaluation of the physical product or service provided. Such motives could be either instrumental, i.e., the web site visit could represent a means to some other end, or consummatory, i.e., the services or experiences to be delivered by the Web site could represent the end consumption object.

What managerially relevant behavior might the experiential quality of a web site influence? In the marketing literature and in marketing practice, Web technology is being used to support the creation and maintenance of long-term, mutually beneficial

exchange relationships, e.g., relationships among the members of a distribution channel or relationships between consumers and producers. The critically important behavior that the Web experience should be shown to influence would include retention or customer loyalty.

Organizations want users of their Web sites to stay as long as possible, and to return many times after the initial visit. Usability is a key in making this happen, but is not the only key. Organizations need to look at the overall quality of the user experience with the Web site. To fully understand the interaction of the user with a Web site, and the aspects of Web site design that affect this interaction, future research will need to investigate the Web experience from a multidisciplinary perspective including service design, human-computer interaction, marketing, psychology, and information systems. The authors plan to look at this comprehensive scenario for Web site design more closely.

A final word of caution, however, is necessary. While taking aesthetics into account during Web site design may be beneficial, one must also realize that too much attention paid to aesthetics can backfire. Donald Norman (1990) showed us that designing solely for aesthetical purposes, without regard to usability, can result in products that consumers cannot and will not use. There is probably some middle ground that adequately addresses both concerns. Since this study indicates that Web aesthetics are important, it seems prudent to keep searching for the proper balance between usability and aesthetics when it comes to Web design.

## **Use of Human Subjects**

The use of human subjects for this study was approved by the Human Subjects Review Board at the University of Maine.

## Appendix A

1. Which statement best describes your level of computer experience?
  - a. I have never used a computer before this experiment.
  - b. I have used a computer a few times before this experiment.
  - c. I use a computer a few times a month.
  - d. I use a computer every week.
  - e. I use a computer almost every day.
  
2. Which statement best describes your level of experience using the Internet and the World Wide Web?
  - a. I have never used the Web before this experiment.
  - b. I have used the Web a few times before this experiment.
  - c. I use the Web a few times a month.
  - d. I use the Web every week.
  - e. I use the Web almost every day.
  
3. Are you:            male            female
  
4. How old are you?            \_\_\_\_\_ years old
  - a. Under 21 years old.
  - b. 21 to 29 years old.
  - c. 30 to 39 years old.
  - d. 40 to 49 years old.
  - e. 50 years old or above.

Appendix B

1. How do you like the site? (1=very much, 10=not at all)
2. How attractive do you find the site? (1=very attractive, 10=very unattractive)
3. What makes the site attractive to you? (check all that apply)
- |            |            |            |             |       |
|------------|------------|------------|-------------|-------|
| animation  | colors     | hyperlinks | information | _____ |
| graphics   | fonts      | appearance | layout      | _____ |
| uniformity | background | content    | products    | _____ |
4. How do you feel when you use the site? (check all that apply)
- |            |             |              |         |           |
|------------|-------------|--------------|---------|-----------|
| tired      | interested  | bored        | good    | irritated |
| uninformed | comfortable | dissatisfied | amused  | impressed |
| disengaged | happy       | lost         | curious | annoyed   |
| confused   | satisfied   | overwhelmed  | certain | _____     |
| nothing    | confident   | unsure       | sure    | _____     |
5. Did you enjoy the site? (1=very much, 10=not at all)
6. How easy is the site to use? (1=very easy, 10=very difficult)
7. What makes the site easy to use? (check all that apply)
- |              |            |             |           |       |
|--------------|------------|-------------|-----------|-------|
| instructions | icons      | style       | speed     | _____ |
| pictures     | wording    | simplicity  | menus     | _____ |
| hyperlinks   | content    | consistency | colors    | _____ |
| layout       | fonts/text | site map    | structure | _____ |
8. How easy is the site to navigate? (1=very easy, 10=very difficult)
9. What makes the site easy to navigate? (check all that apply)
- |              |            |             |           |       |
|--------------|------------|-------------|-----------|-------|
| instructions | icons      | style       | speed     | _____ |
| pictures     | wording    | simplicity  | menus     | _____ |
| hyperlinks   | content    | consistency | colors    | _____ |
| layout       | fonts/text | site map    | structure | _____ |
10. Which of the following would you use to describe the site? (Check all that apply)
- |            |            |             |               |          |
|------------|------------|-------------|---------------|----------|
| cluttered  | clear      | childish    | beautiful     | useless  |
| stupid     | balanced   | hideous     | informational | cool     |
| uninviting | worthwhile | frustrating | simple        | ugly     |
| complex    | sleek      | cryptic     | secure        | readable |
| worthless  | fun        | slow        | fast          | _____    |

Appendix C

1. What features do you look for in a Web site?
2. Rate the sites (1 = best, 2 = next best, 3 = worst) in terms of the following attributes. Use each number only once for each attribute.

<b>Attribute</b>	<b>Contax Cameras</b>	<b>Jennair</b>	<b>Starbucks</b>
Ease of use			
Design			
Ease of navigation			
Content			
Attractiveness			
Speed			

3. Rate the following Web site attributes in order of their overall importance to you from most important (1) to least important (6). Use each number only once.

<b>Attribute</b>	<b>Rating</b>
Ease of use	
Design	
Ease of navigation	
Content	
Attractiveness	
Speed	

4. Any other comments about the Web sites or the experiment?

<b>Table 1 – Responses to general questions (average of all responses*)</b>			
	Contax	Jennair	Starbucks
How do you like the site? (1=very much, 10=not at all)	4.7 (2.6)	5.0 (2.3)	4.0 (2.4)
How attractive do you find the site? (1=very attractive, 10=very unattractive)	4.4 (2.9)	5.0 (2.5)	3.9 (2.5)
Did you enjoy the site? (1=very much, 10=not at all)	5.1 (2.6)	5.4 (2.4)	4.0 (2.4)
How easy is the site to use? (1=very easy, 10=very difficult)	4.1 (2.6)	4.4 (2.7)	3.7 (2.6)
How easy is the site to navigate? (1=very easy, 10=very difficult)	4.0 (2.7)	4.1 (2.8)	3.9 (2.8)
*Standard deviation given in parentheses			

<b>Table 2 – What makes the site attractive to you? (number of responses)</b>			
	Contax	Jennair	Starbucks
Animation	53	4	9
Graphics	60	30	44
Uniformity	15	21	11
Colors	39	32	60
Fonts	9	17	31
Background	23	16	39
Hyperlinks	10	12	20
Appearance	39	35	50
Content	17	15	30
Information	31	35	32
Layout	34	34	31
Products	33	28	38

<b>Table 3 – How do you feel when you use the site? (number of responses)</b>			
	Contax	Jennair	Starbucks
Interested	36	23	45
Comfortable	18	20	32
Happy	7	3	20
Satisfied	24	18	28
Confident	12	4	10
Good	15	13	26
Amused	8	0	17
Curious	29	16	39
Certain	5	2	5
Sure	4	1	5
Impressed	24	8	14
Tired	3	16	3
Uninformed	7	8	1
Disengaged	9	13	2
Confused	14	9	9
Nothing	4	9	2
Bored	11	27	3
Dissatisfied	6	10	3
Lost	10	7	6
Overwhelmed	8	3	9
Unsure	10	4	3
Irritated	11	12	3
Annoyed	9	10	6

<b>Table 4 – What makes the site easy to use? (number of responses)</b>			
<b>Attribute</b>	<b>Contax</b>	<b>Jennair</b>	<b>Starbucks</b>
Instructions	18	9	12
Pictures	33	40	38
Hyperlinks	26	25	38
Layout	38	30	35
Icons	32	28	25
Wording	20	18	24
Content	17	19	18
Fonts/text	9	5	16
Style	26	21	30
Simplicity	15	36	27
Consistency	23	20	23
Site map	7	8	7
Speed	29	27	38
Menus	23	27	27
Colors	11	13	25
Structure	19	14	16

<b>Table 5 – What makes the site easy to navigate? (number of responses)</b>			
Attribute	Contax	Jennair	Starbucks
Instructions	17	11	11
Pictures	35	40	34
Hyperlinks	25	30	37
Layout	35	32	35
Icons	27	25	22
Wording	18	22	24
Content	16	17	18
Fonts/text	10	5	15
Style	23	14	22
Simplicity	22	31	24
Consistency	22	23	26
Site map	4	7	9
Speed	25	21	33
Menus	29	23	29
Colors	14	9	22
Structure	22	9	28

<b>Table 6 – Which of the following would you use to describe the site? (number of responses)</b>			
	Contax	Jennair	Starbucks
Clear	22	32	22
Balanced	20	22	21
Worthwhile	14	16	21
Sleek	26	10	7
Fun	12	2	35
Beautiful	11	4	13
Informational	40	37	32
Simple	18	38	23
Secure	3	1	5
Fast	27	27	35
Cool	26	5	27
Readable	16	21	20
Cluttered	10	8	21
Stupid	1	3	1
Uninviting	11	17	2
Complex	23	3	12
Worthless	3	8	5
Childish	0	0	5
Hideous	1	2	1
Frustrating	9	9	4
Cryptic	2	0	1
Slow	8	9	1
Useless	2	5	4
Ugly	2	3	6

Attribute	Contax			Jennair			Starbucks		
	Best		Worst	Best		Worst	Best		Worst
Ease of Use	16	28	28	24	22	26	34	21	17
Design	31	24	17	12	25	35	30	24	18
Ease of Nav.	16	34	22	31	13	28	28	23	21
Content	25	24	23	11	27	34	37	20	15
Attractiveness	32	25	15	4	31	37	34	20	18
Speed	25	20	27	22	25	25	25	27	20

<b>Table 8 – Importance of Web site attributes (number of subjects ranking as)</b>						
<b>Attribute</b>	<b>Most Important</b>				<b>Least Important</b>	
Ease of Use	21	18	16	6	7	4
Design	5	6	9	12	17	23
Ease of Nav.	8	17	9	18	9	11
Content	19	11	15	12	12	3
Attractiveness	6	12	8	13	17	16
Speed	13	10	15	11	10	13

## REFERENCES

- Alben, L. (1996). Quality of Experience: Defining the Criteria for Effective Interaction Design. Interactions, 3 (3), 11-15.
- Bloch, P. H. (1995). Seeking the Ideal Form: Product Design and Consumer Response. Journal of Marketing, 59, 16-29.
- Darden, W. R., & Babin, B. J. (1994). Exploring the Concept of Affective Quality: Expanding the Concept of Retail Personality. Journal of Business Research, 29, 101-109.
- Eastlick, M. A. & Feinburg, R. A. (1999). Shopping Motives for Mail Catalog Shopping. Journal of Business Research, 45, 281-290.
- Eysenck, H. J. (1983). Visual Aesthetic Sensitivity and its Measurement. In M. Russ (Ed.), The Arts: A Way of Knowing (pp. 105-125). Oxford: Pergamon Press,.
- Fiore, A. M., Yah, X. & Yoh, E. (2000). Effects of a Product Display and Environmental Fragrancing on Approach Responses and Pleasurable Experiences. Psychology & Marketing, 17, 27-54.
- Hirschman, E. C. & Holbrook, M. B. (1982). Hedonic Consumption: Emerging Concepts, Methods, and Propositions. Journal of Marketing, 46, 92-101.
- Holbrook, M. B. (1995). Consumer Research: Introspective Essays on the Study of Consumption. London: Sage.
- Holbrook, M. B. & Gardner, M. P. (1998). How Motivation Moderates the Effects of Emotions on the Duration of Consumption. Journal of Business Research, 42, 241-252.

Holbrook, M. B. & Hirschman E. C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings and Fun. Journal of Consumer Research, 9, 132-140.

Hudson, W. (2000, November/December). Web Evolution: Is HCI an Endangered Species? SIGCHI Bulletin, 9.

Jordan, P. W. (1997). Human Factors for Pleasure in Product Use. Applied Ergonomics, 29 (1), 25-33.

Kurosu, M., & Kashimura, K. (1995). Apparent Usability vs. Inherent Usability. Proceedings of CHI '95, 292-293.

Mano, H. (1999). The Influence of Pre-existing Negative Affect on Store Purchase Intentions. Journal of Retailing, 75, 149-172.

Norman, D. (1990). The Design of Everyday Things. New York: Doubleday.

Pham, M. T. (1998). Representativeness, Relevance, and the Use of Feelings in Decision Making. Journal of Consumer Research, 25, 144-159.

Pye, D. (1978). The Nature and Aesthetics of Design. London: Barrie & Jenkins, Ltd.

Stolterman, E. (1994). The Aesthetics of Information Systems. Unpublished manuscript.

Tarasewich, P., & Cobo-Lewis, C. (2000). An Investigation into the Aesthetics of Web Site Design. Proceedings of the 2000 DSI Annual Meeting, 722-724.

Tractinsky, N. (1997). Aesthetics and Apparent Usability: Empirically Assessing Cultural and Methodological Issues. Proceedings of CHI '97, 115-122.

Tractinsky, N., Shoval-Katz, A., & Ikar, D. (1999). What is Beautiful is Useable, Manuscript submitted for publication.

Veryzer, R. W., & Hutchinson, J. W. (1998). The Influence of Unity and Prototypicality on Aesthetic Responses to New Product Designs. Journal of Consumer Research, 24, 374-394.

Wakefield, K. L. & Blodgett, J. G. (1999). Customer Response to Intangible and Tangible Service Factors. Psychology & Marketing, 16, 51-68.