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# THE EFFECT OF E-SCAPE ON INTERNET SHOPPERS' COGNITION, EMOTION, AND BEHAVIOR RESPONSE

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## Abstract

*Servicescape is one of the differentiation strategies by which general shopping malls can attract customers. By investigating Internet shopping malls from a viewpoint of environmental psychology, this study tries to expand the subject of servicescape, previously used to address physical spaces, into the Internet. An analysis of 490 questionnaires found that all of the four aspects of e-servicescape (hereinafter e-scape) influenced the emotional and cognitive responses of Internet shoppers, ultimately triggering their behaviors. In addition, the effects of e-scape on customers' behavior were mediated by customers' internal responses. Based on the results, servicescape management is important on the Internet just as it is in physical space and it can be one of the effective strategies to distinguish one Internet shopping mall from another.*

**Keywords:** Servicescape, e-scape, emotion, cognition, customers' behavior

## Introduction

The Internet has transformed companies' business development into a new mode characterized by market globalization and the spread of information technology and networks. This new mode is appropriate for the economy of an information-based age. The Internet is also changing customers' consumption behaviors, thereby increasing their tendencies to make purchases via the Internet rather than at a physical store (Luo and Seyedian 2003-2004). The Internet makes transactions possible without direct personal contact, thus freeing large amounts of customers' time and not tying them to specific spaces (Eroglu et al. 2001; Sharma and Sheth 2004).

Since the Internet is a relatively new medium in which a great deal of information is offered with no direct personal contact with a seller, it is a different shopping environment from that of existing physical spaces (Degeratu et al. 2000). In such a virtual environment, customers are likely to need clues for evaluating goods, services, or other attributes, and to use such clues to evaluate attributes of the Internet shopping mall. Environmental psychology considers the environment as being an important factor affecting human beings' internal evaluation. For example, the store environment has been found to influence evaluations of in-store attributes, the level of sales in a store, customer satisfaction, and behavioral intention (Dawson et al. 1990; Donovan and Rossiter 1982; Donovan et al. 1994; Mano and Oliver 1993; Spangenberg et al. 1996). Likewise, previous studies on shopping in physical spaces have indicated that the in-store environment exerts greater effects on the purchase decision than the service itself does, directly triggering customers' behaviors, attitudes, and emotions (Bitner 1992; Baker 1987; Wakefield and Blodgett 1996). It can be said that such an in-store environment is a servicescape. Since service is fundamentally intangible, using a visible clue to make it tangible is an important strategy to improve customers' attitudes and

behavioral intentions.

Most researchers have overlooked the fact that evaluating attributes in the context of a shopping mall may differ based on stimuli in the Internet environment. Bitner (1992) maintained that industries with little interaction between customers and employees are more likely to be influenced by a service environment because employees are excluded from the list of customers' service evaluation criteria. Therefore, the concept of servicescape is important even in an Internet shopping mall. Also, how it is presented may affect customers' evaluation of shopping mall attributes, which ultimately leads to their intentions to purchase, staying at the shopping mall, or revisit it. We here define "e-servicescape" (hereinafter "e-scape") as an environmental stimulus of an Internet shopping mall that facilitates interactions between an Internet shopping mall and a customer in the course of Internet shopping.

The purpose of this study is to define the concept of e-scape and to examine how e-scape affects customers' cognition and emotion, and further how such internal responses lead to customers' behavior. This study intends to provide a theoretical basis on e-scape as an important variable to provoke customers' responses in Internet shopping malls and to empirically validate them. The study on e-scape is expected to provide Internet shopping malls with an opportunity to gain competitive advantages as well as sustainability.

## **Theoretical Background and Hypotheses**

### ***Conceptual Model***

To investigate the relationship among environmental stimuli, organisms' internal responses, and behavioral responses, this study introduces the stimulus-organism-response theory (S-O-R theory) advocated in the area of environmental psychology. The S-O-R theory is about relations among a stimulus, an organism, and a response: a stimulus is the environment; an organism is a customer in this environment; and a response is a behavior conformed to the environment. First, a stimulus means a multi-dimensional environment. Stimulus clues which have been investigated in the field of marketing include music, color, illumination, fragrance, design, crowdedness, cleanliness, and spatial arrangement. Second, an organism is caused to respond internally by such a stimulus. These responses include the experience of some kinds of emotion caused by the stimuli, evaluations of product price or quality, and so on. This stimulus is acknowledged ultimately with a thoughtful response, not by mere passive reception. The stimulus is directly connected to the response of an individual (Bellizzi et al. 1983). Third, behavioral responses may include approach and avoidance behaviors: the level of product inquiry, the length of stay at a store, the intention to visit a store, interaction with people in the store, and the expenditure have been suggested in the field of marketing (Bitner 1992; Donovan and Rossiter 1982; Ridgway et al. 1990; Yalch and Spangenberg 1988).

The S-O-R theory suggests that many aspects of the environment will affect customers, who will then move in a certain mode according to their internal responses. Bitner (1992) applied the S-O-R theory in her research on servicescape. She mentioned organisms' internal responses, such as emotion or cognition, and further noted that approach and avoidance behaviors would appear as the resulting behavioral responses.

On the basis of the S-O-R theory, this study proposes the concept of e-scape, which is an environmental factor of an Internet shopping mall, as a stimulus clue (S), cognitive responses for evaluation of attributes of a shopping mall and emotional responses that customers experience as organisms' internal responses (O), and purchase, stay, and revisit intentions as behavioral responses (R) to investigate the relations among them. This study's intent is to validate that e-scape causes customers' internal responses (cognitive and emotional), and the responses ultimately influence customers' behaviors. This suggests the possibility of expanding the theory based on environmental psychology in existing physical spaces into the Internet shopping context.

### ***Environmental Stimulus***

#### **Servicescape in the Physical Space**

The paradigm of servicescape was presented by Bitner (1992). On the effect of the physical environment on customers and employees in a service industry, she presented a conceptual model showing how a physical environment affects customers' and employees' behaviors using the concept of servicescape. Previous literature on

servicescape can be divided into two types of studies: (1) those on the aspects/dimensions of servicescape, and (2) those on the effects of servicescape on consumers' attitudes, behaviors, and so on. Baker (1987) classified servicescape into three categories: ambient, design, and social factors. As background conditions which cannot be perceived immediately, ambient means room temperature and illumination that may attract attention only in case of deficiency or discomfort. Design factors, which are visible, may involve aesthetic factors (such as architectural beauty and color), and functional ones (such as layout and stability). Social factors refer to customers and employees, including other customers, the number of employees, and appearance.

Bitner (1992) classified the constituent aspects of servicescape into three categories: ambient, spatial layout/functionality, and signs/symbols/artifacts. Ambient refers to the background properties of the environment, including temperature, illumination, noise, music, and fragrance. Generally, as factors that may affect the human senses, they all can exert great effects on human feeling, thinking, and responses to service facilities. Spatial layout and functionality refer to instruments belonging to the space for service. They are variables designating layout of furniture, machinery, and the equipment and spatial relations among them. Signs, symbols, and artifacts are the means of communication between or among customers and employees through symbolic representation in the service space. They include art decorations, certificate presentation, photos, flooring, and personal belongings. Although each category is an independent stimulus, people may perceive environmental stimuli as a whole. Employees or customers perceive environmental stimuli as a whole pattern of independent stimuli. On the basis of Bitner's (1992) servicescape model, Wakefield and Blodgett (1996) examined the effects of servicescape on customers' behavioral intention in the areas of leisure services such as American football fields, baseball grounds, casinos, and so on. They proposed layout accessibility, facility aesthetics, seating comfort, electronic equipment/displays, and facility cleanliness as aspects of servicescape.

We next review prior studies on how perception of servicescape causes customers' attitudes and behaviors. Bitner (1992) argued that the perception of servicescape affects consumers' behaviors. Wakefield and Blodgett (1996) noted that among the constituent aspects of servicescape, layout accessibility and facility aesthetics increase the perceived quality of servicescape, and that satisfaction with servicescape enhances stay intention. Baker (1987) found that the store environment influences the emotion and purchase intention that customers experienced.

These studies commonly suggest that servicescape is composed of various aspects of the physical space and has great effects on customers' responses. Consequently, there are a variety of environmental stimuli in physical space and those various stimuli are important factors which may lead to customers' responses.

### **e-Scape: Roles and Significance in Electronic Commerce**

The Internet is a sensory medium with a visible factor. Environmental factors in the Internet environment might form a positive view of a shopping mall, stimulate access to a shopping mall, and exert great influences on a consumption experience as well as perception of other factors. Thus, differentiated environmental factors in an Internet site can cause visibly contrastive stimuli and bring a higher level of perception than non-differentiated sites, thereby affecting formation of an image for a shopping mall. Satisfaction with a sensory aspect in shopping through environmental stimulants can induce customers to consider a visit pleasant and enjoyable. In other words, customers set the value of shopping at a higher level. They believe that they can be or were given better-quality goods and service. In particular, since contact between an Internet shopping mall and a customer is mostly implemented via an Internet site, good construction and design of a site can be connected directly with the users' purchases and revisit intentions. After all, the e-scape of an Internet shopping mall is its environmental factor to facilitate interaction between a shopping mall and a customer. Environmental factors in an Internet shopping mall include design, color, sound, speed, icons, labels, and layout. In other words, they are similar to environmental factors in physical space. It is likely to exert significant effects on customers' consumption experiences as well as on evaluation of attributes of a shopping mall.

We now identify the role and significance of e-scape in electronic commerce (EC), suggesting how these aspects differ from those proposed by prior research. Based on previous literature on Internet shopping and interviews with practitioners, we discuss major differential roles of e-scape as follows: First, e-scape plays a role in stimulating customers' needs to actively explore a site. Moe and Fader (2001) contended that Internet shopping should be composed of two independent behaviors: (1) consumers visit a certain site to determine whether to do such activities as information collection and alternative evaluation in the first phase, and (2) then determine whether to make a purchase through active information collection and alternative evaluation in the site in the second phase. That is, consumers enter a site, evaluate it, and explore it actively before making a purchase. In this case, e-scape may be the

basis for evaluating a site. However, the Internet is both efficient and effective in information search as compared with physical spaces. Since there can be a lack of information in many parts (Degeratu et al. 2000), consumers like to get clues for evaluating the quality of a site prior to active exploration. It is shown that e-scape is one of these clues.

Second, e-scape may influence consumers' perception of variables of goods, services, stability, payments, and ordering. This is also indicated by Mandel and Johnson (1999), who insisted on the possibility that the environmental factors of the Internet could affect consumers' perception of the attributes of a site, thereby changing their preference, or that background factors of an Internet site could have an effect on the formation of consumers' preference through associative priming. This is because the development of EC using the Internet serves to offer virtual reality, which makes distinguishing between attributes more difficult (Hoffman and Novak 1996).

As for its marketing-related significance on the Internet, e-scape is important strategically in the following ways: First, since the Internet provides information that consists of symbolic representations completely separated from physical substance, it may potentially leave greater scope for controlling customers than an existing physical shopping environment. Marketers have acquired an ability to execute great control on designing Internet shopping environment, to the point of customizing the design for each potential customer. It can therefore be said that e-scape is an important variable marketers can control. Second, the Internet not only provides a higher level for controlling the information environment for customers, but also helps consumers to adjust themselves based on their need for information, contrary to a fixed information control environment provided in the physical environment. This allows them to easily leave for other shopping malls when they are not satisfied with an Internet environment. Accordingly, it is important to design e-scape for acquiring new customers as well as retaining experienced customers.

### ***Exploring the Dimensions of e-Scape***

There has been no research on the constituent dimensions and items of e-scape. Most of the prior articles (e.g., Abels et al. 1997; Chen and Wells 1999; Ho 1997; Liao and Cheung 2001) classified mood factors to increase customers' satisfaction as well as their purchase intention, and technical factors to provide sufficient marketing functions for a company executing a commercial website. These studies also mention visual and structural factors as factors that may improve customers' responses. However, they do not address the concept of servicescape as an attribute of an Internet shopping mall, failing to identify aspects of e-scape in the Internet shopping context. This study tries to identify constituent dimensions and scales of e-scape. To do this, in-depth interviews were conducted with actual users. Since quantitative research is concerned with identifying the causal processes of concepts to verify already-formed theories (Bryman 1988), it is irrelevant to use a quantitative method for a study to inspect and describe phenomena, culture, or behaviors of a group. Qualitative research has the advantage of drawing conclusions which are derived by a quantitative method when describing field experiences, observations, or daily cases as they are (Atkinson 1990; Rafaeli and Sutton 1989). This study conducted in-depth interviews as a qualitative method and also tried to embody the results with empirical validation.

### **Interview Process**

The interview process was based on the process suggested by Spradley (1979) which consisted of a total of seven stages. Before starting the first stage, informants (information providers) were selected based upon four criteria presented by Spradley (1979): (1) Informants should have a thorough understanding of a subject. Such informants can offer profound information on the subject; (2) informants should currently belong to the cultural situation; (3) informants should be able to take sufficient time for the interview; and (4) informants should be non-analytic if possible. Once informants were selected on the basis of these criteria, an interview was conducted.

The interview was designed for informants to naturally reveal stimulus items of Internet shopping environments as a whole. Any intensive questions about environmental aspects of the Internet were not given at the beginning. By analyzing the first- and second-round interviews, what informants valued was found and selected. On this basis, a series of intensive questions were provided through a total of five rounds of interviews. In the first round, a descriptive question was asked (e.g., "Tell me about the Internet shopping you are doing."). Such a descriptive question motivates the informants to explain a situation from their own point of view. A descriptive question continued to be asked throughout the interview process. During this process, the content of the interview can be recorded. Both field notes and recordings were used in this study. During the second round, a structural question was asked to discover domains which were units of informants' cultural knowledge, and to determine how they

systematized their knowledge (e.g., “What types of Internet shopping mall environments are there?”). Third, a contrast question was asked to identify differences among those domains and their meanings (e.g., “In an Internet shopping mall environment, what differences are there between aesthetics and spatial layout and functionality?”). Fourth, a componential analysis was conducted to get a systematic understanding of attributes related to the informants’ cultural symbols in terms of meaning (e.g., “Do you think that screen crowdedness, complexity, and speed belong to spatial layout and functionality?”). Fifth, a cultural theme was discovered. Sixth, previous literature was reviewed. A field description was provided for informants to confirm that this description accurately reflected their viewpoints and complemented their opinions. Finally, the interview was completed.

This study interviewed six undergraduate and white-collar informants, regardless of gender, in their mid- or late twenties. Each had two to three years of Internet shopping experience, and all of them visited shopping malls more than once a day at that time. These informants had enough time to have a few interviews and they seemed to enjoy explaining their shopping behaviors. They had purchased many products through Internet shopping, including cassettes, books, perfumes, cosmetics, printer inks, clothes, and peripheral devices. All rounds of interviews were held over two and half months. The content of each interview was analyzed in order to be able to ask more concrete questions for the next interview. Interviews were conducted by a researcher who then tried establish a relationship with the informants. The atmosphere for the interviews was kept informal; interviews were performed in the form of conversations and conducted at the same place to maintain psychological comfort.

In addition, this study implemented discussions with research colleagues, use of proper reference data, repetitive confirmation, and confirmation with members to be free from researcher prejudice, securing reliability and validity of the interviews (Lincoln and Guba 1985). In doing so, colleagues with other objective viewpoints were requested to give advice to complement areas that the researcher might miss. Furthermore, large amounts of prior data were reviewed to integrate concepts acquired from the interviews. The researcher’s analysis and conclusions were then shared with informants to ensure the reliability and validity of the findings.

### **Item Refinement**

Based on the items acquired from these interviews as well as those presented by previous research groups, the study gathered survey items. In order to confirm the appropriateness of the initial proposed set of questions, we filtered out irrelevant questions. Also, a professional review group was formed with a doctoral student, an undergraduate student majoring in marketing, and a researcher with a Ph.D. in consumer behavior. The group examined whether there were items with an overlapped meaning in the set of proposed questions. Through this process, some items were removed. Finally, items for each variable were classified properly to improve validity of the content.

### **Validity and Reliability Tests**

To refine and further strengthen the validity of the measurement, we used a survey methodology. We incorporated the items into a questionnaire that we administered to two samples: a pilot sample of 50 and a pretest sample of 100 customers. To achieve external validity, we asked these respondents to recall their most recent Internet shopping experience before providing a series of questions to them.

For the initial pilot, we used a convenience sampling method. The primary purpose of the pilot was to ensure that the questions were well understood and the length of time to complete the questionnaire was reasonable. On the basis of the feedback from the pilot, several items were revised and reworded.

As for the pretest, a random sample of 100 customers was secured to examine further the properties of measurement scales. This pretest provided us with basic data for a power analysis, enabling us to determine the final survey sample size. We also conducted an exploratory factor analysis as well as a reliability test.

The results of the analysis showed that e-scape is comprised of four factors: (1) aesthetics, (2) ambient, (3) spatial layout and functionality, and (4) symbols/artifacts. All of the items in each factor yielded factor loadings of more than 0.5 and showed Cronbach’s alphas with values of more than 0.7; thus, each of the factors was found to have satisfactory reliability. Based on items belonging to each dimension, each dimension was named. Relevant names from prior research (e.g., Bitner 1992; Baker 1987; Wakefield and Blodgett 1996) were adopted if, based on comparison with our dimension, they were sufficiently similar.

## **Four Dimensions of e-Scape**

First, e-scape has the dimension of aesthetics. This refers to the appearance and design of the service space, that is, the aesthetic attractiveness of an Internet shopping mall. It is related to refinement, beauty, and design of an Internet site, enabling the site to attract curiosity and interest. Aesthetics plays the role of visual communication with users so that they can receive information and implement work easily. At the most fundamental level, such visual communication should prevent information overload, allowing users to maintain attention at the proper level. In addition, a consistent design is required. Lin and Lu (2000) claimed that it should be necessary to properly design an Internet site in order to have effective interactions with potential and existing customers.

Second, e-scape includes the ambient dimension, which means a background property of the service environment relating to music, illumination, and so on. In the context of an Internet shopping mall, the ambient dimension is related to sound effects, background music, moving picture presentation, and so forth. Both sound and moving images can encourage users to stay at a site longer. The ambient dimension also attracts users' attention, causes psychological effects, improves memory through association with an object, and creates a pleasant atmosphere. The ambient in a physical store can attract a customer's attention negatively, such as through a basic hygiene factor (Baker 1987). In an Internet shopping mall, however, the ambient dimension may be a selective, motivating factor causing consumers to be curious and enjoy themselves.

Third, e-scape has spatial layout and functionality. It is a variable to designate layout of instruments belonging to the space from which the service is provided and to form spatial relations among these instruments. In an Internet shopping mall, this is related to uncomplicated navigation channels and quick presentation. Sites that permit quick, uncluttered, and easy navigation have good spatial layout and functionality. It also helps enable customers to be free to access their desired information and shopping mall pages. In other words, it is important to enable customers to get relevant information in the shopping mall, to make goods easily searchable and sortable, and to lead to quick shopping. The structure of the navigation may affect the effort required for shopping at an Internet shopping mall (Baty and Lee 1995; Hoque and Loshe 1999). An uncomplicated shopping mall which permits easy navigation is characterized by ease of use (Hoque and Loshe 1999; Loshe and Spiller 1999; Nielsen 2000). It is important to pursue visual order in a layout to avoid confusing customers, and to standardize components to avoid inconsistency.

Finally, e-scape consists of the dimension of symbols and artifacts, which refers to the means of communication through symbolic artifacts within the service space. Bitner (1992) argued that such symbols or artifacts are important in communicating with customers, becoming the main means by which customers differentiate one store from another. In an Internet shopping mall, they may include labeling and icons. Dailey (2004) mentions labels, texts, and icons as clues for helping consumers navigate a website. Labeling originally referred to affixing a tag on a container or package to provide information. Labeling on an Internet site can be the text that names each piece of content or expresses a certain menu or function. Since labeling functions through language, it will have cultural overtones; what language is used in labeling therefore has important long-term ramifications. An icon can symbolize a complex function quickly and simply. An icon builds a natural correlation between form and meanings to give information easily; indiscreet use of icons might act as a visual noise and hamper interpretation. Since an icon has to play a role in maintaining an impression of the interface with the next page of a site after a user clicks by an immediate response, their diverse forms or indistinct ones on a screen may prevent users from connecting with the next page of the same site easily.

## **Comparing e-Scape and Servicescape**

There may be similarities and differences between e-scape in an Internet mall and servicescape in physical space. Those similarities include formation of confidence in a shopping mall, improvement of the perceived quality of service, and a means of service differentiation. Both servicescape and e-scape not only give visible clues to increase customers' confidence, but also provide improved recognition of service quality and differentiated shopping mall services. The differences between servicescape and e-scape can largely be divided into formal and functional aspects. Since the Internet environment consists only of a narrow and small screen, there is clear differentiation in the formal aspect of expression mediated by a computer monitor. This, in general, permits shopping through a virtual, two-dimensional screen, not shopping in real, three-dimensional space. In this case, since the structure of each Internet shopping mall is substituted by a screen, environmental factors on this screen become relatively more important.

There are also differences in the functional aspects. Menon and Kahn (2002) proposed that customers are very likely to move elsewhere when the first stimulus was low at a website. A physical space, however, could compensate for

poor aesthetics or ambient modalities by interactions with employees and goods. In particular, interactions with employees can exert a significant effect on satisfaction with shopping, attitudes toward a shopping mall, perception of service quality, and so on (Yi and Kim 1998). Since there are no employees on the Internet, the Internet site itself plays a critical role in customers' response (Jarvenpaa et al. 2000). For this reason, lack of aesthetics and positive ambient at an Internet site is not easily compensated for by other factors. Since customers hold greater control on the Internet than in physical space (Menon and Kahn 2002), they can leave a site, owing to poor spatial layout and functionality, and move to another site without difficulty or great effort. In a physical space, poor spatial layout and functionality restrict consumers' search, but movement to another store requires time and effort, which might keep a customer in a store despite aesthetic failings. Spatial layout and functionality on the Internet thus pose greater risk of customer loss than in a physical store. High quality e-scape may promote users' feelings of comfort similar to a shopping experience in physical spaces.

In addition, e-scape, including the interface and design of a site, is a means of communicating with customers (Shneiderman 1998). On the Internet, the site is a point of contact with customers; it is, in fact, generally the only vehicle through which it is possible to communicate with customers. E-scape communication is made up of color, design, sound, convenience of use, or navigation speed in computer spaces where there are no employees or other customers.

### ***Organism: Emotional and Cognitive States***

#### **Environment and Emotion**

Out of the research areas on relations among the environment, emotional responses, and behaviors, the field of environmental psychology on interaction between environment and behaviors has tried to build valid frameworks with the concept of emotion. Mehrabian and Russell's (1974) affect model, most generally cited in the field of marketing, proposed that behaviors result from the emotional state formed under a given environment. In other words, an environmental stimulus causes emotion, which then affects such behaviors as approach or avoidance. Russell and Pratt (1980) claimed that the environment, natural or artificial, arouses emotions, which are divided into two fundamental aspects: pleasure/displeasure and degree of arousal. An environment giving both pleasure and arousal is exciting; an environment producing pleasure, but offering no arousal or liveliness, is relaxing. An environment that provides both arousal and displeasure is distressing; the environment that provides both displeasure and insipidity is gloomy. It is known that people want to stay longer and spend more money in an environment where they can get a feeling of pleasure (Donovan and Rossiter 1982). Emotional responses to the environment can be transmitted to people or objects in the same environment. Obermiller and Bitner (1984) demonstrated that responders who observed goods in an emotionally pleasant environment gave more positive evaluations of the goods than those who saw the goods in an unpleasant environment.

Internet use is on the rise, but there are a few studies on comparing emotions experienced on the Internet with those experienced in physical space. Hoffman and Novak (1996) defined the concept of "flow" as a "process of positive experience a consumer achieves while maintaining balance between skill and challenge during the process of interaction with a computer-mediated environment." Skill means consumers' ability to retrieve. Challenge refers to consumers' emotion, including a need to navigate websites, interest, curiosity, and sensory excitement. They contributed to causing numerous Internet companies to take an interest in customers' experiences and their behaviors. Menon and Kahn (2002) also stated that experiences in Internet shopping could provide customers with playfulness and stimuli comparable to shopping at a physical store. They maintained that Internet shopping could not only give cognitive and informative results, but also pleasant consumption experiences.

On the basis that the Internet requires more positive participation than such media as TV and radio, Internet shopping sites may have an opportunity to provide visitors with flow or any emotional states. There are increasing attempts to focus on consumers' emotional experiences in marketing on the Internet owing to broadband's increased penetration providing high-speed Internet. This increases the possibility of giving information graphically rather than just textually. Even voice information can be added to give a holistic, true experience covering the visual and auditory senses (Carpenter 1999).

Many of the prior studies made an empirical examination of relations between environmental clues and emotional responses (Babin and Darden 1996; Donovan and Rossiter 1982; Wakefield and Baker 1998). They mentioned that the perceived servicescape includes color, decoration, music, and other atmosphere factors. These factors influence



people's moods in a certain place and induce emotional responses directly. An emotional response is the degree of consumers' emotional responses caused by external factors at a store. As a stimulus, servicescape may affect consumers' emotional responses.

Research on the Internet also involved the relations between a computer-mediated environment and customers' emotional responses, and explored which site environment may stimulate emotional responses among customers (Menon and Kahn 2002). A few studies on such relationships suggest that an Internet site that permits quick, uncrowded, and easy navigation is more likely to encourage customers to enjoy themselves and satisfy them (Pastrick 1997). Relevant site design can make customers feel good, while an irrelevant design might confuse customers and even instill negative emotions (Hoque and Loshe 1999; Loshe 1993; Nielsen 2000). Daily (2004) proposed that the atmosphere of a site may affect consumers' positive emotion, which may lead in turn to their behavioral intention. Customers tend to show more positive responses to an Internet site with good design, high speed, or easy navigation (Eighmey and McCord 1998; Fram and Grady 1995). On the basis of these discussions, the following hypothesis can be developed.

H1: e-scape will be positively associated with customers' emotional response.

## **Environment and Cognition**

A customer faces a variety of clues in a store environment. The clues are used for evaluating a store in service, quality of goods, price, and so on (Baker et al. 2002). This may be interpreted by inference theory: people tend to use an available clue in judging a thing about which they have little knowledge (Huber and McCann 1982; Nisbett and Ross 1980). Ward et al. (1992) found that consumers' inference on evaluation of in-store attributes was significantly associated with an environmental clue. Generally, consumers tend to make decisions on purchasing based on inference from various informative clues in an environment where they have no accurate information on quality of goods or service (Bloom and Reve 1990).

An Internet shopping mall is a virtual store, thereby making it difficult to give an accurate evaluation on traditional attributes. The Internet supplies a lot of information for users, which differs from the information that consumers get shopping in a physical space. Consumers tend to search for clues to infer attributes of an Internet shopping mall, and environmental stimuli provide useful clues for customers. Environmental clues or stimuli may become useful information in assessing such attributes as quality of goods, price, and service (Bitner 1992; Gardner and Siomkos 1985; Nisbett and Ross 1980; Zeithaml 1988). Accordingly, the environment is regarded as a type of non-verbal communication. Such an environmental clue plays an important role in consumers' decision-making at the point of purchase. Baker (1987) and Bitner (1992) posited that the environment greatly affects customers' evaluation of service. Baumgarten and Hensel (1987) empirically validated that an environmental clue strongly influences consumers' perception of a service provider. Kotler (1973) claimed that this is because customers evaluate the degree to which a company is concerned for its customers based on the store environment. Bellizzi et al. (1983) as well as Obermiller and Bitner (1984) found that in-store color exerted a significant effect on consumers' evaluation of the store and its goods. Mazursky and Jacoby (1986) also demonstrated that customers use the design of a store as an important clue for rating the quality of goods. Gardner and Siomkos (1985) identified that customers evaluate goods of the same brand more positively when the store is better designed. Furthermore, Nagle (1987) maintained that customers' responses to prices are determined by environmental factors since such factors may affect consumers' expectation of prices.

Aesthetics, the ambient dimension, and spatial layout and functionality of a shopping mall could change customers' evaluations of attributes of both physical and Internet shopping malls. Eroglu et al. (2001) argued that environmental factors of a medium could affect valuation of goods or service. In addition, Montoya-Weiss et al. (2003) suggested that the navigation structure of a shopping mall and the attractiveness of a site would have positive effects on customers' evaluation of the quality of service of the Internet site. Thus, we hypothesize:

H2: e-scape will be positively associated with customers' cognitive response.

## **Behavioral Responses**

### **Emotion, Cognition, and Behavioral Responses**

Human beings show two polar behaviors to the environment: approach and avoidance (Mehrabian and Russell 1974). Approach means staying, working, and getting a feeling of intimacy at a certain place. Avoidance, the opposite of approach, involves reducing expenditures, reducing length of stay, failing to work hard, or failing to assimilate. Donovan and Rossiter (1982) examined the concepts of enjoying shopping, being kind to others, spending money, and undertaking long searches in shopping as examples of approach. Many of the previous studies on emotion and shopping behaviors (Babin et al. 1994; Dawson et al. 1990; Donovan and Rossiter 1982; Swinyard 1993) demonstrated that in-store emotion leads to such shopping behaviors as the amount of time for shopping, sums of money spent on shopping, intentions to revisit, and shoppers' satisfaction. Westbrook (1980) indicated that emotion increases preference in goods or stores. Donovan and Rossiter (1982) as well as Weinberg and Gottwald (1982) showed that preference and choice had a strong correlation with a passing emotional state. Also, among shoppers' emotional responses, playfulness induced by the store environment may influence such shopping behaviors as sums of money for in-store shopping, length of stay, and intention to revisit (Donovan and Rossiter 1982; Donovan et al. 1994; Forsythe and Bailey 1996).

As with physical spaces, customers' positive emotional experience was found to increase their revisit intention on the Internet (Reichheld and Schefter 2000). Menon and Kahn (2002) found that the more playfulness customers experienced on an Internet site, the greater their intention to access the site. Some prior articles (Shaw et al. 1997; Harri et al. 1999) insisted that the increase in visual reality, commitment, and playfulness on the Internet triggers customers' approach behavior. In addition, the more spontaneous interest customers experienced on the Internet, the more approach behavior they then exhibited (Hoffman and Novak 1996). Reichheld and Schefter (2000) found that customers experiencing satisfaction on the Internet spent more money by revisits than six months ago. Therefore, we can derive the following hypothesis:

H3: Customers' emotional response will be positively associated with customers' behavior intention.

Further, customers' cognitive evaluation on the attributes of a shopping mall would affect their behavioral responses. Many studies (Sirohi et al. 1998; Zeithaml 1988; Zeithaml et al. 1996) maintained that customers' evaluation of goods and service may lead to their behaviors, including intention to visit a store. Holbrook (1996) observed that customers' evaluations on the quality of goods and price could have an effect on their behavior toward a certain store. Those researchers have argued that goods, service, price, and information provided by a store determine customers' approach and avoidance behaviors.

This aligns with Internet shopping. For example, Jarvenpaa and Todd (1997) empirically proved that customers' evaluation on such factors as value of goods, customer service, and information-providing affected purchase intention. Mark and Kelsey (1999) also noted that the properties of an Internet site, including functionality, navigation, contents, style, and information on contact, cause customers' responses. These imply that Internet shopping customers evaluate attributes of an Internet shopping mall and, on this basis, decide on an approach or avoidance behavior. Based on the above discussions, the following hypothesis can be made:

H4: Customers' cognitive response will be positively associated with customers' behavior intention.

### **Emotion and Cognition as a Mediator**

Mehrabian and Russell (1974) suggested a model consisting of human response behaviors and organisms' internal responses as variables mediating them. They were concerned about examining the effects of environment on human behaviors based on the stimulus-organism-response (S-O-R) paradigm, or relations between stimuli of external environment (S) and approach/avoidance behavior (R), including the role of mediation by the state of organisms' internal responses induced by the external environment (O). The main focus of the model is on whether an organism's internal response is a mediator in relationships between stimuli (S) and responses (R). In their proposed model, the role of customers' cognition and emotion as a mediator has been considered as very persuasive. For example, background music in a store can amuse customers and induce them to evaluate goods or service in the store more positively. As a result, customers form the intention to purchase, want to stay at a store longer, and intend to revisit. Therefore, effects of environmental stimuli will be mediated by customers' emotion and cognition. Likewise, an Internet shopping mall with an uncrowded screen, rapid presentation, excellent sound effects, or higher aesthetic attractiveness would stimulate visitors to have more a positive evaluation of goods and service. The visitors then intend to stay at the Internet site longer, conduct a search, or revisit. Thus, the related hypothesis can be given:

H5: The effect of e-scape on customers' behavior intention will be mediated by emotion and cognition.

## Research Methods and Results

### Data Collection

To test the model and hypotheses, questions on each variable were established to collect data through a questionnaire. Prior to the survey, a pretest was conducted with 100 undergraduates. Based on this, some questions that respondents failed to understand were revised. Two marketing professors were asked to review the questions to improve construct validity. On the basis of the resulting questionnaire, the hypotheses were tested. The survey was conducted with undergraduate students who were shopping on the Internet an average of twice a week. These undergraduates were then allowed to visit a designated Internet shopping mall to shop freely for about thirty minutes in a laboratory. The designated shopping mall was the one that the undergraduates knew but hardly visited. This helped to reduce the effect of knowledge, involvement, and experience related to the shopping mall. Immediately after shopping, they were asked to complete the questionnaire. A total of 511 questionnaires were returned; among them, 21 copies with incomplete responses were excluded. Thus, a total of 490 questionnaires were used for this study.

We estimated a possible non-response bias as follows. A random sample of 60 non-respondents were contacted and requested to answer questions concerning e-scape, emotion, cognition, and behavior responses. The t-tests of the group means on any of these questions showed no significant group differences between respondents and non-respondents, indicating that non-response bias was not a serious problem in this study.

More than half of the respondents were male (60.6%), and more than a half (52%) conducted Internet shopping twice or three times a week on average. More than half of the respondents (60.9%) had visited an Internet shopping mall for one to three years.

### Measures

The measures for e-scape were items refined through an in-depth interview, a pilot test, and the pretest mentioned above. The items presented by Mehrabian and Russell (1974) were used for emotion. The items of attributes of a shopping mall such as cognition were developed based on previous literature such as Jarvenpaa and Todd (1997), Price and Arnould (1999), and Suh and Kim (2002). Purchase, stay, and revisit intentions were used for customers' behavioral responses; these items were provided by Javenpaa et al. (2000) as well as Suh and Kim (2002).

### Validity and Reliability

The reliability of the measurement items was tested for internal consistency by using Cronbach's alpha ( $\alpha$ ). Through this process, items of decreased reliability were removed: one item for aesthetics (refinement of sites), one for spatial layout and functionality (complexity of search channels), one for symbols and artifacts (discrimination of the icons), and one for cognition (good after-sales service) were deleted. As shown in Table 1, the scale was evaluated to be reliable, showing the satisfactory reliability level of Cronbach's  $\alpha$  at 0.7 or above, which is generally accepted (Nunnally 1978). To refine the scale of constructs and examine convergent validity, principal component analysis was conducted with a Varimax rotation. As a result, it was divided into seven factors – aesthetics, ambient, spatial layout and functionality, symbols and artifacts, cognition, emotion, and behavior intention – having both discriminant validity and convergent validity with loading for individual items for each factor at 0.5 or above (see Table 1). The correlation matrices of the constructs are shown in Table 2.

	Items	Cronbach's $\alpha$	Factor loading	Eigen value	% of variance

Aesthetics	1. Uniqueness of a site		.623		
	2. Aesthetic beauty of a site		.701		
	3. Design superiority of a site		.833		
	4. Freshness of a site	.83	.824	2.620	8.733
	5. Attractiveness of a site		.761		
	6. Color superiority of a site		.639		
	7. Refinement of a site*		-		
Ambient	1. Superiority in sound effects		.745		
	2. Superiority in moving picture presentation	.73	.812	1.686	5.620
	3. Vividness of image presented		.765		
Spatial layout and functionality	1. Crowdedness of a screen (R)		.714		
	2. Complexity of a navigation channel (R)*		-		
	3. Convenience in use	.76	.825	1.999	6.662
	4. Ease in browsing		.757		
	5. High speed of navigation		.648		
	6. Ease in channel navigation		.527		
Symbols and artifacts	1. Superiority in icon design		.761		
	2. Visibility of the icons		.826		
	3. Appropriateness of the icons		.814		
	4. Discrimination of the icons*	.72	-	3.252	10.842
	5. Visibility of the labels		.508		
	6. Content representation of the labels		.541		
	7. Assistance in product search through the labels		.660		
Cognition	1. Superiority in the quality of goods		.791		
	2. Reliability in price		.787		
	3. Good after-sales service*		-		
	4. Stability in the security system	.84	.809	6.409	21.365
	5. Easy returns and refund policy		.698		
	6. Good complaint management service		.749		
	7. Observance of the delivery date		.725		
Emotion	1. Unhappy/happy		.926		
	2. Annoyed/pleased	.84	.859	1.867	6.223
	3. Unsatisfied/satisfied		.738		
	4. Melancholic/contented		.609		
Behavior intention	1. Purchase intention		.820		
	2. Revisit intention	.84	.858	1.500	4.999
	3. Stay intention		.840		
	Cumulative % of Variance				64.444

\* item was dropped by reliability analysis

**Table 2. Mean, Standard Deviation, and Correlation Matrices**

	Aesthetics	Ambient	Spatial layout & functionality	Symbols & artifacts	Cognition	Emotion	Behavior intention
Mean	3.319	3.172	3.364	2.583	3.042	2.823	2.557
S.D.	.631	.638	.667	.710	.630	.641	.744
Aesthetics							
Ambient	.185**						
Spatial layout & functionality	.109*	.105*					
Symbols & artifacts	.173**	.160	.306**				
Cognition	.242**	.198**	.217**	.180**			
Emotion	.430**	.225**	.122**	.130**	.353**		
Behavior intention	.173**	.203**	.123**	.178**	.385**	.252**	

\*:  $p < .05$ ; \*\*:  $p < .01$ .

## Results

The hypotheses of this study were tested by multiple regression analyses. A mediator regression analysis (Baron and Kenny 1986) was introduced to test the mediating effects of cognition and emotion on the relationship between e-scape and behavioral intention. Table 3 presents the results of the hypothesis test.

**The effect of e-scape on emotion** (see Model I in Table 3). Aesthetics ( $\beta=.394$ ,  $t=9.476$ ,  $p<.01$ ) and ambient ( $\beta=.143$ ,  $t=3.452$ ,  $p<.01$ ) have a positive effect on emotion. Neither spatial layout and functionality nor symbols and artifacts are significant in increasing emotion. Therefore, H1 is partially supported.

**The effect of e-scape on cognition** (see Model I in Table 3). Aesthetics ( $\beta=.181$ ,  $t=4.244$ ,  $p<.01$ ), ambient ( $\beta=.131$ ,  $t=3.063$ ,  $p<.01$ ), and spatial layout and functionality ( $\beta=.159$ ,  $t=3.550$ ,  $p<.01$ ) have a positive effect on cognition while symbols and artifacts ( $\beta=.078$ ,  $t=1.712$ , ns) are not statistically significant. Thus, H2 is partially supported.

**The effects of emotion/cognition on behavior intention** (see Model III in Table 3). Emotion ( $\beta=.133$ ,  $t=3.005$ ,  $p<.01$ ) has a positive effect on behavior intention, which supports H3. Also, cognition ( $\beta=.338$ ,  $t=7.620$ ,  $p<.01$ ) has a positive effect on behavior intention, supporting H4.

**The mediator effects of emotion and cognition** (see Model I, Model II, and Model IV in Table 3). This refers to a hypothesis that the effects of behavioral intention on e-scape would be mediated by emotion and cognition. The effects of e-scape on behavioral intention should be weaker or insignificant when e-scape and emotion/cognition, are inputted at the same time than when they are not inputted. As for relations between e-scape and behavioral intention, the mediating effects of emotion and cognition were found to be significant, having partial mediator effects in the relationship. That is, in Model I and II, as shown in Table 3, e-scape is significant in emotion, cognition, and behavioral intention as mentioned above; in Model IV, the influence of e-scape on behavioral intention becomes weaker when e-scape and both of emotion and cognition are entered (aesthetics  $.118(\beta_2) \rightarrow .022(\beta_3)$ ; ambient  $.157(\beta_2) \rightarrow .101(\beta_3)$ ; spatial layout and functionality  $.058(\beta_2) \rightarrow .004(\beta_3)$ ). As a result, aesthetics, ambient, and spatial layout and functionality were found to be mediated by emotion and cognition in relationships between e-scape and behavioral intention. However, symbols and artifacts were shown to have no significant effect on emotion and cognition but had direct effects on behavioral intention alone, suggesting that symbols and artifacts were not mediated by emotion and cognition. Consequently, H5 is partially supported.

Figure 1 graphically shows the results of the analysis. In Figure 1, solid arrows indicate significant relationships between two variables at the level of 0.01, while dotted arrows present non-significant.

**Table 3. Results of Hypothesis Tests**

Independent Variables	Dependent Variables		
	Emotion	Cognition	Behavior Intention

		Model I		Model II	Model III	Model IV
Related Hypotheses		H1	H2		H3, H4	H5
e-scape	Aesthetics	.394(9.476) <sup>a)</sup> **	.181(4.244)**	.118(2.638)**	-	.022(.474)
	Ambient	.143(3.452)**	.131(3.063)**	.157(3.501)**	-	.101(2.356)*
	Spatial layout and Functionality	.058(1.361)	.159(3.550)**	.058(1.270)	-	.004(0.081)
	Symbols and artifacts	.021(0.492)	.078(1.712)	.114(2.452)*	-	.088(1.999)*
Emotion		-	-	-	.133(3.005)**	.100(2.081)*
Cognition		-	-	-	.338(7.620)**	.307(6.781)**
F		32.499**	16.571**	10.512**	47.586**	18.136**
R <sup>2</sup> (adjusted R <sup>2</sup> )		.211(.205)	.120(.113)	.080(.072)	.163(.160)	.184(.174)

\*: p < .05; \*\*: p < .01. <sup>a)</sup>: Beta (t-value)

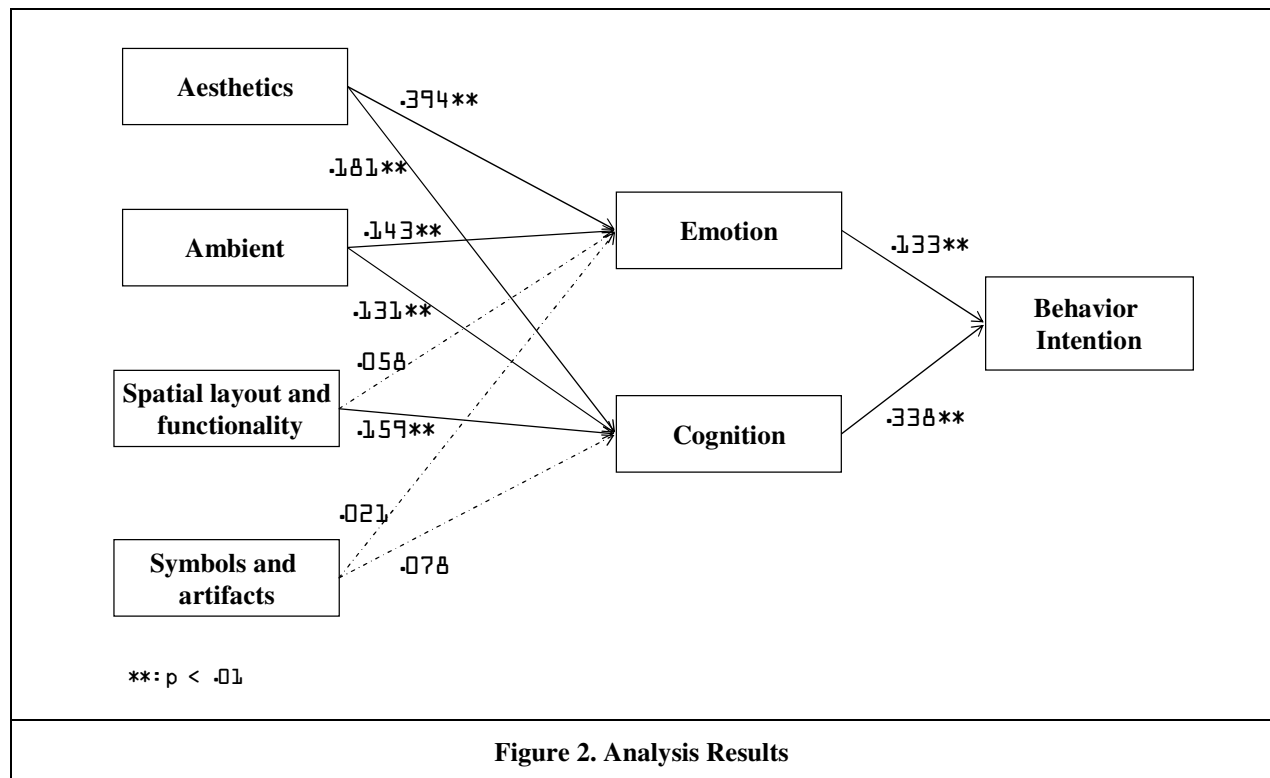


Figure 2. Analysis Results

## Discussion and Conclusion

The purpose of this study has been to discover the importance of servicescape in the context of Internet shopping malls, identify constituent factors of servicescape, and determine how these factors influence cognition, emotion, and customer behavior. For the purpose of the study, several hypotheses were developed and tested with empirical analyses. The results can be summarized as follows:

First, the roles of e-scape were identified through interviews. E-scape may stimulate customers' needs to navigate a site actively. While servicescape plays a similar role in providing an informative clue as to the quality of service or goods in physical space or on the Internet, e-scape additionally provides motives to navigate a site on the Internet. Since it is relatively easier to adjust e-scape to customers' needs than adjust servicescape in a physical space, it could control the shopping environment for individual customers and be a means of realizing the marketing concept of customers' satisfaction needs. Furthermore, since employee related factors are not available in Internet shopping, e-scape itself may affect customers' attitudes and behaviors more strongly on the Internet than in physical stores. These imply that e-scape may be an independent and important subject in the context of Internet shopping.

Second, the e-scape of an Internet shopping mall showed significant effects on cognition and emotion. An interesting finding of the study is that with e-scape the aesthetics and ambient dimensions were found to influence both cognition and emotion with spatial layout and functionality affecting cognition. Symbols and artifacts had a significant effect on neither cognition nor emotion. This indicates that e-scape, in the sensory aspect such as aesthetics and ambient, may be an environmental stimulus which induces playful emotion. Furthermore, e-scape in the pragmatic aspect, such as spatial layout and functionality, can be interpreted as encouraging customers to give more positive evaluations of goods and service presented in a shopping mall. Spatial layout and functionality is a relatively functional and cognitive factor as compared with other factors. Thus this factor is very likely to have direct effects on cognitive internal responses rather than to stimulate an emotional aspect. The results that symbols and artifacts had no relationship with cognition/emotion, on the other hand, imply that proper design of the icons, visibility of the labels, and good product search functions may neither stimulate customers to form positive emotions nor give positive evaluations of attributes of a shopping mall. However, symbols and artifacts were found to exert direct effects on customers' behaviors.

From these results, we interpret that since icons or labels improve accessibility of information for consumers, such convenience makes no contribution to inducing playfulness or getting a positive consumer evaluation of goods or service, but can only improve customers' behavioral intention such as encouraging them to stay or revisit the site. Symbols and artifacts, which are related to icons and labeling, are principal means of communication with customers. Thus they may be directly connected to the intention of immediate and unconscious behaviors rather than passing through internal responses of cognition and emotion. Internet shoppers often reveal repetitive purchase behaviors by clicking an icon or a label because it is a means of communication in itself; smooth communication with an Internet shopping mall is very likely to trigger longer stay and revisit intentions and so on.

Third, cognition and emotion were found to not only increase behavioral intention but also to mediate effects of e-scape on behavioral intention. This is consistent with the findings of the existing research on physical stores (Donovan and Rossiter 1982; Donovan et al. 1994; Dawson et al. 1990; Swinyard 1993; Yoo et al. 1998). It is noteworthy to confirm that cognition and emotion mediate the effects of e-scape on customers' behavioral intention. Practically, shopping website owners or operators should make efforts to encourage playfulness and positive evaluations of attributes of a shopping mall in order to enhance length of stay, intention to revisit, and intention to purchase. It is important to design Internet shopping sites in an aesthetically beautiful and refined way. Also, shopping site managers have to pay close attention to color selection, with music suiting the image of a site and sound effects and moving pictures to enhance Internet users' experience. These can help site information be more vivid and simplify navigation channels. Proper management of customers' emotions and cognition can improve customers' behavioral intentions toward a shopping mall.

### ***Theoretical and Managerial Implications***

This study has theoretical and practical implications as follows. Theoretically, first, this study drew on the aspects and constituent items of e-scape in detail through a qualitative research and secured reliability and validity through quantitative research. The major contribution of the study is that it developed a tool to measure the environmental stimuli of an Internet shopping mall. Second, we proved that customers also experience emotion in Internet shopping and that such emotion is an important variable in customer behavior. Most of the prior studies on Internet shopping overlooked the roles of emotional responses in investigating customers' behavior. This may be due to the attempt to explain Internet shopping behavior from a rational and pragmatic point of view. However, this study found that customers experience an emotional state even in Internet shopping, and that such emotion is a variable, like a cognitive factor, that exerts significant effects on customer behavior. Third, the mention of the Internet shopping mall environment suggests the need to accelerate investigation of the environmental aspect in future research on Internet shopping malls. While most prior studies focused on relationships between attributes of Internet shopping malls and customer behaviors, this study emphasized the importance of environmental factors in Internet shopping malls using the concept of e-scape. Finally, another theoretical contribution of this paper is that we suggest a new concept – e-scape – to predict Internet shoppers' behavior intention, such as purchasing intention. The concept of e-scape, being a good long-term predictor of Internet shoppers' behaviors, might have higher explanatory power than ease of use or usefulness of Technology Acceptance Model (TAM).

Results of this study also have certain practical implications. First, based on the fact that e-scape affects customers' cognitive and emotional experience, we suggest several implications for marketing strategies related to extrinsic clues in the Internet shopping context, where it is difficult to use intrinsic clues (Zeithaml 1988). To get customers to

form positive emotions on an Internet shopping mall, site creators need to manage design, color, and image properly by making a site uncrowded, easy to navigate, and responsive. Although some studies on Internet shopping malls have addressed how cognitive factors of a shopping mall influence customers' responses, they have failed to identify any antecedent variable which could affect customers' evaluation of the cognitive factors. In the case of Internet shopping, customers tend to evaluate cognitive factors presented by an Internet shopping mall and form their behaviors such as staying or purchasing. It is therefore meaningful to enhance the positive evaluation of cognitive factors in order to stimulate approach behaviors and to reduce avoidance behaviors. To do this, website owners and operators should not only manage the attributes of a shopping mall thoroughly, but also provide a stimulus clue for customers to give a more positive evaluation of even the same cognitive factors.

Furthermore, our finding that a greater number of environmental factors exert more effects on customers' cognitive evaluation than on their emotional experience implies that more clues are used to evaluate goods and services if there is no inter-personal or physical interaction, as is the case on the Internet. On the Internet, the computer screen replaces a display stand in the process of shopping, and the screen plays a large role in the shopping process (Menon and Kahn 2002), thus customers are more likely to be affected by e-scape. This is because online customers can easily navigate away from a website whenever they are dissatisfied, and make their purchasing decisions predominantly based on the display on their screen without any help from employees. This study provides managerial implications for practitioners in that it identifies the aspects of e-scape and validates the influence of e-scape on Internet shopping, letting managers know the importance of e-scape management.

Internet shopping mall managers should also consider an environmental viewpoint as well as cognitive and technical viewpoints of a site to provide a more comfortable shopping environment for shoppers. Servicescape is an important strategic factor in image differentiation for Internet shopping malls, providing opportunities to transmit an organizational image. In matching e-scape properly to target customers' taste, Internet shopping mall managers need to design attractive e-scape in terms of the desired image of their Internet site. It is necessary to adjust it to customers' needs and continue to change minor parts to create a better, newer atmosphere rather than to simply maintain a site. Practically, to enhance the quality of e-scape would be a cost-effective strategy for website managers to increase sales in the context of Internet shopping since managers can decorate their site in a relatively low cost manner compared with servicescape in offline stores.

### ***Limitations and Future Research Directions***

This study has several implications for Internet service; however, it has limitations and therefore some directions for future research are evident. First, this study failed to include diverse age groups and a variety of occupations. Since the sample was concentrated on undergraduate students in their twenties, this study has limited generalizability. This is because customers in their twenties may prefer some aspects of shopping over others, resulting in greater effects of environmental stimuli on customers' responses. There have been recent increases in the use of Internet shopping malls among those in middle and old age, and it is doubtful whether they would show similar tendencies as those customers in their twenties. Second, this study addressed servicescape, cognition, emotion, and behavioral intention in all Internet shopping malls. It is, however, necessary to subdivide Internet shopping malls to investigate relationships among research variables in different industry settings. For example, when subdividing into game- and information-providing sites to investigate relative effects of environmental stimuli on customers' responses, it could have greater implications on the practical side. Finally, it would be meaningful to classify customers' characteristics in examining the relationships among the research variables we introduced in this study. For example, they may vary by gender or by sensation-seeking tendency. We suspect that gender or sensation-seeking tendency might determine e-scape, which affects cognitive/emotional responses or could even produce mutual synergy effects between cognitive and emotional responses. Moreover, excluding inexperienced Internet shoppers may restrict the generalization of the findings. More elaborate examinations are needed to further specify different strategic approaches by gender, customers' sensation-seeking tendencies, or online shopping experience that can be used in managing an Internet shopping mall. This differentiation could provide a great help for practitioners.

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