Atmospheric qualities of online retailing
A conceptual model and implications

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Abstract

To address the lack of systematic research on the nature and effectiveness of online retailing, a conceptual model is proposed which examines the potential influence of atmospheric qualities of a virtual store. The underlying premise is that, given the demonstrated impact of store environment on shopper behaviors and outcomes in a traditional retailing setting, such atmospheric cues are likely to play a role in the online shopping context. A Stimulus–Organism–Response (S–O–R) framework is used as the basis of the model which posits that atmospheric cues of the online store, through the intervening effects of affective and cognitive states, influence the outcomes of online retail shopping in terms of approach/avoidance behaviors. Two individual traits, involvement and atmospheric responsiveness, are hypothesized to moderate the relationship between atmospheric cues and shoppers’ affective and cognitive reactions. Propositions are derived and the research implications of the model are presented.

Keywords: Atmospheric qualities; Online retailing; Conceptual model

Online retailing has attracted a great deal of attention in recent years due to its potential and implications for both buyers and sellers. From the retailer’s perspective, online commerce as a way of doing business offers a number of advantages. With consumers’ premium emphasis on efficient use of time and their declining interest in traditional shopping formats, combined with technology improvements that provide greater convenience and more information than traditional retailing, more retailers are considering the online as a way of doing business. From the consumer point of view, online shopping offers convenience (temporal and spatial), value (through price comparison opportunity), and hedonic consumption possibilities. “With online retailing, constraints of time and space disappear” (Kalakota and Whinston, 1997, p. 219) making it a desirable commercial medium for consumers and retailers alike.

Despite all the hype, not much systematic research attention has been given to the nature and effectiveness of online retailing. What little work exists typically focuses on the nature of the medium, neglecting to a great extent its effectiveness particularly from the consumers’ perspective (Hoffman et al., 1996). One of the major determinants of effectiveness is the atmospheric qualities of the medium through which consumers interface the product or service offering (Shih, 1998). Just as the physical environment in a traditional retail store impacts the various psychological and behavioral shopping outcomes (Donovan and Rossiter, 1982; Bitner, 1992; Sherman et al., 1997), certain atmospheric qualities of the online shopping context are likely to affect the use (intentions and actual) and results (e.g., satisfaction, repatronage, amount purchased, and time spent online in the virtual store) of online shopping.

The purpose of this article is to take a first step in examining the atmospheric qualities of online retailing as a virtual shopping outlet. Given the theory that atmospheric factors impact internal states, which shape customer behaviors in the traditional retail context (Mehrabian and Russell, 1974; Donovan and Rossiter, 1982; Bitner, 1992), we present a model and accompanying propositions. The model describes how the online retail store’s environment influences shoppers’ emotional and cognitive states that then alter various aspects of shopping outcomes.

First, major characteristics of online retailing are discussed to explicate the nature of this new retailing format. Next, the model and accompanying propositions are pre-
sented to explain the online retail environment—shopping outcomes relationship. Finally, key managerial and research implications flowing from the conceptual framework are discussed.

1. Online retailing

Of the three dominant forms of electronic retailing (TV, CD-ROM, and online retailing), the latter has been the most explosive in terms of growth and acceptance by both retailers and consumers (Kalakota and Whinston, 1997). In this category, retailing via online services has been around longer than others. These are the “online malls” offered by providers (like America Online), which have marketed such successful retailers as Tower Records and Prodigy. The other and more popular online retailing category is the one based on the Internet and, more specifically, its hypermedia information storage system, the World Wide Web. With annual Web-generated sales in the billions, retailers are considering the Web as a retail outlet because of its wide domestic and international reach, low cost, constant innovation, order taking, and customer feedback facilities, and most importantly, its ability to offer full-color virtual presentations. In analyzing the success of this format, Berthon et al. (1996) liken online retailing on the Web to a cross between an electronic trade show and a flea market. They describe it as a giant international exhibition hall where potential buyers meet and browse passively or vigorously, interacting with fellow attendees and exhibitors with the informal casualness of a community flea market.

In the face of the recent and explosive growth of online retailing, some researchers have already begun to call for more systematic research on the nature of this format by using established retailing and consumer behavior theories. A number of research questions emerge in this venue. Given the demonstrated and significant impact of store atmospherics on shopper activities and outcomes in traditional retailing, what, if any, is the role of such atmospheric cues in the online shopping context? What cues do individuals attend to when shopping online? Do principles of traditional retail store atmospherics apply to the online shopping experience? What is the impact of online atmospheric cues on consumers’ emotional states and shopping outcomes, such as satisfaction with and attitudes toward the product, store, and shopping medium? In Section 2, we present the background literature and a model to address some of these issues.

2. Background literature

2.1. Research on store atmospherics

The impact of atmospherics on the nature and outcomes of shopping has been examined by researchers for some time. Early research in environmental psychology by Mehrabian and Russell (1974) was later adapted to the retailing context by Donovan and Rossiter (1982). The latter tested the Stimulus–Organism–Response (S–O–R) framework in a retail store environment and examined Mehrabian and Russell’s (1974) three-dimensional Pleasure, Arousal, and Dominance (PAD) emotional experience as the intervening organismic state. Their findings suggested that retail environmental stimuli impact consumers’ emotional states, which then result in approach or avoidance behaviors toward the store.

This pioneer effort was subsequently followed by a number of empirical and theoretical studies. On the conceptual side, Baker (1986) presented a typology that grouped the elements of store environment into three categories: social factors (people in the store, e.g., customers and employees), design factors (visual cues such as layout, color, clutter cleanliness), and ambient factors (non-visual cues such as smells, sounds, and lighting effects). Bitner’s (1992) subsequent work on the impact of physical surroundings on the social element (i.e., customers and employees) presented a conceptual model that focused on the atmospheric qualities of service organizations. She proposed an interdisciplinary model based on the extended S–O–R paradigm. Like Baker, she also identified three groups of environmental cues, albeit with slightly different categorization. Ambient cues are defined as those affecting five senses, whether imperceptible or perceivable. The second dimension of layout and functionality refers to the way in which store furniture, machinery, and equipment are arranged as well as their ability to facilitate consumer goals. The third dimension includes signs, symbols, and artifacts; these cues represent all explicit and implicit signals that serve as communicators to the users.

Empirical work in the area has examined specific atmospheric cues and their effects on shopper responses. For example, researchers have focused on cues such as music (Hui et al., 1997), lighting (Golden and Zimmerman, 1986), color (Belizzi et al., 1983), and scent (Spangenberg et al., 1996). Overall, these studies found that atmospheric cues play a significant role in shaping shopper responses and behaviors within the retail and service environment.

3. The model

Fig. 1 presents a model intended to help explain the role of atmospherics in the online retailing context. Based on the S–O–R paradigm, this framework suggests that certain atmospheric elements of the online “store” (as depicted on the shopper’s computer screen) influence the affective and cognitive internal states, which intervene the approach (avoidance) responses to the online shopping experience.
3.1. Stimulus: online “store” atmospheric cues

Within the S–O–R framework, stimulus is conceptualized as an influence that arouses the individual. It is the factor that affects internal, organismic states. In the context of online retailing, we define the stimulus as the sum total of all the cues that are visible and audible to the online shopper.¹ As a natural departure from the stimuli present in a traditional retail store, the online retail environment lacks some of the dimensions (temperature, odor, and textures) that are defined by Baker (1986) and Bitner (1992). Nor do we have the visible presence of other shoppers and employees (the social dimension a la Baker) in the online retail environment, although their existence can be implied by indirect indicators such as webcounters, posts to a bulletin board on the site, or delays in accessing parts of the site due to the computer system being tied up with other users.

Clearly, the “store” environment of online retailing lacks some properties of traditional retail atmospherics (such as three of the five sensory appeals), but possesses some others (such as flexibility across time and space) which all combine to make it a significantly different context from the properties of conventional retail settings. In the online retailing context, the entire store environment is all but reduced to a computer screen. The traditional store designer’s ability to appeal to all senses of the shopper through an infinitely complex combination of ambient, structural, social, and aesthetic elements has now been constrained to a predominantly visual appeal via a screen. Given that the accepted classifications of the traditional store atmospherics cannot be entirely applicable to the online retailing environment, it seems necessary to suggest an alternative taxonomy.

The media richness theory (Walther, 1992), which differentiates between “lean” and “rich” media based on the number of cues offered by it, can be useful in this effort. Lean media are characterized by unequivocal and unambiguous information while richer media contain more emotional, ornamental, and emphatic features. Walther suggests that all computer-mediated communication is essentially lean given its inability to represent most of the sensory and sensual elements present in other contexts. For online retailing, the extent of leanness may be determined by the degree to which the information presented to the online shopper on the screen is directly relevant to his shopping goals. For instance, a shopper may go to a site looking for a pair of khaki pants. He may find a picture of the pants, a description of the fabric and workmanship, sizing information, the price, and terms of ordering and shipping. Such information would be directly relevant to the shopper’s task of finding a pair of pants. Alternatively, the site description could contain many decorative and/or vivid depictions (such as pictures of people enjoying some activity while wearing the pants, beautiful background colors and graphics, graphical image maps to click on to go to the next area of the site rather than simple underlined textual hyperlinks) which, while enhancing the hedonic quality of the shopping experience, may not directly provide much useful information for achieving the shopping goal.

It is clear that a more systematic taxonomy development is necessary for classifying the atmospheric qualities of online retailing. For the purposes of this paper, we begin this effort by grouping the environmental characteristics of the virtual “store” into two general categories. Consistent with the above discussion, a high task-relevant environment is defined as all the site descriptors (verbal or

¹ We include the auditory dimension despite the fact that it has not yet become a standard feature on computers.
pictorial) that appear on the screen which facilitate and enable the consumer’s shopping goal attainment, while a low task-relevant environment represents site information that is relatively inconsequential to completion of the shopping task.

High task-relevant cues include verbal content related to the shopping goals (e.g., descriptions of the merchandise, price, terms of sale, delivery, and return policies), pictures of the merchandise, availability of sampling, and navigation aids (e.g., site map, guide bar at top or bottom of page). Examples of low task-relevant cues are verbal content, which is unrelated to shopping goals (e.g., “check this out”), colors, borders and background patterns, typestyles and fonts, animation, music and sounds, entertainment (e.g., games or contests), amount of “white space,” icons, image maps, pictures other than the merchandise (e.g., for decorative purposes), indicators of secure connections/transactions, “unity” of site, webcounter, site awards, and affiliations (e.g., BBB).

The cue that is likely to be most “task-relevant” is the verbal content specifically related to the shopping goals. This content would typically include, for example, descriptions of the merchandise, price, terms of sale, delivery and return policies. Another example of a highly task-relevant verbal content would include product reviews (e.g., Amazon.com provides book reviews from both customers and literary critics; some online computer retailers include independently conducted product reviews). Further, some sites provide for “text only” options, indicating the importance of verbal content as a high task-relevant cue. A picture of the merchandise, however, is also a high task-relevant cue given that it conveys product attributes and characteristics, especially in the case of clothing or other items purchased on the basis of style or design. The ability of shoppers to “sample” merchandise can also be considered as highly task-relevant. For example, Mothermall.com provides shoppers the opportunity to get an idea of their videos by viewing the movie trailers. Similarly, Amazon.com and Borders.com allow shoppers to see excerpts from the book as does CDNow.com, which offers the chance to play a part of the music. Navigation aids can serve the same function as signage would in the traditional retail outlet, and can help a shopper move through a site quickly and efficiently thereby facilitating completion of the shopping task. For example, Borders.com has a site map and two different search functions which allow the shopper to locate merchandise easily.

Low task-relevant cues do not directly affect the completion of the task, although they can create an atmosphere that has the potential to make the shopping experience more pleasurable, trigger memories of shopping in a traditional store counterpart, or provide confidence in shopping with an unknown retailer. Cues such as color, background patterns, typestyles and fonts cannot only serve the function of making the verbal content easy (or difficult) to read, they can also create a mood or an image for the site. The amount of “white space” and the “unity” of the site are concepts traditional to print ad layout and design which may also apply to the online environment (Ahrens and Bovee, 1994). Animation can attract attention, but it may also be distracting. Similarly, icons and image maps can enhance the online retailer’s image, yet their presence may be annoying to the online shopper if they add to download times and delay completion of the shopping task. The presence of text only options on many web sites can be taken as an indication that there is a segment of the market that prefers to do away with these sorts of environmental cues.

3.2. Organism: affective and cognitive states

According to the S–O–R paradigm, organism is represented by affective and cognitive intermediary states and processes that intervene the relationship between the stimulus and individual’s responses. Shoppers’ affective states can be conceptualized along a number of dimensions. Most work in environmental psychology focuses on the Pleasure, Arousal, Dominance (PAD) dimensions of affective response as expected reactions to environmental stimuli (Mehrabian and Russell, 1974). Researchers interested in effects of the retail environment have found the...
The affective and cognitive internal states of online shoppers mediate the relation between the perceived online store environment and shopping outcomes (approach and avoidance behaviors).

3.3. Moderators: involvement and atmospheric responsiveness

The proposed model suggests the moderating role of two individual characteristics that are likely to affect the nature of the S–O relationship (see Fig. 1). **Involvement** refers to the degree of personal relevance, which is a function of the extent to which the online shopping activity is perceived to help achieve consumers’ goals. We posit that consumers’ involvement with the shopping task will influence the type of impact online cues have on his/her intervening affective and cognitive states. Specifically, we expect high involvement shoppers to be more concerned with the informational content depicted on the screen because they view the online shopping process as a means–end chain that links the computer-mediated activity with their goals. Under these circumstances, the online stimulus with low relevance to completing the shopping task is likely to interfere with the elaborate information-processing goals of the high-involvement shopper.

This view is akin to the central vs. peripheral route information processing theory suggested by Petty et al. (1983). The highly involved shoppers are likely to pursue central cognitive processes, which will enable them to interpret the stimulus cues in order to form product attitudes and purchase decisions. Hence, low relevance content of the stimulus might clash with shoppers’ propensity to use central processing, thus resulting in negative affect and negative attitude toward the online shopping process. The reverse would be true when the online retail screen with a highly relevant content enhances the involved shoppers’ elaborate processing efforts, thus leading to the creation of a positive affective and attitudinal state. This is in contrast to the low involvement shopper who might be more interested in the hedonic qualities (Holbrook and Hirschman, 1982) of the online shopping activity and the entertainment value it provides (Shih, 1998).

**Atmospheric responsiveness** is the second moderator that is proposed to affect the S–O relationship in the online retailing context. Atmospheric responsiveness is defined as the tendency to base patronage and purchase decisions on the store’s physical qualities (McKechnie, 1974). Put differently, this trait is reflected in the extent to which environmental characteristics influence customers’ decisions on where and how to shop and how much time to spend shopping. Heightened sensitivity to decor and physical environment is associated with aversion to physical and social distraction, discontent with environmental stimulation, and an overall disenchantment with external environment (Grossbart et al., 1990). Hence, in the context of online shopping, we expect involvement and atmospheric responsiveness to influence the relationship between online shopping stimuli and consumers’ emotional state. Consequently,
relationship between the perceived online store environment and online shoppers’ affective and cognitive states.

P4. High (low) involvement online shoppers who are exposed to predominantly low (high) task-relevant online store information will experience negative (positive) affect and form negative (positive) attitudes toward the online shopping process.

P5. High (low) atmospheric response online shoppers who are exposed to predominantly high (low) task-relevant online store information will experience negative (positive) affect and form negative (positive) attitudes toward the online shopping process.

3.4. Response: approach/avoidance behaviors

The response in the S–O–R paradigm represents the final outcome, the approach or avoidance behaviors of the consumer (Donovan and Rossiter, 1982; Sherman and Smith, 1986; Sherman et al., 1997). Approach behaviors refer to all positive actions that might be directed toward a particular setting, for example, intentions to stay, explore, and affiliate, while avoidance concerns the opposite (Mehrabian and Russell, 1974; Bitner, 1992). In the traditional retail setting, Donovan and Rossiter (1982) found that shoppers’ environmental perceptions affected their approach behaviors in the form of time and money spent, returning, store exploration, and so forth. Milliman (1982) found similar approach/avoidance responses when supermarkets were exposed to different tempo of background music. Within the online shopping context, the proposed model posits similar approach/avoidance behaviors depending on the perceived “store” environment and the mediating effects of individual traits and internal states. For example, to the extent that the online store information facilitates or impedes the attainment of shopping goals, we would expect the online shopper to exhibit positive or negative behaviors toward the particular site. Hence:

P6. Online shoppers’ positive (negative) affective and positive (negative) attitudinal states lead to approach (avoidance) behaviors such as online store repatronage (i.e., site revisit), amount of money and time spent in the online store, and exploration of the online store offerings (vs. avoidance behaviors in the opposite direction).

4. Research implications

The proposed conceptual model suggests a number of research avenues. Given that the model represents a first step in conceptualizing online retailing from an atmospheric perspective, there is opportunity for theoretical and empirical research in this area. Each of the links proposed in the model and its accompanying propositions offer avenues for more detailed assessment of the specific relationships and their outcomes.

Perhaps the first step towards theory building in this context involves taxonomy development. Before we can analyze the impact of store atmospherics on online shoppers, we first must take stock of all the potential environmental cues that are represented by this format. Put differently, there is a need to systematically develop a comprehensive taxonomy of online atmospheric cues and to identify their major dimensions similar to what has been done within the traditional retail store environment by Baker (1986), Bitner (1992), and others. While our suggested categories of high and low task-relevance may be appropriate, more detailed research is needed in this venue. Further, for retailers who maintain both a traditional and an online retail presence, additional research could be undertaken to determine whether there is an effect of memory of the actual store environmental cues on perceptions of the online store atmospheric cues.

Another group of conceptual research issues centers around the moderating or direct effect of personality traits. The proposed model suggests involvement and atmospheric responsiveness as two possible individual variables. Yet, there are a number of other potentially significant factors, such as risk aversiveness and confidence, which may be applicable in this context. To what extent are high risk-takers different from risk aversives in their attitudes toward, willingness, and satisfaction with shopping online? What role will different types of self-confidence (e.g., confidence in technical ability, confidence in general shopping ability) play in consumers’ approach/avoidance behaviors regarding online shopping? How, if ever, does the atmospheric quality of the online store affect consumers’ confidence in and risk perceptions of online shopping? Specifically, which particular online atmospheric cues are more influential in affecting attitudes toward and intentions to use online shopping?

In addition to conventional variables, internet research is producing new constructs which, while irrelevant in the traditional retail context, are very applicable to the new shopping experiences that are offered by technology. One such construct is telepresence, which describes the extent to which consumers feel their existence in the virtual space (Schloerb, 1995). Shih (1998) suggests that one’s feeling of telepresence is determined by the configuration of the technology that allows users to interact with the environment. If this is the case, it is curious to understand how online atmospherics can enhance or inhibit shoppers’ subjective sense of telepresence. For example, is vivid information with decorative metaphors and graphical illustrations (i.e., information which is likely to be low task-relevant) more influential in increasing shoppers’ telepresence and bringing them “into” the shopping environment than highly relevant but “dry” site information? What is the impact of
shoppers’ felt telepresence on their affective and cognitive states? What impact does it have on the evaluation of the shopping outcomes and approach/avoidance behaviors?

Research opportunities are also available in extending the environmental psychology theories into the online shopping context similar to what has been done in traditional retailing research. A case in point is the work on crowding which has been successfully applied to the retail store context. Theoretical views on crowding posit that stress resulting from an overload of social or merchandise density can influence consumers’ internal states and subsequent shopping behaviors and outcomes (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990; Hui and Bateson, 1991). Future studies can examine the applicability of crowding theory in the online context through theoretical and empirical research.

In addition to environmental psychology, other previously underutilized sub-fields in psychology are now being considered as potential explanatory paradigms (Aldersey-Williams, 1996). Psychophysics, for example, extends the field of ergonomics into the area of human visual and aural response and focuses on issues such as the legibility of typographic fonts on computer screens and desirable levels of brightness, colors, and contrasts. Cognitive psychology concerns itself with how we think, understand, and remember, and examines how best to present information and how much of it people can absorb. Finally, ecological psychology focuses on human perception and studies how individuals are affected by the environment around them. All of these disciplines are rich with theories and constructs, which can enhance our understanding of how online store atmospherics can affect consumers’ reactions and responses to online shopping. While the existing trend in cyber technology seems toward greater realism via computer icons, metaphors, and increasing use of sounds, there seems to be disagreement as to how this can be achieved. Among the debated issues is whether metaphors and icons should be lifelike or abstract, humorous or serious and whether auditory icons (“earcons”) are superior to visual signals (Aldersey-Williams, 1996). Each of these issues has a tremendous bearing on the availability and potency of the atmospheric qualities that represent the online virtual store. Much creative research can be conducted on the nature and impact of these different computer-mediated atmospheric cues. For example, one can examine the potential influence of a store “earcon” (e.g., the sound of a cash register or a store greeter) on online shoppers’ affective/cognitive states and their ultimate approach/avoidance responses to the virtual store. Similarly, the role of animation and its impact on shopper cognitions and affect can be examined.

From a technical perspective, given the novelty of its format, research on online shopping is likely to open up a whole new set of research avenues for measurement and, particularly, method development. Typically, empirical research on the impact of environmental qualities is limited by a number of physical and practical constraints imposed by the traditional retail setting. The virtual store, however, should allow researchers more flexibility in terms of the ability to manipulate various atmospheric elements across time and space. While very few researchers have the opportunity to create their own retail stores for experimental purposes, this is a viable option in the online retailing context. Retail web sites can be set up so that online shoppers are randomly and unobtrusively exposed to various atmospheric manipulations. Approach/avoidance responses such as time spent at the site and number of repeat visits can easily be measured. Hence, experimental manipulations can be realized and behavioral outcomes measured with negligible investments in time and financial resources. Furthermore, retailers with online stores are likely to be more willing to share their sites with researchers because the major limitation of doing research in the traditional store (impeding shopping activities and invading privacy of shoppers) would be irrelevant in the online setting.

5. Conclusion

In conclusion, the model presented here represents a first step in conceptualizing the atmospheric cues and responses present in the online shopping context. Given both the increasing number of online stores and shoppers, and the critical strategic importance of the store environment (real or virtual), this retail format is likely to receive increasing academic and managerial attention. Clearly, the area is wide open to all kinds of theoretical and methodological contributions. In particular, the online applications of the topic afford marketing researchers the unique opportunity to infuse the discipline with new paradigms and techniques.

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