Please Smile, the CCTV is running!

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Abstract

The Closed Circuit Television system is a tool employed in most retail environments to ensure public security, especially after the September 11 attacks, but it is usually ignored by researchers. For shoppers, CCTV may be a critical factor affecting their perspective on a retail environment and their purchasing behaviors, especially when CCTV and retail density exist together in a retail store. This study finds that shoppers' hedonic and utilitarian evaluations of their shopping experiences are most positive under conditions of moderate notice of the CCTV accompanied by high density and extreme notice of CCTV accompanied by low density. The results highlight the need to examine the interactive effects among retail factors to understand the impact of retail environments on shoppers.

1. Introduction

Turley and Milliman's research [32] highlights a variety of shopping responses that retailers could influence and the different retail environment factors involved. Studies on retailing have generally found that the retail atmosphere really affects shopper behavior and shopping outcomes. For example, past research has investigated the significant influence of retail environment factors in various commercial settings, such as banks [9], supermarkets [27], and malls [33]. However, few studies have examined the interactive impacts among retail factors in a single study. The idea of looking at a ''basket'' of retail factors at a time rather than a single one is fairly new and is clearly under-researched (e.g., [12]).

Two factors, the Closed Circuit Television system (CCTV) and retail density, would be special factors in a retail store. CCTV exists in most retail environments but is usually ignored by researchers. The importance of CCTV is going nowadays, especially in terms of counter-terrorist uses since the September 11 attacks. As to the protection of the right to privacy, it seems to be the reason why retailers post notices on the use of CCTV in their retail environments. However, the question is whether a moderate or an extreme notice of the use of CCTV should be employed in retail environments of varying density. Retail density means that shoppers perceive retail crowding when lots of people and objects occupying a specific space interfere with their activities [11]. When the retail environment is unusually dense, shoppers might feel uncomfortable and their opinion of the store and its shopping environment could be adversely affected [11,24].

It is proposed that the interactive effect of moderate/extreme notices of CCTV and retail density has a significant influence on shoppers' evaluations of the hedonic and utilitarian value of their shopping experience. To test the conceptual model presented in this study, we use videotapes to simulate the experience of being in a retail store. This method has proven to be an effective medium for conducting environmental representations (e.g., [3,7]).

2. Conceptual Factor: the Attributes of Notice of the Presence of a CCTV

Since the September 11 attacks, the issue of public security has become an urgent priority, and retail environments are not exception. For the purposes of security and the measurement of service procedures, CCTV has been applied to most retail environments. However, few studies on the retail environment deal with the topic of CCTV. Some sociological research indicates that CCTV has an impact in various locations, such as on buses [29], in parking lots [31],

and in small businesses [16]. In a survey conducted by [8], the respondents were asked how much they mind being watched by the CCTV system in public? The results show that almost a quarter of the participants do mind being watched under such circumstances. Regarding the field of retailing, the CCTV system also plays an important role in public security, crime detection, and the assessment of service procedures.

"Undermanning" has been defined in Barker's theory [2] of behavioral ecology as a condition that occurs when the number of employees in a retail environment is lower than the setting needs to function properly. Under such circumstances, CCTV plays the role of a security guard in retail environments, making sure that the retail setting functions properly. Nowadays, due to the increased awareness of public security, CCTV is not a secret guard in retail environments anymore. It is the retailers' responsibility to remind shoppers that the CCTV is being used in order to avoid infringing on their right to privacy. Therefore, how to point out to customers the existence of the CCTV in a retail environment has become a serious issue.

A lot of research in psychology and decision science has been done on the subject of framing (i.e., presenting logically equivalent options in semantically different ways). An important issue is whether framing a course of action in terms of moderate versus extreme notices affects shoppers' reactions to the existence of CCTV. In attribute framing, the object of the frame is an attribute of the decision option. For example, if we say that an operation is successful 50% of the time or not successful 50% of the time, we implicitly present "success" as an attribute of the surgery [23].

Krishnamurthy, Carter and Blair [20] indicate that moderate or extreme attribute framing can be achieved through various means, including the presentation of desirable versus undesirable attributes (hamburger meat is 80% lean vs 20% fat), the presence versus the absence of a desirable attribute (a health treatment is successful 80% of the time vs not successful 20% of the time), and the absence versus the presence of an undesirable attribute (80% of patients do not experience side effects vs 20% of patients do experience side effects). Levin and Gaeth [21] suggest that moderate attribute framing activates favorable associations in the memory, while extreme framing activates unfavorable associations, and these affect-laden associations influence evaluation and persuasion. In this study, moderate/extreme notices of CCTV are manipulated in conjunction with retail density to indicate in what way shoppers' evaluation of their shopping experience is affected.

3. Conceptual Factor: Retail Density

Crowding is perceived as uncomfortable in shopping environments [5]. Research on crowding clearly distinguishes among perceived crowding and human density [24,18], spatial density [24], functional density [10], and perceived control and choice [18]. Human density emerges as the most important component of crowding. Crowding is likely to create some psychological stress and increased arousal on the part of shoppers who feel an invasion of personal space and a limitation in freedom. Of course, shoppers' perception of retail density is related to their expectations, past experiences, and personality traits. The system overload theory [26] holds that shoppers are exposed to too many stimuli under high human-density conditions. Shoppers might have less time to process atmospheric cues [14]. Machleit et al. [24] found that human and spatial crowding are immoderately correlated with Mehrabian and Russell's [25] pleasure dimension and moderately correlated with Izard's [19] ''hostility triad'' (anger, disgust, and contempt). The mediating effect of human density and perceived crowding on perceptions and emotions also influences shopping behavior. Shoppers in conditions of higher retail densities might reduce their shopping time, abandon their shopping plans, rely more on shopping lists, and refrain from exploratory behaviors [10].

Density is the root cause of the crowding experience [11]. When a shopper perceives a retail environment as abnormally dense, they perceive it to be confining and constraining, which leads to the state of crowding. It is fair to say that highly dense situations result in perceptions of crowding, which in turn sensitize the shoppers to actual or potential problems resulting from limited space [30]. In the retail context, density might induce tension and confusion, leading to less favorable evaluations of the shopping experience [10,14].

4. Interaction of Factors: the Attributes of Notice of the Presence of a CCTV and Retail Density

Undeniably, both density and the presence of CCTV are commercially significant atmospheric factors and issues in retail that are of interest to both retailers and marketing researchers. From the retailers' point of view, retail density and the need for CCTV might imply a good stream of people and large business revenue; however, from the shoppers' perspective, retail density and the existence of CCTV might be the last thing on their list of preferences. When a retail

store is crowded, shoppers might feel uneasy and think that the store should add some security devices in order to ensure public safety, a reaction which results from their perception of the problem of "undermanning". However, shoppers' might try to escape from very dense retail environments and the surveillance of the CCTV in order to avoid such uncomfortable experiences. In order to reconcile the contrasting roles of CCTV in crowded and in empty retail environments, the display of desirable versus undesirable attributes of notices of the existence of CCTV is considered a better way to ease shoppers' discomfort. The effect of these two variables (moderate/extreme notice of CCTV and high/low retail density) might have significant implications. For example, to what extent can the impact of one of these factors be mitigated or offset by the other? How do these two variables influence shoppers' hedonic and utilitarian shopping values [1]? The main purpose of this study is to evaluate the interactive impact of these two variables on shopper responses.

The schema incongruity theory tells us that when faced with stimuli that are mildly incongruous while having prior expectations, human beings engage in more elaborative information processing [17]. In situations of mild incongruity, unusual elements might increase individuals' arousal and lead to favorable evaluations of the situation. On the contrary, extreme incongruity is defined as the case in which shoppers can't deal with the situation without making some fundamental changes in their existing cognitive structure, such as redefining the original "mall" schema. Such a mental process might likely result in more extreme evaluations than would those resulting from moderate incongruities.

A situation of moderate incongruity is expected to arise from the interaction between moderate/extreme notice of CCTV and high/low of density in the retail setting. Furthermore, shoppers should likely make more favorable evaluations of their shopping trips in situations of moderate incongruity than they would in extremely congruent or incongruous scenarios. The evaluations employed here are hedonic and utilitarian assessments. Hedonic assessments reflects the entertainment and emotional value of shopping trips, while utilitarian assessments reflect whether the shopping tasks were accomplished [1]. Together, these two types of evaluations provide a total assessment of the overall evaluation of a shopping trip. Therefore, we hypothesize that:

Under the moderately incongruent conditions of a moderate (extreme) notice of the CCTV and high (low) density, hedonic and utilitarian evaluations of the shopping experience will be more favorable than under the congruent conditions of an extreme (moderate) notice of the CCTV and high (low) density.

5. Method

A pretest was employed to examine whether the attributes of the sentences used in a notice of the existence of a CCTV system are moderate or extreme. Forty-two EMBA students were asked to express their feelings about these sentences. The pretest questionnaire consisted of seven sentences which were measured on a 5-point Likert-type scale, with anchors set as 1(strongly extreme) and 5(strongly moderate). On the basis of the results of the paired-samples T-test, "Please Smile, the CCTV is running!"(Mean=4.48) and "Taping now! Shoplifters will be fined ten times the price of the stolen goods!!"(Mean=2.40) were chosen as the key moderate and extreme sentences for the following factorial designs test. The study applied a two-by-two factorial structure (moderate/extreme notice of CCTV and high/low retail density). Furthermore, Chinese New Year being the most important and longest vacation of the year for Chinese people (as significant to them as Christmas is to people of the West), Chinese New Year's Eve was chosen as the high density setting and the day after the Chinese New Year vacation as the low density setting.

To test the hypothesis, videotapes were used to simulate the experience of a retail store environment. The videotape presentation has proven an effective medium for environmental representation (e.g., [3,7]). The research setting was a home furnishings store (B&Q) located in northern Taiwan. To provide a realistic store setting and to create a variation in the environmental stimuli, four videotapes were created and manipulated using two environmental components in a 2×2 between-subjects full factorial design. Specifically, the attributes of notices of CCTV (moderate or extreme) and the density of the retail store (high or low) were manipulated across treatments.

As Monroe and Krishnan [28] mention, the influence of store environment cues on consumer inferences might be stronger when consumers are unfamiliar with the store. Therefore, we recruited 230 Executive-MBA students in southern Taiwan as our subjects and ensured that the retail store was unfamiliar to them. Fifty-one percent of the participants were men; 72% were between 35 and 45 years of age and 28% over 45 years of age; 75% reported a household income of greater than USD$2,000 per month; and over 87% of the subjects indicated that they had visited home furnishings stores (ex: B&Q) in the past year. This means that participants tended to be familiar with shopping in

home furnishings stores but not familiar with the experimental setting.

Before each participant viewed a five-minute videotape that visually simulated browsing around a retail store environment, they were asked to prepare a shopping list for that shopping trip. The video first showed the entrance of the store (with the notices of the existence of CCTV in plain view), then it started glancing at the furnishings on display and moved around aisles, showing close-up shots of notices of the existence of CCTV, the surrounding shoppers also being visible throughout the entire store. According to a previous study [12], significant interactive effects might be observed when using a more “noisy”density assessment. For purposes of realism, the videotapes also included clamor reflecting either high or low retail density. After viewing the videotape, subjects were instructed as follows:” Please base your answers on what you have seen on the videotape. This questionnaire contains a series of questions that ask you about your perceptions of the shopping trip. There are no right or wrong answers to the questions—we are interested in your own opinions”. Subjects then completed a questionnaire that contained items measuring the model constructs.

6. Results

Questions on hedonic evaluations included: “This shopping trip was truly a joy, (HED 1)”“I enjoyed this shopping trip for its own sake, not just for the items I may have purchased, (HED 2)”“Compared to other things I could have done, the time spent shopping was truly enjoyable, (HED 3)”“This shopping trip truly felt like an escape, (HED 4)” and “I continued to shop, not because I had to, but because I wanted to. (HED 5)” Questions on utilitarian evaluations included: “While shopping, I found just the item(s) I was looking for,(UTI 1)”“I accomplished just what I wanted to on this shopping trip, (UTI 2)”“I was disappointed because I had to go to another store(s) to complete my shopping. (UTI 3)” All the hedonic and utilitarian evaluations employed 7-item Likert scales adapted from Babin et al. [1] (measurement statistics as shown in Table1). Subjects also completed final behavioral-intention statements: “I would like returning to this retail store, (BI 1)” and “This is a kind of place where I would spend more money than expected. (BI 2)”which was adapted from Eroglu et al. [12].

Table 1 Measurement statistics table

Item	Mean	Standard Deviation	Factor Loading	Cronbach’s alpha
HED 1	4.77	1.46	0.86	0.86
HED 2	4.06	1.61	0.85	
HED 3	5.47	1.32	0.70	
HED 4	4.05	1.48	0.85	
HED 5	3.76	1.61	0.78	
UTI 1	4.13	1.55	0.85	0.88
UTI 2	4.18	1.45	0.89	
UTI 3	4.17	1.44	0.84	
BI 1	3.01	1.62	0.91	0.83
BI 2	4.96	1.42	0.96	

7. Hypothesis Test and Exploratory Analysis

It was hypothesized that the interactive impact of the attributes of a notice of CCTV and retail density might produce shoppers’ responses. A MANOVA test indicated no significant main effects on CCTV notice attributes ($p = 0.771$) and retail density ($p = 0.692$), but there was a significant interactive effect between the two variables ($p = 0.005$). The univariate ANOVA interaction for hedonic evaluations ($F = 6.983$, $p = 0.005$) and the univariate ANOVA interaction for utilitarian evaluations were significant ($F = 6.136$, $p = 0.004$). As shown in Table 2, the highest means for both hedonic and utilitarian evaluations happen under the incongruous conditions of moderate CCTV notice accompanied by high density and extreme CCTV notice accompanied by low density, just as hypothesized. This means that the data support the hypothesized interaction between CCTV notice attributes and retail density.

Table 2 Interaction of Attributes of Notices of CCTV and Retail Density for Hedonic and Utilitarian Evaluations

		Hedonic Evaluations		Utilitarian Evaluations	
		CCTV Notice Attributes		CCTV Notice Attributes	
		Moderate	Extreme	Moderate	Extreme
Retail Density	High Density	3.65*	3.12	4.23*	3.47
	Low Density	3.07	3.89*	3.19	4.09*

【*】means the highest score for both hedonic and utilitarian evaluations happen under the incongruous conditions of moderate CCTV notice accompanied by high density and extreme CCTV notice accompanied by low density.

Finally, future approach/avoidance intentions of the participants were measured on the basis of their evaluation of the statement: "I would avoid returning to this retail store", measured on a 1–5 agreement scale. ANOVA results demonstrated that only the effect of the attributes of a notice of CCTV ($p=0.004$) was significant; in other words, shoppers would avoid shopping in a retail store which posted extreme notices of the existence of a CCTV ($\mu_{moderate}=4.08$, $\mu_{extreme}=2.92$).

8. Discussion

This study approaches work on atmospheric effects in retail stores from a new direction by primarily focusing on the attributes of notices of the existence of a CCTV, especially when combined with retail density. Furthermore, whereas lots of studies on retail environments have focused on the influence of individual retail variables, this study examines the interactive effects of two essential retail factors: CCTV notice attributes and retail density.

The results show that shoppers' hedonic and utilitarian evaluations of their shopping experience are highest under conditions of moderate CCTV notice attributes accompanied by high density and extreme notices attributes of CCTV accompanied by low density, which is consistent with the schema incongruity theory [17]. When in a dense retail store, shoppers need to process more information and keep shorter distances between themselves and others. The information overload theory [26] applied to crowding defines the latter as a high density condition in which the rate and amount of environmental stimuli exceed the capacity to cope with them. Shoppers may feel uneasy when sensing the existence of the CCTV in a dense retail store; however, a moderate notice of the CCTV (in contrast to an extreme one) in this situation may relieve shoppers' anxiety and make them feel comfortable and secure while shopping in this retail store. Such a positive perception may lead to the retail store being thought of as a friendly environment, and shoppers may finish their shopping tasks and experience a nice shopping trip. On the contrary, when shoppers browsing around a low density retail store catch sight of an extreme notice of a CCTV, the idea comes to them is that although the store isn't full of shoppers, the retailer still strictly secures the area against dangers inherent in a retail setting. The resulting impression is that the retailer really cares about the shoppers. As opposed to the case of a moderate notice of a CCTV in a low density retail store, shoppers unhurriedly approach an extreme notice of a CCTV, owing to the fact that shoppers don't need to process much information in a low density retail setting.

The results of this study also correspond to the attribute framing effect, which indicates that people respond to positive framing more favorably than they do to negative framing. This effect has been replicated in a wide variety of contexts, including product evaluation [21] and medical treatments [22]. According to the stress model [13], shoppers in a retail setting become more sensitive as they are made aware of the existence of a CCTV system. At the moment of recognition, customers' emotions may change from moderate to extreme as a result of the moderate effect of the CCTV system.

Since the September 11 attacks, public security has become a momentous issue. For most retail stores and public places, the existence of a CCTV for security purposes is thought of as a "necessary evil". This is unclear the application

of CCTV as well as keeping customers in good moods may not be complete in both respects. According to this research, extremely worded notices really depress consumers' emotions. The results also indicate that applying the attributes framing effect to the design of notices of the existence of a CCTV may harmonize shoppers' perceptions, which in turn could lead to positive reactions toward the retail atmosphere.

This study has several limitations. First, Baker [4] mentions the difficulty of and the expenses incurred when manipulating elements of the environment in a real store setting. Laboratory experiments are obviously more affordable but certainly less realistic alternatives. This experiment was conducted on the basis of a factorial design; however, future research should be conducted in real shopping centers in order to generalize our findings. Second, a lot of effort may be required to develop a standard measure for retail density. In the present study, we use before/after the Chinese New Year vacation to classify the retail environment as either of high or low density, respectively. Researchers should develop more creative methods of measuring retail environment density in the future. Third, from the point of view of the protection of the right to privacy, it is important for retailers to inform shoppers that there are several CCTV around the store. However, cultural aspects may influence the value assigned to this right, especially with respect to the collectivism/individualism dichotomy. Reactions to notices of the existence of a CCTV and dense retail environments might be less negative in the East than they are in the West. However, this must be confirmed by future research.

In conclusion, our research focuses on the effects of the combination of notices of a CCTV system and retail density. CCTV systems are basic equipment in retailing settings nowadays, but they differ from valence environmental cues, such as music and scent, in that shoppers may feel disturbed, uneasy, and even anxious when they discover the presence of a CCTV. However, this study indicates that the suitable application of the attributes framing effect entails positive reactions from shoppers, regardless of whether they are in high or low retail density. Retail managers should adapt their notices of the existence of a CCTV according to the retail density to put shoppers in a cheerful frame of mind. Furthermore, recalling the earlier study on the of incongruity theory by Hastie and Kumar [15], the fact that the retailing industry is increasingly competitive makes it critical that retail environments provide shoppers with a maximum of efficiency and pleasure. Given that reality, the combination of the elements of the retail atmosphere, such as density, CCTV, music, lighting and scent, are likely to be the focus of more and more research and managerial attention in the future.

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