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## **INFLUENCE OF PHYSICAL ENVIRONMENT ON DISCONFIRMATION, CUSTOMER SATISFACTION, AND CUSTOMER LOYALTY FOR FIRST-TIME AND REPEAT CUSTOMERS IN UPSCALE RESTAURANTS**

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### **ABSTRACT**

This study proposed a conceptual model to examine how customers' perceptions of physical environment influence disconfirmation, customer satisfaction, and customer loyalty for first-time and repeat customers in upscale restaurants. Using a structural equation modeling analysis, this study showed that facility aesthetics, lighting, layout, and social factors had significant effects on disconfirmation. Moreover, disconfirmation had direct influences on customer satisfaction and customer loyalty. Customer satisfaction also positively influenced customer loyalty. Finally, the impacts of facility aesthetics, lighting, service product, and social factors on disconfirmation significantly differed between first-timers and repeaters. The implications for academic researchers and marketing practitioners were discussed.

**Key Words:** Physical environment; disconfirmation; customer satisfaction; customer loyalty; first-time and repeat customers; upscale restaurant.

### **INTRODUCTION**

The importance of attaining distinctive atmosphere has gained growing attention among hospitality and scholars and managers since it is considered one of key factors in attracting and satisfying customers in the hospitality industry (Han & Ryu, 2009; Jang & Namkung, 2009; Liu & Jang, 2009; Ryu & Jang, 2007). A number of studies identified that customer reactions to the physical environment may be more emotional than cognitive, particularly when hedonic consumption is highly involved (Ryu & Jang, 2007; Wakefield & Blodgett, 1994). While consumption of many types of service (e.g., consumption of a ready-to-eat food) is driven primarily by utilitarian (functional) purposes, consumption of leisure services (e.g., fine-dining experience) is largely driven by hedonic (emotional) motives (Lin, 2004; Ryu & Jang, 2007). Hedonic aspects of consumption behavior focus on the consumption experience (Babin et al., 1994; Wakefield & Baker, 1998), thus reflecting the need for entertainment and emotional worth. In contrast, utilitarian consumption is mainly task-related or functional in nature.

The physical environment is an important determinant of consumer psychology (e.g., disconfirmation and satisfaction) and behavior (e.g., patronage and word-of-mouth) when a service is consumed primarily for hedonic purposes and when customers spend moderate to long time periods in the atmospheric place (Ryu & Jang, 2007). For instance, in the case of upscale restaurants, customers may spend two hours or more, and they sense the physical surroundings consciously and unconsciously before, during, and after the meal. In addition to food and service, pleasant physical setting (e.g., innovative interior design and décor, pleasing music, subdued lighting, unique color scheme, ambient odor, spacious layout, appealing table settings, and attractive service staff) should determine to a large extent the degree of overall customer satisfaction and loyalty (Han & Ryu, 2009; Kim & Moon, 2009).

While a substantial amount of research has revealed that physical environments and disconfirmation, which can be defined as the discrepancy between expectation and performance, are important indicators of customer satisfaction particularly in the hedonic consumption situation, to the best of our knowledge none of previous studies investigated the combinations of the effects of physical environments, disconfirmation, and customer satisfaction. In particular, surprisingly, little to no research has identified the impact of physical environments on disconfirmation. Since physical environments are particularly influential factors toward customer reactions in hedonic services, there is a need to understand how customer satisfaction and behavior change depending upon their perception of physical environmental elements. Additionally, researchers have suggested the importance of understanding the differences between first-time customers and repeat customers in the hospitality and tourism industry (Opperman, 1997; Petrick, 2004). However, the investigation of the differences between these segments (first-time and repeat customers) in regards to the perceptions of physical environments in the restaurant industry is scant. Thus, this present research was aimed at filling these research gaps by proposing and testing an integrative model which focuses on the relationship between customer perceptions of physical environments on their disconfirmation, satisfaction and loyalty while identifying the differences between first-time and repeat visitors in the upscale restaurant context.

## **LITERATURE REVIEW**

### **Impact of Physical Environment on Disconfirmation**

To capture how customers perceived the physical environment in the dining area, DINESCAPE scale was used in this study (Ryu & Jang, 2008). The DINESCAPE is defined as the man-made physical and human surroundings in the dining area of upscale restaurants. The DINESCAPE includes six dimensions: facility aesthetics, lighting, ambience, layout, table settings, and service staff. Facility aesthetics means architectural design, along with interior design and décor that contribute to the attractiveness of the dining environment (Wakefield & Blodgett, 1994). Facility aesthetics can be a critical aspect of attracting and maintaining customers to a restaurant. Not only it can influence consumer traffic to a restaurant, but it can also affect the revenue of restaurant. A lot of restaurants recognize and utilize facility aesthetics to capture specific restaurant. For instance, Rainforest Café and Planet Hollywood made their mark through innovative interior design and décor. Additionally, it can play as an important marketing tool by affecting customer responses such as attitudes, emotions, price perception, value, satisfaction, and behavior (Berry & Wall, 2007; Liu & Jang, 2009; Ryu & Jang, 2007).

Research indicates that there is the relationship between lighting level preferences and individuals' emotional responses and approach-avoidance behaviors. Areni and Kim (1994) identified the impact of in-store lighting on various aspects of shopping behavior (e.g., consumer behavior, amount of time spent, and total sales) in a retail store setting. Lighting can be one of the most powerful physical stimuli in restaurants, particularly in upscale restaurants. While bright lighting at fast-food restaurants (e.g., McDonald's) may symbolize quick service and relatively low prices, subdued and warm lighting may symbolically convey full service and high prices. Ambient elements are intangible background characteristics (e.g., music, scent, temperature) that tend to affect the non-visual senses and may have a subconscious effect on customers. Atmospheric music can (1) affect customer perceptions of business places; (2) elicit emotions; (3) influence customer satisfaction and relaxation; (4) increase shopping time and waiting time; (5) decrease perceived shopping time and waiting time; (6) influence dining; (7) influence purchase intentions; (8) influence buyer/seller interaction; and (9) increase sales. Moreover, the influence of pleasant scents as a powerful tool to increase sales has gained much attention in retail businesses (Chebat et al., 2009; Magnini & Parker, 2009). Aroma can have an impact on a consumer's desire to make a purchase, mood, or emotion.

Spatial layout refers to the way in which objects (e.g., furnishings) are arranged within the environment. Just as the layout in discount stores facilitates the fulfillment of functional or utilitarian needs, an effective layout can also facilitate fulfillment of hedonic needs (Wakefield & Blodgett, 1994; Ryu & Jang, 2007). Spatial layout that makes people feel constricted may have a direct effect on customer quality perceptions, excitement levels, and indirectly on their desire to return. This implies that service or retail facilities that are specifically designed to add some level of excitement or arousal to the service experience such as in an upscale restaurant should provide ample

space to facilitate exploration and stimulation within the physical environment (Wakefield & Blodgett, 1994). The service product should be an important element of atmosphere in upscale restaurant setting. Upscale restaurants should be designed to deliver a prestigious image to attract upper-class customers. For instance, high quality flatware, china, glassware, and linen can be good tools to influence customers' perceptions of overall restaurant service quality. The way in which the table is decorated (e.g., an attractive candle and flow on the table) can also make customers feel that they are in a prestigious environment. Even though this dimension has been largely ignored in the literature probably because it is very unique and valid only to upscale restaurants, service product is assumed to affect diners' cognitive (e.g., disconfirmation) and affective (emotions) responses, which in turn influence customer behavior. Social factors refer to the people (i.e., employees and their customers) in the service setting. The social variables include employee appearance, number of employees, gender of employees, and dress or physical appearance of other customers. A professional employee uniform may effectively convey an organization's image and core values in a very up-close-and-personal way. Tombs and McColl-Kennedy (2003) further claimed that service staff are related to the desired social density, which affects customer affective and cognitive responses as well as repurchase intentions. Similarly, Ryu and Jang (2007) supported the strong influence of employees on customers' pleasure and arousal states.

Not only the physical environment may elicit emotional responses (e.g., pleasure, arousal, customer satisfaction) (Han & Ryu, 2009; Ryu & Jang, 2007), but it may also induce cognitive or perceptual responses (e.g., service quality, disconfirmation, value) (Kim & Moon, 2009), influencing people's evaluations and judgments on the quality of a place or product/service (e.g., dining experience). Some previous studies further revealed that atmospherics may influence a customer's evaluation of service quality as well as their behavioral responses (Berry & Wall, 2007; Jang & Namkung, 2009). For example, if customers perceive the background music of a restaurant pleasing, this environmental cue may positively affect the perceptions of the cognitive response such as perceived disconfirmation. Hence, it is logical to postulate that the customers' perceptions of physical environments may influence the disconfirmation of overall dining experience. Based on the aforementioned discussions, the following hypotheses were proposed:

Hypothesis 1a-H1f: Facility aesthetics, lighting, ambience, layout, service product and social factors influence disconfirmation.

### **Impact of Disconfirmation on Customer Satisfaction and Customer Loyalty**

A considerable work in understanding of customer satisfaction/dissatisfaction (CS/D) has taken place among consumer researchers. Understanding what makes consumers satisfied or dissatisfied is a key to the successful marketing management in service industries. From the satisfaction stream of research the concept of 'disconfirmation' evolved. In the literature, disconfirmation refers to "a psychological interpretation of an expectation-performance discrepancy" (Oliver, 1997, p. 28). Exceeding expectations (positive disconfirmation) is likely to lead to enhanced satisfaction while falling short of expectations (negative disconfirmation) is likely to result in less favorable evaluations. A considerable amount of previous research has empirically confirmed a direct causal relationship between disconfirmation and consumers' satisfaction/dissatisfaction (Bigne et al., 2008; Molinari et al., 2008). For example, Bigne et al. (2008) conducted a study to examine cognitive and affective antecedents and consequences of consumer satisfaction in the context of hedonic services: a theme park experience and a visit to an interactive museum. Disconfirmation had a direct influence on consumer satisfaction in both samples. Additionally, disconfirmation had indirect positive effect on loyalty through pleasure and satisfaction. Molinari et al. (2008) also conducted an empirical study to examine how satisfaction, quality, and value affect repurchase and positive word-of-mouth behavioral. The results of the study showed a strong positive effect from positive disconfirmation of expectation to satisfaction. The findings also indicated the direct links from positive disconfirmation to repurchase intention and word-of-mouth intention. Consequently, this study postulates that positive disconfirmation that is derived by customers who positively evaluate the physical environments will positively influence their satisfaction and loyalty.

Hypothesis 2: Positive disconfirmation positively influences customer satisfaction

Hypothesis 3: Positive disconfirmation positively influences customer loyalty.

### **Impact of Customer Satisfaction on Customer Loyalty**

A great deal of previous research has shown empirical evidence of a positive relationship between customer satisfaction and loyalty (Fornell et al., 1996; Han & Ryu, 2009). Fornell et al. (1996) indicated that enhancing satisfaction level contributed to building customer loyalty in regards to the repurchase likelihood and price tolerance given repurchase. In addition, Han and Ryu (2009) found that the direct effect of customer satisfaction on customer loyalty was statistically significant. Satisfied customers are likely to remain loyal to the provider by repatronizing the service/product, by spreading positive word-of-mouth (WOM), and by spending more. Therefore, it was hypothesized that customer satisfaction was a significant predictor of customer loyalty.

Hypothesis 4: Customer satisfaction positively influences customer loyalty.

### **Physical Environment on Disconfirmation Between First-time and Repeat Customers**

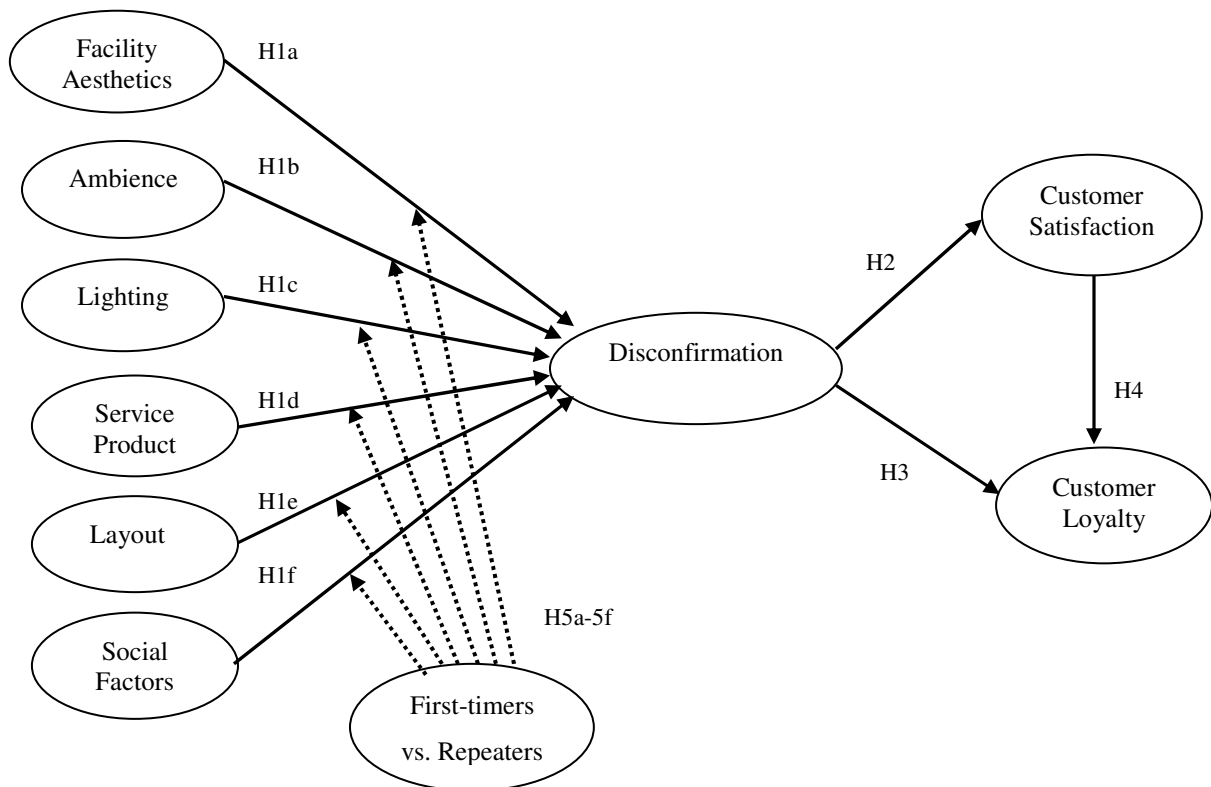
The impact of the situation in which purchase or consumption occurs has been largely ignored in understanding customer behaviors. Bitner (1992) proposed that situational factors such as monetary mood, and plans and purposes for being in the physical environment, can have a moderating effect of customers' responses. Expectations are known to play a critical role in the formation of disconfirmation process by serving as a comparison standard. However, the nature of expectations might differ across customers depending on many factors, such as past experience, word-of-mouth reports, advertising, policies, and price. Similarly, this study assumed that situation-specific measures, particularly past experience (first-timers versus repeaters) could moderate the effect of customers' perceptions about the quality of physical environment on disconfirmation. For instance, perceived quality of physical environment might vary depending upon target segments (e.g., first-time visitors versus repeat visitors). Customers in various frequency stages may evaluate their needs and preferences in foodservice differently. First-time visitors are more likely to have more complex and differentiated images of products/services than repeat visitors (Petrick, 2004). However, a repeat customer is likely to judge the discrepancy between expectations and performance more exactly. Repeaters are desirable because they will require less persuasion to make a repatronage than first-timers. The restaurant industry is in great need of attracting and/or retaining repeat visitors. Restaurants build rapport with patrons and generate repeat sales by offering differentiated benefits (e.g., elegant atmosphere) compared to competitors. Therefore, it would be important for restaurant management to understand whether differences exist between first time and repeat visitors with regards to the man-made physical surroundings. Consequently, the following hypothesis is proposed:

Hypothesis 5: Past experience (first-timers versus repeaters) has a significant moderating role in the relationship between physical environment and disconfirmation.

Based on the aforementioned discussions, the following conceptual framework regarding the relationships among latent variables was proposed as shown in Figure 1.

## **METHOD**

The operationalizations of the questionnaire were developed based on the extant literature. A pilot test of the research instrument was conducted as a preliminary test of the final version with 30 actual customers at an upscale restaurant. First, respondents were asked to rate each DINESCAPE item using a 7-point Likert scale to assess customers' physical environmental perceptions in the dining area. The questionnaire included a pool of 21 measurement items for six dimensions of the DINESCAPE scale (Ryu & Jang, 2008). More specifically, a list of 21 items consisted of 5 items for aesthetic design, 4 items for ambience, 3 items for lighting, 3 items for layout, 3 items for table settings, and 3 items for service staff. Second, positive disconfirmation was measured with two items using 7-point semantic differential scale (Bigne et al., 2008). Subjects were asked to respond to two statements, ranging from "worse than expected" to "better than expected." Third, customer satisfaction was assessed using a 7-point Likert scale with three items. Fourth, customer loyalty was measured using a 7-point Likert scale with five items. Fifth, to identify if the participants were the first timers or repeaters to the restaurant, one question was asked using dichotomous scale. Finally, demographic variables were measured.



**Figure 1. Proposed Conceptual Model Related to Latent variables**

The data were collected from customers at upscale restaurants in which average guest checks were more than \$25 and which provided professional service, luxurious atmosphere, and exceptional food. Using a convenience sampling approach, 310 responses were collected at three upscale restaurants in Seoul, Korea. After deleting surveys with incomplete responses, 300 questionnaires were remained for data analysis. After two extreme multivariate outliers were excluded (Mahalanobis'  $D(21) > 46.797$ ,  $p < .001$ ), 298 cases were remained for further analyses.

## RESULTS

### Measurement Model and Structural Model

The measurement model provided a good fit to the data ( $\chi^2 = 1050.463$ ,  $df = 428$ ,  $p < .001$ ; RMSEA = 0.070; CFI = 0.904; NFI = 0.849). All composite reliabilities were above the recommended value of .70, ranging from .764 to .930. All AVE values exceeded the recommended value of .50 (Fornell & Larcker, 1981). The squared correlation value between a pair of constructs was lower than the AVE of each construct. These findings indicated both convergent and discriminant validity. Then, structural model was estimated as suggested by Anderson and Gerbing (1988). Table 1 presents the model adequately fits the data ( $\chi^2/df = 2.256$ , RMSEA = 0.065). The regression paths from facility aesthetic ( $p < .01$ ), lighting ( $p < .05$ ), layout ( $p < .05$ ), and social factor ( $p < .01$ ) to disconfirmation were positive and significant, supporting hypotheses 1a, 1c, 1e and 1f. The regression paths from disconfirmation to customer satisfaction ( $p < .01$ ) and customer loyalty ( $p < .01$ ) were significant. Thus, hypotheses 2 and 3 were supported. Lastly, as expected, the linkage between customer satisfaction and loyalty was positive and significant ( $p < .01$ ), supporting hypothesis 4. This model achieved a satisfactory level of goodness of fit in predicting the total

variance of disconfirmation ( $R^2 = .554$ ), customer satisfaction ( $R^2 = .744$ ), and customer loyalty ( $R^2 = .715$ ). Furthermore, indirect effects of the components of DINESCAPE and disconfirmation were examined. The findings indicated that facility aesthetic ( $\beta_{FA-DI-CS} = .563, p < .01$ ), lighting ( $p < .05$ ), layout ( $p < .05$ ), and social factors ( $p < .05$ ) significantly affected customer satisfaction through disconfirmation. That is, disconfirmation acted as a mediator in the relationship between these components of DINESCAPE and customer satisfaction. In addition, results showed that facility aesthetic ( $\beta_{FA-DI-CS-CL} = .538, p < .01$ ), lighting ( $p < .05$ ), layout ( $p < .05$ ), and social factors ( $p < .05$ ) significantly affected loyalty through disconfirmation and satisfaction. Thus, it can be concluded that both disconfirmation and satisfaction had a significant mediating role between these variables and customer loyalty. Further, satisfaction was found to mediate the effect of disconfirmation on loyalty ( $\beta_{DI-CS-CL} = .316, p < .01$ ).

**Table 1. Results of the Structural Equation Modeling**

Hypotheses	Coefficients	t-values	Results
H1a: FA → DI	.652**	3.051	Supported
H1b: AM → DI	.134	1.465	Not supported
H1c: LI → DI	.294*	2.069	Supported
H1d: SP → DI	.100	.950	Not supported
H1e: LA → DI	.165*	1.985	Supported
H1f: SF → DI	.262**	2.793	Supported
H2: DI → CS	.862**	16.441	Supported
H3: DI → CL	.509**	5.080	Supported
H4: CS → CL	.367**	3.720	Supported

Note1. FA = Facility Aesthetics; AM = Ambience; LI = Lighting; SP = Service Product; LA = Layout; SF = Social Factors; DI = Disconfirmation; CS = Customer Satisfaction; CL = Customer Loyalty; \* $p < .05$ , \*\* $p < .01$

Note 2: Goodness-of-fit statistics:  $\chi^2 = 924.887, df = 410, p < .001, RMSEA = 0.065; CFI = .918; NFI = .863$

### Invariance Models

The respondents were divided into first-time ( $n = 110$ ) and repeat visitors' groups ( $n = 188$ ) before testing group difference for hypothesis 5a-5f. Measurement invariance was first tested. Non-restricted model was run using CFA without constraining any factor loading across groups, and full-metric invariance model was run using CFA with constraining all factor loadings to be equal across groups. Results indicated that full-metric invariance was supported in that the chi-square difference between two models were not significant ( $\Delta\chi^2(22) = 28.224, p > .01$ ). As a next step, a baseline model was run by including proposed paths among the study variables. The model presented a satisfactory fit to the data ( $\chi^2 = 1494.580, df = 842, p < .001, \chi^2/df = 1.775, RMSEA = 0.051; CFI = .901; NFI = .801$ ). The equality of a particular parameter between two groups was tested by constraining a specific path of interest to be equal across groups in sequence (nested models). The findings are presented in Table 2. The paths from facility aesthetic ( $p < .01$ ), lighting ( $p < .01$ ), service product ( $p < .05$ ), and social factors ( $p < .05$ ) to disconfirmation significantly differed across first-time and repeat visitors' groups. Results further reveal that the effects of facility aesthetic (FVG:  $\beta = .349$  vs. RVG:  $\beta = .841$ ), lighting (FVG:  $\beta = .262$  vs. RVG:  $\beta = .423$ ), service product (FVG:  $\beta = .075$  vs. RVG:  $\beta = .369$ ), and social factors (FVG:  $\beta = .217$  vs. RVG:  $\beta = .289$ ) on disconfirmation were greater in the repeat visitors' groups. The link between service product and disconfirmation for the first-time customers' group was not significant, but this link was significant for the repeat customers' group ( $p < .05$ ). Similarly, the link between layout and disconfirmation for the first-time visitors' group was not significant, while this link was significant for the repeat visitors' group. Overall, these findings supported hypotheses H5a, H5c, H5d, and H5f.

### CONCLUSION

The findings revealed that the proposed model could well predict customers' perceived disconfirmation ( $R^2 = .554$ ), satisfaction ( $R^2 = .744$ ), and loyalty ( $R^2 = .715$ ). This present study extends previous research from theoretical and practical standpoints. The current study has implications related to the understanding of the disconfirmation framework. First, the results indicated that dimensions of the physical environment directly

affecting disconfirmation were facility aesthetics, lighting, layout, and social factors. Out of six physical environmental dimensions, facility aesthetics most significantly influenced disconfirmation. This finding stresses the important role of facility aesthetics in creating a unique and innovative fine dining atmosphere should be stressed since it is most likely to differentiate an upscale restaurant from the competition. This study suggests restaurateurs who plan to redesign their facilities should assess customer perceptions of facility aesthetics (e.g., ceiling/wall décor, carpeting/flooring, paintings/pictures, plants/flowers, furniture, and color) before making any significant investment.

**Table 2. Results of the Invariance Tests for the Paths**

Paths	Fit of the Model with the Path		
	Baseline Model (Freely Estimated)	Nested Model (Constrained to be Equal)	Chi-square difference test
H5a: FA → DI (S)	FVG: $\beta = .349^{**}$ (t = 3.010) RVG: $\beta = .841^{**}$ (t = 5.980) $\chi^2$ (842) = 1494.580	$\chi^2$ (843) = 1503.620	$\Delta\chi^2$ (1) = 9.040, p < .01 (significant)
H5b: AM → DI (NS)	FVG: $\beta = .135$ (t = .724) RVG: $\beta = .191$ (t = 1.587) $\chi^2$ (842) = 1494.580	$\chi^2$ (843) = 1496.602	$\Delta\chi^2$ (1) = 2.022, p > .05 (insignificant)
H5c: LI → DI (S)	FVG: $\beta = .262^*$ (t = 2.198) RVG: $\beta = .423^{**}$ (t = 3.213) $\chi^2$ (842) = 1494.580	$\chi^2$ (843) = 1501.631	$\Delta\chi^2$ (1) = 7.051, p < .01 (significant)
H5d: SP → DI (S)	FVG: $\beta = .075$ (t = .717) RVG: $\beta = .369^*$ (t = 2.457) $\chi^2$ (842) = 1494.580	$\chi^2$ (843) = 1499.132	$\Delta\chi^2$ (1) = 4.552, p < .05 (significant)
H5e: LA → DI (NS)	FVG: $\beta = .157$ (t = 1.478) RVG: $\beta = .202^*$ (t = 2.101) $\chi^2$ (842) = 1494.580	$\chi^2$ (843) = 1495.584	$\Delta\chi^2$ (1) = 1.004, p > .05 (insignificant)
H5f: SF → DI (S)	FVG: $\beta = .217^*$ (t = 2.270) RVG: $\beta = .289^{**}$ (t = 3.301) $\chi^2$ (842) = 1494.580	$\chi^2$ (843) = 1499.840	$\Delta\chi^2$ (1) = 5.260, p < .05 (significant)

Note 1. S = Supported; NS = Not Supported; FVG = First-time Visitors' Group; RVG = Repeat Visitors' Group

Results showed that positive disconfirmation positively and directly influenced customers' satisfaction and loyalty. For instance, customers in the upscale restaurant can be pleasantly surprised by the elegance of facility aesthetics. Results further reveal that the positive disconfirmation derived by the physical environments were determined the extent to which customers intended to come back and to recommend the restaurant to friends or others. Hence, restaurant management should understand how important the physical environments are in inducing positive disconfirmation in restaurants. The results showed that past experience moderated the relationship between four DINESCAPE dimensions (i.e., facility aesthetics, lighting, table settings, and service staff) and disconfirmation. More specifically, in comparison to first-timers, repeat visitors' perception towards the quality of physical environment was much greater predictor of disconfirmation. This finding implied that repeat customers were more likely to base their perceptions about the disconfirmation of overall dining experience on how the atmosphere (i.e., facility aesthetics, lighting, table settings, and service staff) made them feel. Of all the DINESCAPE antecedents, facility aesthetics had the strongest impact on disconfirmation, suggesting that restaurateurs wishing to position themselves with the use of atmosphere (physical environment) should pay substantial attention to their facility aesthetics to retain repeat customers. It was further revealed that facility aesthetics, lighting, and service staff were significant determinants of both first timers' and repeaters' perceived disconfirmation, while layout and service product were significant predictors of only repeat visitors' perceived disconfirmation. This implies that layout and service product play more important role for repeat visitors than first-time visitors. Thus, restaurant management should pay special attention for repeat patrons by using layout and service product. Since the data were collected in three upscale restaurants in South Korea, the current result should not be generalized to other restaurant segments and other places. Given the great diversity of hospitality and tourism industries, more research is necessary to determine if similar results would be derived from different samples across various hospitality industries.



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