

Combined Effects of Physical Evidence and Functional Service at *Bulgogi* Restaurants on Customers' Store Image and Purchase Behaviors: Application of Video Scenario Technique

Daye Hwang, Hyeja Chang*

Department of Food Science and Nutrition, College of Natural Science, Dankook University

Abstract

This study aimed to identify whether or not four service situations varying according to positive and negative combinations of physical evidence and functional service influence store image and purchase behavioral intentions of customers at bulgogi restaurants. The video-scenario technique was used for the study. Data were analyzed with the SPSS (Window 19.0) package using frequency analysis, one-way ANOVA, 2 by 2 factorial ANOVA, exploratory factor analysis, and multiple regression analysis to confirm the hypotheses. The combined effect of functional service and physical evidence influenced store image and purchase intention. In terms of separate effect of physical evidence and functional service, the effect of employee service on store image was more powerful than that of physical evidence, even though the effect differed depending on the situation. Purchase intention was only influenced by functional service quality from employees under the four different scenarios. Thus, when opening a Korean restaurant, proper management of tangible evidence suitable to service, and the prices expected from local customers should be determined. Additionally, extremely high or low levels of physical evidence management should be avoided.

Key Words : *Bulgogi* restaurant, video-scenario technique, physical evidence, functional service, purchase intention

1. Introduction

Chain restaurant outlets have increased dramatically in recent years. The number of Korean restaurant franchise reached 29,209 in 2018 from 20,119 in 2013, equivalent to 45.2 percent growth rate compared to 2013, amounting to 87,124,140 million won of the sales and leading to intense competition market (Korean Statistic Information Service 2019). Excellent food quality is necessary, but food quality alone is not enough to outperform competitors. Unique physical evidence as well as effective service should be provided to differentiate a restaurant from competitors (Kim et al. 2008; Lee et al. 2010a; Nam & Lee 2011; Lin & Worthley 2012). Berry et al. (2002) suggested that customers evaluate the service experience based on two factors. Emotional clues are influenced by the physical environment as well as the functionality of the service and product. Physical clues are related to the service environment, including the design, modernization of equipment, layout of the facility, lighting and color. Physical evidence stimulates emotions and affects the customer's expectations (Kim et al.

2008; Lin & Worthley 2012). Therefore, it is important to create the proper level of customer expectation by using appropriate physical evidence and prices to present the desired image to customers (Wall & Berry 2007).

Berry et al. (2002) refer to the functionality of service as the technical quality of the service rendered. For example, a rude and unfriendly server can ruin a customer's restaurant experience even if the meal was prepared properly. This is consistent with the findings of Thusyanthy & Senthilnathan (2012), who emphasized the importance of employee interaction for customer satisfaction in service business. By the same token, the importance of functional service still applies in the context of Korean restaurants with *bulgogi* as a signature menu, which is the primary interest of this study. The operational strategies of Korean restaurants tend to overemphasize the image and the taste of Korean foods, less attention on the importance of employee service training and physical evidence (Kweon & Yoon 2006; Chang et al. 2010).

On the other hand, the functionality of the product and service influences the restaurant experience and the quality of service from employees. SERVQUAL, the model for

*Corresponding author: Hyeja Chang, Dankook University, 119 Dandae-ro Dongnam-gu Cheonan-si Chungnam, 31116, South Korea
Tel: +82-41-550-3478 Fax: +82-41-559-7857 E-mail: hjc10@dankook.ac.kr

service quality evaluation, supported that positive interaction between the customer and the staff, such as kindness from the staff, professional knowledge, responsiveness, and attention to the customer, leads to positive service evaluation from the customer (Zeithaml et al. 1985; Berry et al. 2002; Wall & Berry 2007). In contrast, negative customer evaluations can result from ignoring customers without acknowledging their needs, unkind behavior, insufficient responses to customer questions or not explaining service delays (Mattila 2001; Namkung & Jang 2010).

It is a reality that lots of traditional Korean restaurants operate with little attention on the importance of employee service training and physical evidence, emphasizing only the image and taste of Korean foods. A previous study reported that the quality of physical evidence and the functionality of the service encounter affect store image (Jang et al. 2010) and consumers' behavior intentions (Kim et al. 2007; Lee et al. 2010a). Behavior intention indicates whether the customer will continue to patronize a restaurant, meanwhile store image is overall impression on the restaurant that customer feels (Lee et al. 2010b). However, previous studies have reported conflicting relationships. Good quality in fast food outlets is positively associated with customer purchase intention in Australia, but has a negative association in India (Keillor et al. 2004). Another study pointed out that the servicescape has a significant impact on customers' perception of service quality and pleasure, consequently affecting revisit intention (Rye & Jang 2007; Kim & Moon 2009; Han & Hyun 2017; Park & Yoo 2019).

Wall & Berry (2007) pointed out that the combined effect of mechanic clues, such as the ambience of the facility, and humanic clues, such as the employees' performance and behaviors, had different effects on service quality depending on the restaurants' service situations. They found that humanic clues are more important than mechanic clues and that customers have a tendency to become dissatisfied as a result of forming over-expectations based on positive physical evidence.

As *Bulgogi* is the most preferred Korean dish of Korean and non-Korean tourists (Kweon & Yoon 2006; Chang et al. 2010), the *bulgogi*-specialized restaurant is expected to be a main theme for the globalization. For the successful operation of the restaurants which is specialized in *bulgogi*, the ethnic food quality is important, but the service quality related on functional service and physical evidence also crucial factor to be managed. It means that ethnic dining should be unique

in terms of physical evidence and menu offerings (Liu & Mattila 2015). Thus, the combined effect of physical evidence and functional service from employees on purchase intention should be investigated. Study methodologies that utilize video clips with different situations of combined positive and negative physical evidence and functional service have advantages such as overcoming the limitations of qualitative research, delivering a vivid field atmosphere, and potentially more precise evaluation of physical evidence and functional service quality by customers (Bateson & Hui 1992).

Therefore, the goal of this research was to investigate how customers evaluate the quality of physical evidence and functional service from employees in four different situations involving combinations of positive and negative physical evidence as well as functional service quality presented through a video format. Additionally, the research investigated how these factors affect the image of the restaurants and the purchase intention of customers at '*bulgogi*' specialized restaurants.

II. Subjects and Methods

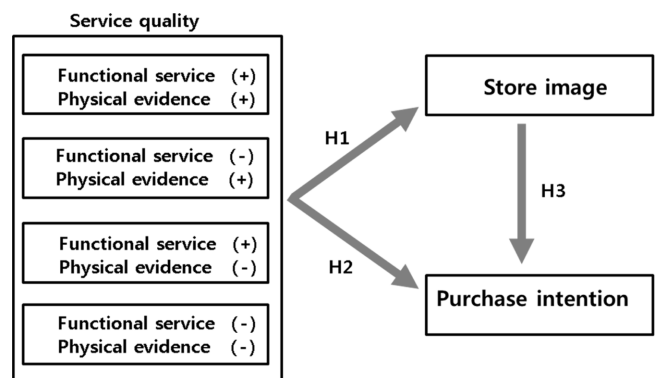
1. Research Hypotheses

For the analysis of research goals, the research hypotheses were set as follows <Figure 1>:

H1: Combined effects of physical evidence and functional service from employees at a restaurant will be different on store image depending on the four situations.

H2: Combined effects of physical evidence and functional service from employees at a restaurant will have different effects on purchase intention depending on the four situations.

H3: Store image of the restaurant will have an effect on purchase intention of customer.



<Figure 1> Research model

2. Research design of survey with video taping

To identify how physical evidence of the store and functional service of service employees affect store image and the purchase intention of customers in ‘*bulgogi*’ specialized restaurants, respondents completed a questionnaire after watching a video depicting one of 4 different scenarios selected by a 2 by 2 experiment design. According to a brainstorming technique on service process and physical evidence with our research team, the research design for the survey with video clips was decided. The video clips were professionally recorded with the 4 scenarios. The videos for each scenario lasted for 3 minutes and 5 seconds. For the positive and negative physical evidence, two restaurants were selected for comparison: one *bulgogi* franchise restaurant as a case for positive physical evidence and one independent *bulgogi* restaurant as a negative case, similar to the physical evidence we set (refer to physical evidence in Table 1). The ‘*bulgogi*’ franchise restaurant operated by a medium sized business organization have equipped with modern furniture, bright lights, clean ambience and wide windows, showing a modernized atmosphere and a well-designed facility. Meanwhile, the independent restaurant operated by an individual owner

with a small size had dull lights, narrow windows and old-fashioned furniture, giving an image of out-of-date physical evidence.

For the functional service, positive and negative functional services were performed by the employees with different scenarios. For the service behavior of employees, negative service was represented as a situation involving ignorance of the customer and service delay. In contrast, positive service was represented by kindness and attention to customers. Different continuities were evaluated according to the 5 steps of service: greeting, ordering, service delivery, consumption, and payment and leaving (Kim et al. 2008; Jang et al. 2010; Namkung & Jang 2010).

As shown in <Table 1>, four video clips were made with the different four scenarios. Scenario 1 showed positive functional service at a *bulgogi* franchise restaurant with positive physical evidence; Scenario 2 depicted negative functional service and positive physical evidence; Scenario 3 contained positive functional service at an independent *bulgogi* restaurant with negative physical evidence; Scenario 4 showed negative functional service and negative physical evidence. A pilot test was conducted to determine whether

<Table 1> Description of scenarios according to combinations of positive/negative physical evidence and functional service

| Situation Factor | Positive | Negative |
|----------------------------------|---|---|
| Physical Evidence | <ul style="list-style-type: none"> - Luxurious interior design at a franchise restaurant operated by a company - Music (sweet jazz music). - Ambient lighting (delicate lighting) - Wide pathway allowing people to move easily - Displaying signs of pathways and exits - Attractiveness of menus and pamphlets - Uniforms appropriate to brand image | <ul style="list-style-type: none"> - Interior design less than lower level of common at a restaurant operated by an individual owner - Not noisy but no music - Bright lighting, but with no special features - Paths wide enough for only one person to move around - No signs for exits or pathways - Menu board hangs on the wall - Employee uniforms without character |
| Functional Service | <ul style="list-style-type: none"> - Polite attitude, nice service, attention on customer, wide knowledge of products | <ul style="list-style-type: none"> - Blunt way of speaking, apathetic attitude with customer, indifferent look, no knowledge of the menu |
| Procedure 1: greeting | <ul style="list-style-type: none"> - Service employees greet customers with polite attitude and tone then guide them to the table | <ul style="list-style-type: none"> - Customer takes a seat without service employee's guidance |
| Procedure 2: ordering | <ul style="list-style-type: none"> - Suggestion from the menu with polite - Service employees provide information about the menu to customers who hesitate when ordering | <ul style="list-style-type: none"> - Suggestion from the menu - Service employees do not provide specific information about the menu when the customer hesitate menu selection |
| Procedure 3: delivery | <ul style="list-style-type: none"> - Meal provided on time to the table | <ul style="list-style-type: none"> - Waiting time for meal is long and no explanation is provided by service employees |
| Procedure 4: consumption | <ul style="list-style-type: none"> - Service employees confirm customers' dining needs and refill side dishes | <ul style="list-style-type: none"> - Service employees do not verify customers' dining needs and side dishes refilled only when customers ask |
| Procedure 5: payment and exiting | <ul style="list-style-type: none"> - Service employees inquire whether the meal was good and the receipt was exact, then politely bid customers farewell upon departure | <ul style="list-style-type: none"> - Service employees do not ask whether meal was good, check-out service is delayed, customers are not invited to revisit restaurant |

Scenario 1: combination of positive functional service and positive physical evidence; Scenario 2: combination of negative functional service and positive physical evidence; Scenario 3: combination of positive functional service and negative physical evidence; Scenario 4: combination of negative functional service and negative physical evidence

the 4 situations in the videos were appropriate for the questionnaire. Afterward, the questionnaire and videos were considered complete.

3. Subject and data collection

The subjects were recruited as a convenience sampling method. A questionnaire was administered to young adults and adults such as staff at educational institutes, staff at business corporations and housewives attending cooking classes. One scenario out of the 4 recorded scenarios was shown randomly to respondents, who were asked to complete the questionnaire after watching the video. A total of 527 questionnaires were distributed to respondents. Incomplete questionnaires were excluded and the remaining 469 (88.9%) responses were used for analyses.

4. Contents of questionnaire

The questionnaire consisted of 5 sections with a total of 34 items: seven questions about physical evidence, 9 items on the functional service from the service employee, 6 items on store image, 3 items on purchase intention, and 9 items on the demographical characteristics of respondents.

Questions on physical evidence consisted of 7 items related to lighting, facility layout and function, sign, music, interior, and tangibility (Bitner 1992; Zeithaml & Bitner 2000). Those on functional service at the restaurant consisted of 9 items described by Zeithaml & Bitner (2000), i.e. confidence, responsiveness, assurance, empathy and SERVQUAL items excluding tangibility. Questions concerning the store image of the restaurant included 2 positive and 2 negative items on feelings (Yoo 1996; Lee et al. 1999; Kim et al. 2007). In addition, store image was included 2 questions on visual aspects. The responses were recorded on 5 point Likert scales ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses to negative questions were re-coded in the opposite direction during statistical analysis. Purchasing intention consists of re-visitation, positive recommendations, and willingness to pay more than planned according to Zeithaml & Bitner (2000). The general profiles of the respondents included gender, age, marital states, occupation, education level, residence area, monthly income per household, and cost of eating out on average. Monthly income criteria were determined according to the second-quarter income percentile data posted on the Korean Statistical Institute System.

5. Statistical analyses

Data analyses were conducted with the SPSS program version 19.0 for Windows. Frequency analysis was completed for the general profiles of the respondents. Exploratory factor analyses on service quality, purchase intention and store image were done to measure validity and confidence of the variables. To investigate the mean differences of variables among scenarios, one-way analysis of variance (ANOVA) and Duncan test were done. To test combined effects of physical evidence and functional service on store image and purchase intention (hypotheses 1 and 2), two way analysis of variance was performed. Finally, multiple regression analysis was done to test the hypothesis 3, the effect of store image to purchase intention under 4 different scenario.

III. Results and Discussion

1. General characteristics of the samples

Demographic profiles of the respondents are presented in <Table 2>. The majority of the respondents were female (373, 79.5%), and the most frequently distributed age was the 20 to 30 generation (83.4%). Seventy-one point six percent of the respondents were single (336 persons) and almost all (95.2%) lived in Seoul and Gyeonggi province. The top 3 occupations were as follows: 225 university students (54.4%), 72 professionals (15.4%), and 54 office workers (11.9%). Income distribution per month was as follows: 48 people made 1.6~2.2 million won per month (10.2%), 63 made 3.2-3.6 million won (13.4%), 60 made 4.8~5.7 million won (12.8%), and 55 made 5.7~8.5 million won (11.7%). The average cost of eating out per capita ranged from 5,000 to 20,000 won, accounting for 77.4% of total respondents.

2. Measurement results by scenarios

After respondents viewed a video clip randomly contained one scenario out of four, they evaluated the functional service, physical evidence and store image of the restaurant, and their purchase intention. As presented at <Table 3>, consumers rated differently in the physical evidence and function service quality, store image and purchase intentions, even though the video clips were the same positive or negative setting ($p < 0.001$). The ratings for physical evidence variables were highest in scenario 1 (3.78 points), 3.42 points in scenario 2, 2.50 points in scenario 3, and 2.33 point in

<Table 2> Demographical variables of the respondents (N=469)

| Variable | | N | % | Variable | | N | % |
|----------------|----------------------|-----|------|---------------|----------------------------|------|------|
| Gender | Male | 96 | 20.5 | Nationality | Korean | 461 | 98.3 |
| | Female | 373 | 79.5 | | Non-Korean | 8 | 1.7 |
| Age | 19-25 years | 213 | 45.4 | Education | High school | 19 | 4.1 |
| | 26-30 years | 82 | 17.5 | | Collage/University student | 232 | 49.5 |
| | 31-35 years | 51 | 10.9 | | Collage/University degree | 122 | 26.0 |
| | 36-40 years | 45 | 9.6 | | Above graduate school | 96 | 20.5 |
| | 41-45 years | 44 | 9.4 | Less than 70 | 31 | 6.6 | |
| | 46-50 years | 22 | 4.7 | 70-160 | 25 | 5.3 | |
| | 51~59 years | 12 | 2.6 | 160-220 | 48 | 10.2 | |
| Residence | Seoul | 108 | 27.4 | 220-270 | 31 | 6.6 | |
| | Gyeonggi-do | 267 | 67.8 | 270-320 | 34 | 7.2 | |
| | Gangwon-do | 3 | 0.8 | 320-360 | 63 | 13.4 | |
| | Chungcheong-do | 8 | 2.0 | 360-410 | 43 | 9.2 | |
| | Jeolla-do | 3 | 0.8 | 410-480 | 40 | 8.5 | |
| | Gyeongsang-do | 3 | 0.8 | 480-570 | 60 | 12.8 | |
| | Jeju-do | 1 | 0.3 | 570-850 | 55 | 11.7 | |
| | Others | 1 | 0.3 | More than 850 | 39 | 8.3 | |
| Marital status | Single/Never married | 336 | 71.6 | Less than 5 | 10 | 2.1 | |
| | Married | 133 | 28.4 | 5-10 | 171 | 36.5 | |
| Occupation | Supervisor | 4 | 0.9 | 10-15 | 131 | 27.9 | |
| | Professional | 72 | 15.3 | 15-20 | 61 | 13.0 | |
| | Engineer | 9 | 1.9 | 20-25 | 16 | 3.4 | |
| | Office worker | 54 | 11.4 | 25-30 | 31 | 6.6 | |
| | Service related job | 22 | 4.7 | 30-35 | 7 | 1.5 | |
| | Sales worker | 3 | 0.6 | 35-40 | 15 | 3.2 | |
| | Functional worker | 4 | 0.9 | 40-45 | 0 | 0 | |
| | Soldier | 3 | 0.6 | 45-50 | 2 | 0.4 | |
| | University students | 255 | 54.0 | More than 50 | 25 | 5.3 | |
| | Housewife | 32 | 6.8 | | | | |
| | Others | 11 | 2.3 | | | | |

scenario 4. In the results of the Duncan test, the ratings for physical evidence in the different scenarios fell into three statistically different groups ($p < 0.001$). Regarding functional service from employees, the respondents' ratings were highest in scenario 1 (4.13 point), followed by scenario 3 (3.63 points), scenario 2 (1.98 points), and scenario 4 (1.78 points), with all scenarios falling into statistically different groups ($p < 0.001$).

Store image rating results showed the same order as functional service, specifically, scenario 1 (3.97 point) followed by scenario 3 (2.87 point), scenario 2 (2.71 point), and scenario 4 (2.04 point). Scenarios 3 and 2 were in the same category, therefore, these ratings were divided into 3 different groups. Purchase intention also showed the same

order: scenario 1 (3.59 points), scenario 3 (2.48 point), scenario 2 (2.09 point), scenario 4 (1.68 point). The scenarios were divided into 4 statistically different groups ($p < 0.001$). From the results we could confirmed that even though video clips are the same positive and negative physical evidence or function service, consumers scored them differently under the different combined situation of physical evidence and function service.

The participants' ratings for physical evidence and functional service were expected to fall into two groups, but 3 separate groups were found for physical evidence, with 4 groups for functional service. These results indicate that customers assess the quality of physical evidence and functional service differently, because of a combination

effect or the interdependency of the two factors even in the same situation (Wall & Berry 2007). In other words, even if the physical surroundings remained the same but the quality of functional service turned bad, there was a tendency on the part of customers to reduce the rating for the physical evidence as well. Similarly, the functional service from the

employees was also dependent on the physical evidence according to the results.

3. Factor analyses on service quality, store image and purchase intention

Before testing the hypotheses, validity tests were performed

<Table 3> Results of measurement variables by the scenarios (Mean ±SD)

| Classification ¹⁾ | Scenario 1 ³⁾ (N=118) | Scenario 2 (N=121) | Scenario 3 (N=121) | Scenario 4 (N=109) | F-value |
|---|-------------------------------------|--------------------------|-------------------------|-------------------------|------------|
| Physical evidence | | | | | |
| Lightening creates a good atmosphere | 3.92 ^{a4)} ±0.70 | 3.49 ^b ±0.86 | 2.44 ^c ±0.92 | 2.39 ^f ±1.01 | 88.936*** |
| Background music is appropriate to restaurant | 3.72 ^a ±0.70 | 3.34 ^b ±0.71 | 2.43 ^c ±0.86 | 2.14 ^e ±0.92 | 99.694*** |
| Furniture is attractive | 3.89 ^a ±0.66 | 3.50 ^b ±0.86 | 1.99 ^e ±0.78 | 2.00 ^f ±0.69 | 202.469*** |
| Hallway is convenient to pass | 3.55 ^a ±0.71 | 3.37 ^{ab} ±0.86 | 3.17 ^b ±0.90 | 2.94 ^e ±0.89 | 10.881*** |
| Passage, exit and signs are easily identified | 3.60 ^a ±0.73 | 3.28 ^{ab} ±0.76 | 3.08 ^b ±0.94 | 2.69 ^f ±0.90 | 23.836*** |
| Menu board is visually attractive | 3.80 ^a ±0.70 | 3.42 ^b ±0.77 | 2.28 ^c ±0.79 | 2.17 ^e ±0.69 | 141.876*** |
| Interior of restaurant is attractive. | 4.04 ^a ±0.68 | 3.57 ^b ±0.76 | 2.12 ^c ±0.80 | 1.95 ^e ±0.81 | 216.650*** |
| Total mean | 3.78 ^a ±0.47 | 3.42 ^b ±0.58 | 2.50 ^c ±0.60 | 2.33 ^e ±0.57 | 186.944*** |
| Functional service | | | | | |
| Service employee is likely to provide the hygienic foods | 4.08 ^a ±0.59 | 2.93 ^c ±0.84 | 3.23 ^b ±0.76 | 2.50 ^d ±0.83 | 88.620*** |
| Service employee is likely to fulfill the promised service accurately | 4.18 ^a ±0.66 | 2.07 ^c ±0.83 | 3.80 ^b ±0.71 | 1.81 ^d ±0.84 | 279.941*** |
| Service employee is likely to know the menu well | 4.36 ^a ±0.62 | 2.22 ^c ±0.79 | 3.99 ^b ±0.75 | 2.16 ^e ±0.93 | 258.719*** |
| Service employee is likely to provide a service kindly | 4.34 ^a ±0.64 | 1.80 ^c ±0.77 | 4.01 ^b ±0.75 | 1.81 ^e ±0.83 | 392.983*** |
| Service employee is likely to response immediately to customers' requests | 4.14 ^a ±0.72 | 1.88 ^c ±0.82 | 3.90 ^b ±0.79 | 1.49 ^d ±0.63 | 380.666*** |
| Service employee is likely to pay individual attentions to customers | 3.73 ^a ±0.90 | 1.69 ^c ±0.67 | 3.31 ^b ±0.89 | 1.53 ^e ±0.59 | 239.874*** |
| Service employee is likely to have a professionalism of customer service | 4.02 ^a ±0.74 | 1.83 ^c ±0.69 | 3.33 ^b ±1.89 | 1.62 ^e ±0.65 | 279.092*** |
| Service employee is likely to give spontaneous helps to the customer | 4.16 ^a ±0.65 | 1.60 ^c ±0.61 | 3.72 ^b ±0.79 | 1.43 ^e ±0.58 | 525.640*** |
| Service employee is likely to provide an excellent service. | 4.14 ^a ±0.67 | 1.77 ^c ±0.73 | 3.41 ^b ±0.77 | 1.66 ^e ±0.71 | 337.858*** |
| Total mean | 4.13 ^a ±0.51 | 1.98 ^c ±0.54 | 3.63 ^b ±0.57 | 1.78 ^d ±0.56 | 537.183*** |
| Store image | | | | | |
| Restaurant is attractive. | 3.86 ^a ±0.65 | 2.83 ^b ±0.91 | 2.47 ^c ±0.75 | 1.85 ^d ±0.73 | 139.028*** |
| We can enjoy a meal in the restaurant. | 3.92 ^a ±0.63 | 2.59 ^c ±0.90 | 3.08 ^b ±0.70 | 2.02 ^d ±0.92 | 117.848*** |
| The restaurant gives customer an unpleasant feeling ²⁾ . | 4.33 ^a ±0.59 | 2.98 ^c ±1.02 | 3.64 ^b ±0.75 | 2.50 ^d ±1.06 | 95.782*** |
| The restaurant gives customer a disappointment ²⁾ . | 4.34 ^a ±0.62 | 2.79 ^c ±1.07 | 3.50 ^b ±0.83 | 2.44 ^e ±0.97 | 103.464*** |
| The restaurant stands comparison as a restaurant specializing in Korean foods | 3.50 ^a ±0.83 | 2.45 ^c ±0.89 | 2.74 ^b ±0.77 | 1.96 ^d ±0.84 | 68.092*** |
| The restaurant gives impressions of a fine dining restaurant. | 3.84 ^a ±0.79 | 2.62 ^c ±0.95 | 1.77 ^b ±0.84 | 1.49 ^d ±0.68 | 189.863*** |
| Total mean | 3.97 ^a ±0.51 | 2.71 ^b ±0.67 | 2.87 ^b ±0.56 | 2.04 ^e ±0.97 | 203.175*** |
| Purchase behavioral intention | | | | | |
| I would like to visit the restaurant | 3.81 ^a ±0.70 | 2.30 ^c ±0.91 | 2.61 ^b ±0.85 | 1.78 ^d ±0.75 | 130.390*** |
| I would like to recommend the restaurant to an acquaintance | 3.59 ^a ±0.72 | 2.02 ^c ±2.55 | 2.55 ^b ±0.82 | 1.62 ^d ±0.69 | 144.036*** |
| I have an intention to spend more money than planned, if I visit the restaurant | 3.36 ^a ±0.91 | 1.96 ^c ±0.83 | 2.28 ^b ±0.90 | 1.63 ^d ±0.80 | 87.891*** |
| Total mean | 3.59 ^a ±0.65 | 2.09 ^c ±0.72 | 2.48 ^b ±0.76 | 1.68 ^d ±0.63 | 160.926*** |

***p<.001

¹⁾A 5-point scale (1: strongly disagree, 5: strongly agree)

²⁾Reversed response was recoded 1 to 5, 2 to 4, 4 to 2, and 5 to 1.

³⁾Scenario 1: positive physical evidence, positive functional service; Scenario 2: positive physical evidence, negative functional service; Scenario 3: negative physical evidence, positive functional service; Scenario 4: negative physical evidence, negative functional service

⁴⁾Different subscript character indicated statistically significant difference at p=0.05

with three times of exploratory factor analyses to determine whether the measures of service quality, store image and purchase intention, respectively, were appropriate for the contents of the rating construction. Principal components analysis was used as a factor extraction method and the varimax rotation method served as a vertical rotation method.

The first factor analysis results for service quality measures were classified into two factors: physical evidence and functional service, as shown in <Table 4>. The two factors explained 74.6% of the total variance, which was comparatively high ($p < 0.001$). From the results, two separate dimensions for functional service and physical evidence were extracted from service quality. The results of the second factor analysis on store image and the third of

purchase intention extracted one dimension, respectively, with significant probability and high explanation power ($R^2 = 68.712$, $R^2 = 84.597$) for store image and purchase intention).

In this study, service quality was classified into two factors named as physical evidence and functional service from employees. Store image and purchase intention were also categorized one factor, respectively. These results were similar to the previous studies (Bitner 1992; Zeithaml & Bitner 2000). In the case of store image, it is defined as the customer’s overall impression of the restaurant and is developed through the marketing stimulus provided during food consumption and service in restaurants (Lee et al. 2010b). Functional attributes and psychological attributes are generally used for the measurement. Functional attributes

<Table 4> Factor analysis of the service quality, store image and purchase intention in restaurant settings

| Dimension | Attributes | Factor loading | Eigen value | Variance (%) | |
|---|--|---|-------------|--------------|-------|
| Factor analysis 1 | | | | | |
| Physical evidence | Lightening creates a good atmosphere | 0.781 | 4.801 | 74.593 | |
| | Background music is appropriate to restaurant | 0.799 | | | |
| | Furniture is attractive | 0.882 | | | |
| | Movement traffic in dining hall is convenient | 0.589 | | | |
| | Passage, exit and signs are easily identified | 0.653 | | | |
| | Menu board is visually attractive | 0.848 | | | |
| | Interior of restaurant is attractive. | 0.886 | | | |
| | Functional Service | Service employee is likely to provide the hygienic foods | | | 0.596 |
| | | Service employee is likely to fulfill the promised service accurately | | | 0.901 |
| | | Service employee is likely to know the menu well | | | 0.903 |
| Service employee is likely to provide a service kindly | | 0.943 | | | |
| Service employee is likely to response immediately to customers' requests | | 0.920 | | | |
| Service employee is likely to pay individual attentions to customers | | 0.880 | | | |
| Service employee is likely to have a professionalism of customer service. | | 0.897 | | | |
| Service employee is likely to give spontaneous helps to the customer | 0.930 | | | | |
| Service employee is likely to provide an excellent service. | 0.908 | | | | |
| Factor analysis 2 | | | | | |
| Store image | We can enjoy a meal in the restaurant | 0.873 | 4.123 | 68.712 | |
| | Restaurant is attractive | 0.852 | | | |
| | The restaurant stands comparison as a restaurant specializing in Korean foods. | 0.826 | | | |
| | The restaurant gives customer a disappointment ¹⁾ | 0.813 | | | |
| | The restaurant gives customer an unpleasant feeling ¹⁾ | 0.804 | | | |
| The restaurant gives impressions of a fine dining restaurant | 0.802 | | | | |
| Factor analysis 3 | | | | | |
| Purchase behavioral intention | I would like to recommend the restaurant to an acquaintance | 0.952 | 2.538 | 84.597 | |
| | I would like to visit the restaurant | 0.934 | | | |
| | I have an intention to spend more money than planned amount, if I visit the restaurant | 0.872 | | | |

¹⁾Reversed response was recoded 1 to 5, 2 to 4, 4 to 2, and 5 to 1

include product, price and layout, whereas the latter includes emotional feelings such as friendliness, belonging and interest. The menu, price, style and location of the store also influence the development of the store image (Lee et al. 2010b).

4. Combined effects of the physical evidence and functional service on store image and purchase intention

The results of two way ANOVA showed that functional service and physical evidence jointly influenced store image for hypothesis 1 ($p < 0.001$, $R^2 = 0.961$) and purchase intention for hypothesis 2 ($p < 0.001$, $R^2 = 0.932$). As presented in <Figure 2(a)>, in a situation where the functional service is negative and physical evidence is negative (scenario 4), the store image was the most lowly rated as 1.68 points out of 5 points, while when positive functional service (scenario 3), it increased as 2.48 points. In addition, under positive physical evidence, when functional service is negative (scenario 2), the store image was 2.09 while in positive functional service (scenario 1), the store image was highly scored as 3.59 points. The gap of the store image scores between negative and positive physical evidence is deeper (1.11) in the positive functional service situations rather than the score gap (0.41)

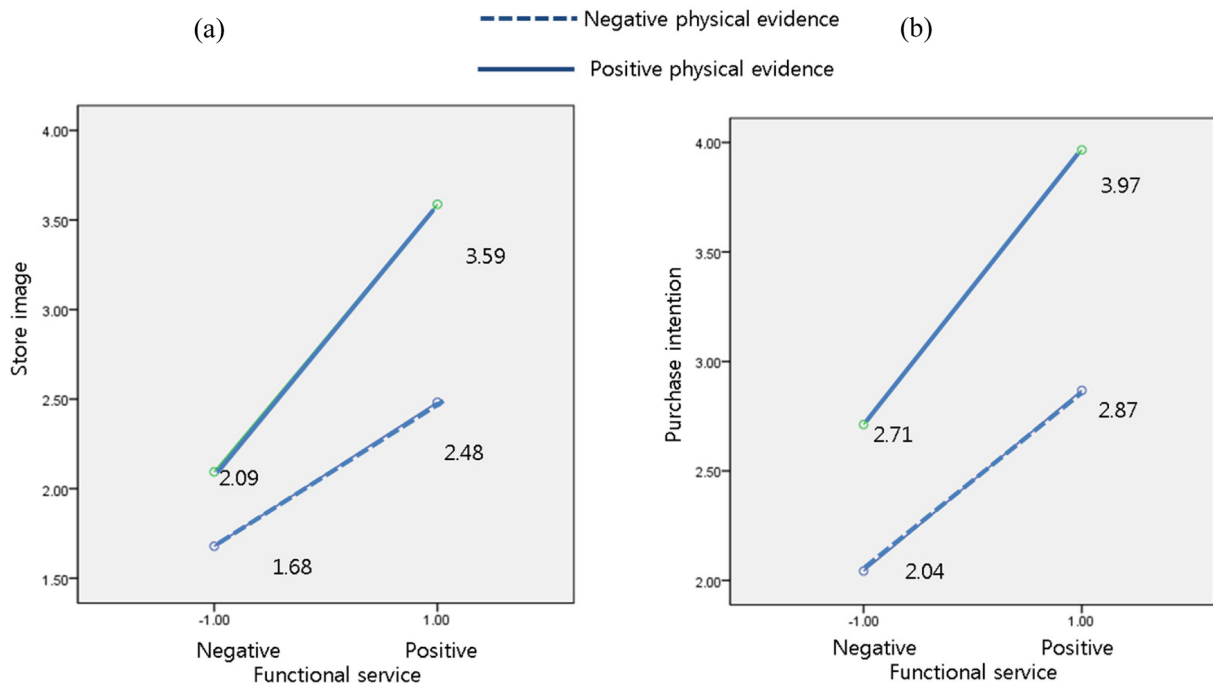
in the negative functional service. Similar results showed in the purchase intention, too: the following order of scenario 4 (2.04), scenario 3 (2.71), scenario 2 (2.87), and scenario 1 (3.97) <Figure 2(b)>. Therefore the hypothesis 1 and hypothesis 2 were accepted ($p < 0.001$).

Theses result was consistent with the Wall & Berry (2007) study. They pointed that in restaurants with positive physical evidence, customers have high expectations of employee service and if these expectations are not met, the customers rate service quality lower than for restaurants with negative physical evidence.

5. Hypothesis test for each effect of physical evidence and functional service on store image

From the two ANOVA analysis, as significant interactions effect between functional service and physical evidence existed, multiple regression tests were performed to identify separate impact of employees' functional service and physical environment on store image and purchase intention under the four different scenarios <Table 5>.

With both positive physical evidence and positive functional service from employees, physical evidence ($\beta = 0.433$) has a stronger effect on store image than functional service



<Figure 2> Combined effect of the functional service and physical evidence on store image (a) and purchase intention (b). Adjusted R^2 value for store image is 0.961 ($p < 0.001$) with mean square 126.5 for function service ($p < 0.001$), 91.4 for physical evidence ($p < 0.001$), and 5.385 for the interaction of functional service and physical evidence ($p < 0.001$). Adjusted R^2 value for purchase intention is 0.932 ($p < 0.001$) with mean square 154.4 for function service ($p < 0.001$), 67.6 for physical evidence ($p < 0.001$), and 13.959 for the interaction of functional service and physical evidence ($p < 0.001$).

($\beta=0.385$). However, in a situation with positive physical evidence and negative functional service, the functional service ($\beta=0.381$) affects the store image more than the physical evidence ($\beta=0.276$) ($p<0.001$). Under the situation where negative physical evidence is combined with positive functional service (scenario 3), the store image is influenced by the physical evidence ($\beta=0.521$) more than by the functional service ($\beta=0.251$). However, if both negative physical evidence and negative functional service are present (scenario 4), only the functional service ($\beta=0.648$, $p<0.001$) has strongest impact on store image while physical evidence has no effect.

5. Hypothesis test for each effect of physical evidence and functional service on purchase intention

As shown in <Table 5>, intention to purchase was not affected by physical evidence but affected by functional service from the employees regardless of the different four scenarios. Especially, the impact of functional service on

purchase intention ($\beta=0.413$, $p<0.001$) was stronger under negative functional service rather than positive function service situation.

In our study, combined effects of functional service and physical evidence on store image and purchase intention were found to be different, thus hypothesis 1 and 2 were accepted. When the separate effect of function service and physical evidence tested, there were different effects under 4 scenarios: in store image, function service and physical evidence affect store image except scenario 4 but, for the purchase intention, the only function service affect. Physical evidence describes the service provision environment including the visual factor, the surroundings and mood. It also refers to the location where the service delivery and interaction between the service provider and the customer occurs (Baker et al. 1994; Lee et al. 1999). It is called the servicescape and includes lighting, color, allocation of furniture, signals, movement flows, decoration and indoor temperature (Bitner 1992; Park & Yoo 2019). Studies

<Table 5> Influence of physical evidence and functional service on store image and purchase intention under

| Dependent variable | Independent variable | β | t-value | p-value | F-value | R ² |
|-------------------------------|----------------------|---------|----------|---------|-----------|----------------|
| Scenario 1 | | | | | | |
| Store image | Physical evidence | .433 | 5.543*** | 0.000 | 63.675*** | 0.525 |
| | Functional service | .385 | 4.936*** | 0.000 | | |
| Purchase behavioral intention | Physical evidence | .115 | 1.350 | 0.180 | 48.672*** | 0.562 |
| | Functional service | .198 | 2.384* | 0.019 | | |
| | Store image | .524 | 5.819*** | 0.000 | | |
| Scenario 2 | | | | | | |
| Store image | Physical evidence | .276 | 3.427** | 0.001 | 19.580*** | 0.236 |
| | Functional service | .381 | 4.732*** | 0.000 | | |
| Purchase behavioral intention | Physical evidence | .059 | 0.866 | 0.388 | 42.450*** | 0.521 |
| | Functional service | .413 | 5.866*** | 0.000 | | |
| | Store image | .423 | 5.726*** | 0.000 | | |
| Scenario 3 | | | | | | |
| Store image | Physical evidence | .521 | 6.788*** | 0.000 | 49.671*** | 0.448 |
| | Functional service | .251 | 3.268** | 0.001 | | |
| Purchase behavioral intention | Physical evidence | .083 | 1.029 | 0.350 | 47.779*** | 0.548 |
| | Functional service | .201 | 2.852** | 0.005 | | |
| | Store image | .569 | 6.780*** | 0.000 | | |
| Scenario 4 | | | | | | |
| Store image | Physical evidence | .111 | 1.361 | 0.176 | 55.299*** | 0.501 |
| | Functional service | .648 | 7.977*** | 0.000 | | |
| Purchase behavioral intention | Physical evidence | -.043 | -0.576 | 0.566 | 50.718*** | 0.592 |
| | Functional service | .360 | 3.818*** | 0.000 | | |
| | Store image | .495 | 5.550*** | 0.000 | | |

* $p<.05$, ** $p<.01$, *** $p<.001$

examining the physical environment's effects on customers' feeling, satisfaction and revisit intention showed that physical environment had a significant effect on positive emotions in the customer. A study in dessert café sector stated that physical environment had a powerful impact on consumers' loyalty and cleanliness, especially, was the strong impact variable for the service quality and maintaining the attractive physical evidence for the café has an effect in formation of a favorable attitude and purchase intention from consumers (Seo & Kim 2016). The Han & Hyun's study (2017) in the hotel sector also pointed out that quality of physical environment was a predictor of the patrons' purchase intentions. In turn, the customer's positive emotions affected their satisfaction and revisit intent (Lee 2009; Jung & Yoon 2010). The study revealed that the emotional factor deduced from physical evidence (ie. environment, convenience, cleanliness, and attractiveness) at the restaurant had a close link with purchase intention (Rye & Jang 2007).

In previous studies (Lee et al. 1999; Gremler & Gwinner 2000; Jang et al. 2010), store image as well as purchase intention were reported to be affected by the service quality, which includes functional service and physical evidence. But in our study using video clips, only functional service affected purchase intention, not physical evidence. Especially when function service is negative situation, the effects were more powerful than the positive situation. In the Wall & Berry's study (2007), the authors suggested that both humanic and mechanic clues should convey a coherent message to customers, but when inconstancy occurs, humanic clues are more influential. Their findings emphasize the importance of positive humanic service. If positive humanic clues are provided, there is a chance to overcome negative assessments in situations with negative mechanic clues situation, unlike with negative humanic clues. The result may be related with losing a trust when physical evidence is positive but functional service is negative. Trust is reported as a feeling given to consumer from restaurant, and an important factor for visit intention and in restaurant selection (Song & Shin 2017). However, even if the importance of humanic clues is emphasized, mechanic clues are still important because they are one of the factors affecting the customer's expectations. Therefore, foodservice managers should try to maintain physical evidence levels appropriate to the price and employee service of the restaurant, given that customers form their expectations of service quality based on the physical evidence at the restaurant.

6. Hypothesis test for relationship between store image and purchase intention

Store images of restaurant from all scenarios have influenced on consumer's purchasing intension <Table 5>. Thus the hypothesis 3 was accepted. The impacts power of store image were strongest ($\beta=0.569$, $p<0.001$) at scenario 1 and lowest at scenario 2 ($\beta=0.423$, $p<0.001$). This result is similar to the previous result (Baker et al. 1994; Jang et al. 2010; Lee et al. 2010b; Yi et al. 2017).

From the above result, this study can be helpful in designing a service management strategy for a restaurant specializing in *bulgogi*. However, the study has some limitations. Most of all, this study employed the convenience sampling method. The samples are characterizes as 20' and 30' generation living in Seoul and Gyeonggi province, and female and single oriented. Only a few local respondents or non-Korea nationality were included, but it could not be said to represent the regions or foreigner. However, the minority samples were included with the consideration of the usefulness of information because the samples worked in the research related area. Thus, possible generalization of the results is limited and a caution interpretation is needed. Future studies should use systematic sampling methods with various population groups. Secondly, in our study, physical evidence attributes were measured in terms of emotional, not functional, perspectives. So, future studies are needed to identify the combined effects of functional service and physical evidence from a functional as well as an emotional perspective. Lastly, mainly because Koreans and foreigners might have different perceptions of Korean foods and restaurants, it is necessary for future studies to identify the impact of cultural differences on foreigners' perceptions of functional service from employees, physical evidence, store image, and purchase intention in different scenarios.

IV. Summary and Conclusion

This study aimed to identify whether four service situations that occurred with positive and negative combinations of physical evidence and functional service from employees influenced the store image and purchase behavioral intentions of customers at *bulgogi* restaurants. Respondents were asked to complete a questionnaire after watching one of four videos recorded at *bulgogi*-specialized restaurants with four different scenarios. Data were analyzed with the SPSS (Window 19.0) package, using frequency analysis, one-way ANOVA, 2 by 2 factorial ANOVA, exploratory factor

analysis, and multiple regression analysis to confirm the hypotheses. In particular, we identified the combined effects of functional service and physical evidence on store image and purchase intention. The study found that service quality, store image, and purchase intention received the highest ratings for restaurants with positive physical evidence and positive functional employee service, but received the lowest ratings when both conditions were negative. Especially, in the scenario with negative functional service from employees and positive physical evidence, store image and purchase intention were rated lower than the opposite scenario. The study also found that functional service and physical evidence respectively influenced store image and purchase intention. Moreover under the combined effect of the physical evidence and functional service existing, the effect of employee service is more powerful on store image than that of physical evidence, even though the effect differed depending on the situation. Purchase intention was only influenced by functional service quality from employees under combined effect of two factors. Therefore, the top priority is to decide the level of physical evidence suitable for the service and price that local customers expect when launching Korean food restaurants inside as well as outside Korea. In addition, managers should understand that customers may be more dissatisfied with poor employee service if the physical evidence is positive, resulting in low evaluation of service quality and complaints from customers. Consequently, proper management of employees' functional service at a level that suits the physical evidence is recommended.

Author biography

Chang, Hyeja (Dankook University, Professor, 0000-0003-4871-3053)

Hwang, Daye (Dankook University, Master of Science, 0000-0002-0078-1607)

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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