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Bridging the Perception Gap between Management and Customers on DINESERV Attributes: The Korean All-You-Can-Eat Buffet

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Abstract: Our study is based on the premise that there are differences between the key service attributes that restaurant managers prioritize and crucial DINESERV attributes that are important to customers' perception of their experience at a restaurant. This paper investigated the perception gap between operators and customers on the service attributes of Korean all-you-can-eat buffet restaurants, and it suggests strategic alternatives to bridge this perception gap. To investigate this perception gap, we first used the analytic hierarchy process (AHP) to determine the priority ranking of the service attributes that restaurant managers employ for enhancing customer satisfaction. Second, we used the importance-performance analysis (IPA) methodology to reveal the importance that customers place on individual restaurant service attributes and how they affect customer satisfaction. Finally, this paper integrated AHP and IPA to scrutinize the perception gap between managers' prioritization and customers' view of the importance of DINESERV attributes. The theoretical contribution of this study is the proposed integrated AHP-IPA model that combines the manager and customer perspectives. This model differentiates our study from previous studies that analyzed operator prioritizations and customer perceptions separately. Furthermore, we offer strategic alternatives for managing service attributes that are suitable for multiple types of buffet restaurants, including hotel, specific, and casual buffet restaurant types that are categorized by the food served and service procedures employed.

Keywords: DINESERV; service attribute; buffet restaurant; AHP; IPA

1. Introduction

The number of meals eaten outside the home is increasing, making restaurants one of the fastest-growing service industries. The worldwide restaurant industry has expanded as the demand for eating-out has increased with economic growth, improved standards of living, and changing food consumption patterns. In particular, dining out in Korea has been growing faster than in other countries due to changes in the Korean economic and social environment including lifestyle changes, the alteration of eating habits, and increased eating out [1,2]. This rapid growth has accelerated the complex and fierce competition among restaurants. To achieve sustainable growth, a restaurant must have a competitive edge such as price competitiveness, food quality, or service quality [3]. Restaurant service operators should appropriately prioritize service resources to differentiate their service quality, and they should develop new menus in a timely manner to increase customer satisfaction and competitive advantages.

Most previous studies on restaurants have primarily examined service attributes from the customer's point of view [4] and have analyzed the effect of restaurant service quality on customer satisfaction, customer attitude, repurchase intention, and loyalty [5–7]. Other studies have investigated

the optimal strategies to allocate service resources to maximize service efficiency from the perspective of service operators [8–11]. However, there have been relatively few studies that have integrated the perspectives of both customers and service operators to increase customer satisfaction and maximize service efficiency.

In restaurants, there are both differences and similarities between the service attributes that customers deem to be of importance and those that service operators strategically prioritize. These differences are mainly due to the discrepancies between customers' expectations of service and the service providers' perception of the service provided. Therefore, the purpose of this study is to investigate the restaurant service attributes that are perceived differently by providers and customers and to suggest strategic initiatives to reduce this perception gap.

It is important to note that there are multiple types of buffet restaurants. They are categorized by the operational characteristics of the restaurants, the type of food they serve, and their price range [12,13]. The hotel buffet restaurant (HBR) serves a variety of luxury foods with high-quality ingredients and relatively high prices. The specific buffet restaurant (SBR) focuses only on one or two primary menus. They may serve Korean, Japanese, Chinese, or seafood-based menus with a limited menu portfolio and have prices in the medium range—less than hotels but somewhat more expensive than the casual buffet restaurant. The casual buffet restaurant (CBR) is economically priced, with a price range of $10.00–20.00. They focus on cheaper menus than HBRs and offer a simple buffet service like a salad bar.

All-you-can-eat buffet restaurants can also be categorized into HBR, SBR, and CBR according to the critical operational strategies of a restaurant and the customer's expectations for their visit. Because the three types are quite different, this study separately examines the perception gap between managers and customers in regard to the importance of buffet restaurant service attributes by types of buffet restaurants. This approach offers tailored strategic initiatives for each restaurant type to enhance customer satisfaction and achieve sustainable growth of a buffet restaurant. The specific research questions addressed in this study are as follows:

Research Question 1: What are the service attributes that are important to customers and increase customer satisfaction at a buffet restaurant?

Research Question 2: What are the service attributes prioritized by operators of buffet restaurants to increase customer satisfaction?

Research Question 3: Is there a perception gap between managers' and customers' priorities on the importance of buffet restaurant service attributes?

This paper is structured as follows. The theoretical background of previous studies is reviewed in the next section. In Section 3, we define the research model and methodologies importance-performance analysis (IPA) and analytic hierarchy process (AHP). Section 4 analyzes various restaurant service attributes using the IPA, and Section 5 analyzes restaurant operators' priority ranking on restaurant service attributes via the AHP. In Section 6, we attempt to combine the IPA and AHP to integrate the manager and customer perspective, resulting in a complete view for the improvement of restaurant operation management. Section 7 discusses the theoretical and practical implications of the results, and conclusions and future studies are proposed in the final section.

2. Literature Review

2.1. Literature Review of DINESERV

Service quality is an assessment of how well service conforms to the customer's expectations and measures perceived expectations of service against perceived performance [14]. Providing excellent service quality is a strategic factor for achieving a competitive advantage in an industry such as the rapidly changing hospitality and foodservice industry.

Service quality has been shown to have a positive effect on customer satisfaction and purchase intentions, making it one of the most important factors in restaurant management. Only restaurants

with excellent service along with good quality food can survive the fierce competition. Therefore, it is necessary for restaurant operators to accurately understand their customers' needs and strategically manage service resources to increase customer satisfaction and achieve sustainable growth.

The service quality of restaurants has unique features that differentiate it from the other service fields. Similar to SERVQUAL, Stevens et al. [15] developed the 29-item DINESERV questionnaire designed to measure restaurant service quality in relation to the service provider and customer interaction during service delivery. Various studies have demonstrated that, as proposed, the DINESERV is a reliable, relatively simple measurement tool for determining how consumers view a restaurant's quality [16]. Moreover, DINESERV is a powerful tool that the restaurant operator can use to objectively estimate the expected and perceived service quality of a restaurant. For instance, Bougoure and Neu [17] used DINESERV to investigate the relationships between service quality, overall service quality perceptions, customer satisfaction, and repurchase intentions in the Malaysian fast food industry. Ryu and Jang [18] explored the dimensions of the physical environment of upscale restaurants to develop the DINESCAPE scale. Based on quantitative analyses, they identified a six-factor scale consisting of facility aesthetics, ambience, lighting, service product, layout, and social factors. Kim et al. [19] validated the five dimensions of DINESERV and evaluated the service quality of foreign-brand, casual dining restaurants in Korea using DINESERV.

2.2. Literature Review of Restaurant Service Attributes

A number of studies in the field of restaurant management have been conducted to investigate ways to improve service quality and increase customer satisfaction. In particular, those examining the DINESERV questionnaire introduced the important concepts of restaurant service attributes and their effect on customer satisfaction. Several previous studies investigated that excellent service quality attracts new customers, positively affects customer attitudes, and leads to customer satisfaction [13,20,21]. Most current studies have shown that customer satisfaction has a very important influence on customers' revisit intentions and on positive word-of-mouth recommendations of restaurants to potential customers, which ultimately strengthens customer loyalty [22,23].

In the case of a buffet restaurant, physical factors such as food, facilities, and atmosphere may be as important as the service; thus, physical aspects as well as the procedure of service delivery should be considered crucial restaurant attributes. Ha and Jang [24] suggested that physical environments are important in increasing customer satisfaction and have an important influence on restaurant selection. Moreover, Namkung and Jang [20], Ha and Jang [25], and Ryu and Han [26] showed that the food quality is the most important factor in determining customer satisfaction and behavioral intention. There are a number of other restaurant service attributes that affect customer satisfaction and revisit intention in the DINESERV. For instance, appealing food presentation, tasty food, spatial seating arrangement, fascinating interior design, pleasing background music and mood, reliable service, service responsiveness/assurance and competent employees are important attributes in contributing to the high satisfaction of restaurant diners [3,27,28].

The existing studies on the service attributes of restaurants are as follows: Harrington et al. [29] examined the relationship among six restaurant attribute factors such as promotion, price/value, quality expectation, setting, dietary, and variety/innovative characteristics in fine-dining restaurant choice selections. Furthermore, Oyewole [12] reported a two-phase study conducted to determine the dimensions of service quality in the all-you-can-eat buffet restaurant industry from the consumer's perspective. In this research, he revealed twelve distinct dimensions made up of 87 different attributes.

Several authors have compiled lists of restaurants attributes. Some have been based on the different constructs that represent the different types of restaurant attributes. Firstly, Kim et al. [30] investigated the relative importance of institutional DINESERV factors that affect customer satisfaction in university dining facilities and examined the influence of customer satisfaction on return intention and word-of-mouth endorsement. In this research, they categorized institutional DINESERV dimensions into five factors: Food quality (overall quality of the food, taste of food, eye appeal of the food, and

freshness of the food), service quality (staff appearance, attentive staff, service provided by staff, staff's knowledge about food, and friendly dining managers), price and value (good value for the price, appropriate portion size, reasonable price item, and overall value of the dining experience), atmosphere (cleanliness of facilities, dining room environment, and level of comfort in the dining), and convenience (convenient location and short walking distance). Liu and Jang [31] investigated American customers' perceptions of Chinese restaurants in the U.S. by using the IPA approach, and they also examined which attributes of Chinese restaurants (i.e., food-related attributes, service-related attributes, atmospherics-related attributes, and other attributes) influence American customers' satisfaction and behavioral intentions. This study divided four Chinese restaurant quality dimensions into 24 attributes. More recently, Marinkovic et al. [32] identified the key determinants of choosing a particular ethnic-themed restaurant, as well as the factors (e.g., quality of food, price, and service quality, interior and exterior) that have an impact on an ethnic restaurant's perceived image. They determined priority ranking of service attributes that were significant for choosing an ethnic restaurant through the AHP technique, while in the second stage, a structural equation modeling model was used to identify the triggers of perceived image after a visit to an ethnic restaurant. Longart et al. [33] developed the basis for new, clearer seven categories of restaurant attributes: Food and drink, ambiance/atmosphere, value for money/perceived customer value, clearness/hygiene, service quality, location, and restaurant image. Moreover, they suggested a model that shows the relationships between attributes and perceived consumer value. Table 1 tabulates previous studies on the service attributes of restaurants.

Table 1. Literature review of service attributes for restaurants (from 2007 to 2017)

Food Quality (A)				Interior (B)				Service Quality (C)				Price and Value (D)				Researcher
A_1	A_2	A_3	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4	D_1	D_2	D_3	D_4	
✓	✓	✓					✓				✓	✓	✓	✓	✓	DiPietro [34]
✓				✓	✓	✓		✓		✓		✓				Ulkhaq et al. [2]
	✓		✓				✓					✓	✓	✓	✓	Ramakrishnan et al. [13]
				✓						✓						Cheng et al. [35]
		✓	✓	✓	✓	✓	✓				✓					Wu and Mohi [11]
✓	✓	✓		✓					✓			✓	✓			Marinkovic et al. [32]
✓		✓		✓			✓									Jang and Ha [3]
✓		✓								✓			✓	✓	✓	Min and Min [1]
✓	✓	✓			✓		✓	✓	✓	✓		✓	✓	✓	✓	Oyewole [12]
✓		✓			✓				✓	✓		✓			✓	Clemes et al. [36]
✓		✓											✓	✓	✓	Ha and Jang [25]
✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓		Oyewole [6]
✓	✓	✓							✓			✓				Ma et al. [37]
✓		✓								✓						Min and Min [9]
✓		✓		✓		✓	✓	✓	✓	✓						Ha and Jang [25]
✓	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓		Ryu and Han [26]
				✓					✓	✓	✓		✓	✓		Bougoure and Neu [17]
✓	✓	✓			✓		✓	✓	✓	✓		✓	✓	✓		Kim et al. [30]
✓	✓	✓	✓	✓			✓	✓	✓				✓			Liu and Jang [31]
✓		✓					✓						✓			Law et al. [4]
✓	✓		✓	✓						✓						Namkung and Jang [27]
✓	✓		✓													Namkung and Jang [20]
✓	✓	✓	✓	✓			✓	✓	✓				✓			Chow et al. [38]
✓		✓			✓				✓							Ryu and Jang [28]

Note: A_1: Taste of Food; A_2: Freshness of Food; A_3: Menu Variety (Seasoned Food); A_4: Temperature of Food; B_1: Interior Design and Décor; B_2: Table Setting (Tableware, Linens); B_3: Customer-Friendly Layout; B_4: Environmental Cleanliness (Powder Room etc.); C_1: Chef's Knowledge and Cooking Skill; C_2: Quick Service Response; C_3: Friendly and Kind Staff Attitude; C_4: Efficient Service Failure Recovery; D_1: Value for Absolute and Asking Price; D_2: Value for Comparative and Reasonable Price; D_3: Overall Value of the Dining Experience; D_4: Discount/Coupon/Sales Promotion.

3. Research Model and Methodology

3.1. Research Model

In this study, we employed the IPA methodology to objectively and accurately measure various service attributes provided to customers in a restaurant. IPA compares and analyzes the importance

and customer satisfaction resulting from each restaurant service attribute based on data collected from customer evaluations. In doing this, we sought to gather useful data on restaurant service attributes that customers desire and to provide basic data for establishing market segmentation strategies to achieve customer satisfaction.

Service attributes that customers perceive in a buffet restaurant are, from the service operator's perspective, critical operational and managerial variables. Buffet restaurant operators strive to increase customer satisfaction by creating high-quality menus which may include fresh foods cooked on the spot or seasonal ingredients. Furthermore, there are a number of strategic service attributes that managers must prepare in advance of their customers' arrival, such as table layouts that consider the route of the customers during meals, the intensity of lighting within the restaurant, and service manuals to recover from service failures. Implementing these items takes up limited time and resources. Therefore, it is very important for buffet restaurant operators to determine the priority level of these service attributes and strategic management practices and implement them according to their importance. Thus, this study used the AHP to measure priorities of buffet restaurant service attributes based on data gathered from the restaurant operators or buffet restaurant-related professionals.

There are differences and similarities between the restaurant service attributes that service operators operationally prioritize and the restaurant service attributes important to customers. Thus, this study investigated the perception gap between operators and customers on restaurant service attributes by using the integrated IPA-AHP method, as seen in Figure 1.

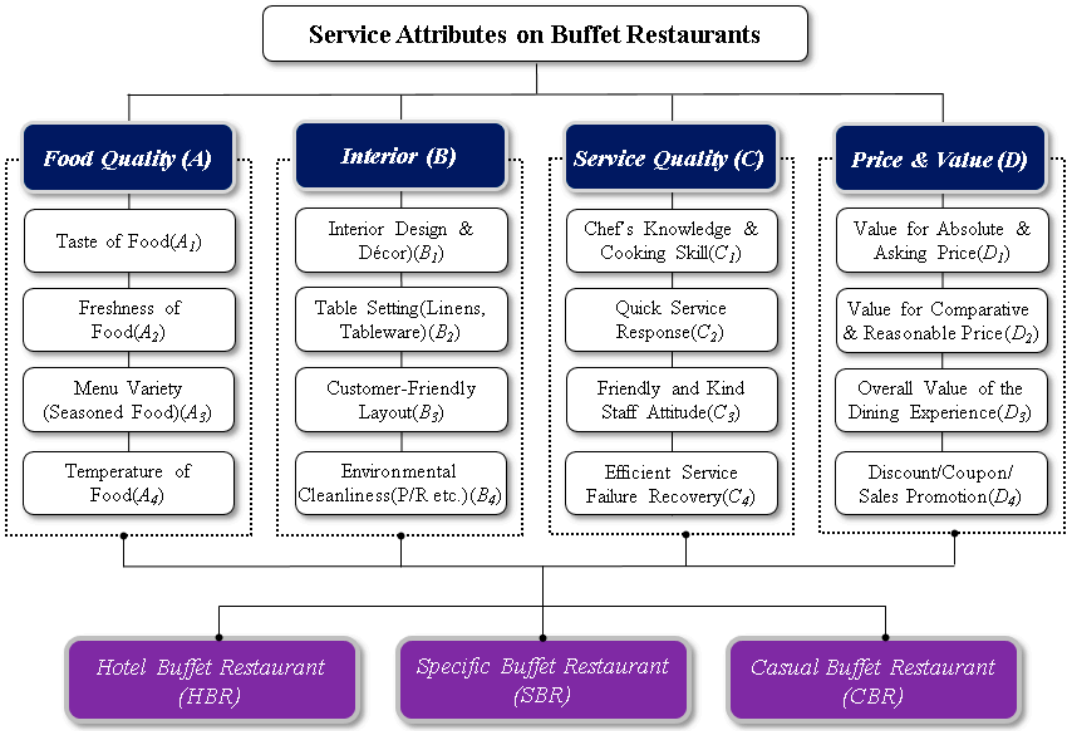


Figure 1. Research model for service attributes of buffet restaurants.

The service attributes used in this study were developed on the basis of published literature (seen in Table 1) and focus group discussions with buffet restaurant experts from industry. Based on previous literature [30–34], this paper categorized the service attributes of all-you-can-eat buffet restaurant into four dimensions: 'Food quality,' 'interior,' 'service quality,' and 'price and value,' as seen in Figure 2. The 'food quality' dimension includes restaurant sub-attributes such as the taste of food (A_1), the freshness of food (A_2), menu variety (A_3), and the temperature of food (A_4). The 'interior' dimension includes interior design and décor (B_1), table setting (B_2), Customer-friendly layout (B_3), and environmental cleanliness (B_4). The 'service quality' dimension includes chef's knowledge and

cooking skill (C_1), quick service response (C_2), friendly and kind staff attitude (C_3), and efficient service failure recovery (C_4). Finally, the 'price and value' dimension includes value for absolute and asking price (D_1), the value for comparative and reasonable price (D_2), the overall value of the dining experience (D_3), and discount/coupon/sales promotion (D_4).

3.2. Importance-Performance Analysis

The IPA is a quantitative approach for measuring how people feel about certain characteristics of an issue or a thing [39] and a simple graphical tool to further the development of effective marketing strategies based on judgments of the importance and performance of each attribute measured [40]. This method probes into the customers' perception of quality characteristics pre-service and the customers' actual satisfaction with the quality characteristics post-service. The IPA is a practical and useful methodology that can help managers to identify service and product elements that could contribute to higher customer satisfaction through the allocation of resources. The IPA allocates the quality characteristics into four categories in a two-dimensional matrix based on the importance and performance of each attribute. As seen in Figure 2, the horizontal axis measures the importance of attributes, including service attributes. The vertical axis measures the performance of the attributes, such as customers' perceptions of services.

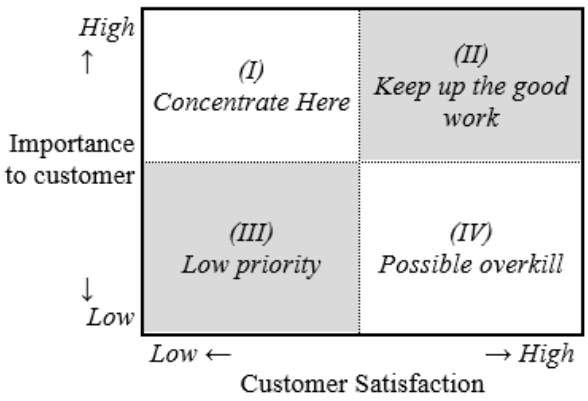


Figure 2. Importance-performance analysis (IPA).

Quadrant I (concentrate here) is an area of high importance but low satisfaction. Attributes situated in this quadrant are considered to be underperforming and represent the product's major weaknesses and threats to its competitiveness. These attributes have the highest priority for management improvement and investment [41]. Quadrant II (keep up the good work) is an area where both importance and satisfaction are high. Attributes in this quadrant represent major strengths and potential competitive advantages of a product or service, and they are considered to be performing well, so the investment level should be held steady. Quadrant III (low priority) is an area where both importance and satisfaction are low. Since user interest is low, managerial improvement is not urgent. Therefore, managers should not be overly concerned with these attributes. These attributes represent minor weaknesses and poor performance is not a major problem. Attributes with low importance but high performance are located in Quadrant IV (possible overkill), containing attributes of low importance to customers which are performing strongly, indicating the possibly inefficient use of limited resources that could be reallocated elsewhere, such as Quadrant I.

The IPA has been widely used for quality analysis in various fields. Its clear visual presentation of the two-dimensional matrix and the intuitive validity of the improvement directions presented by the four areas makes it a valuable analysis tool. For instance, in the hospitality or food service industry, Tzeng and Chang [42] attempted to identify both the importance and performance of restaurant service quality in the Taiwan food service industry using the SERVQUAL and IPA models. Ma et al. [37] investigated customers' perception toward the various service aspects of a Chinese restaurant in the

United States and identified the service attributes that require special attention by employing the DINESERV and IPA techniques. Obonyo et al. [10] described the importance-performance of food service attributes in gastro-tourism development in the Western Tourist Circuit, Kenya. Moreover, Martin [43] measured the perception difference of service quality between management and employee perception in the seven Toronto mid-range and luxury hotels by using the IPA technique and the service gap technique. Chu and Choi [44] examined business and leisure travelers' perceived importance and performance of six hotel selection factors in the Hong Kong hotel industry. More recently, Cheng et al. [35] integrated importance-performance and gap analysis with the quality function deployment model in order to determine the critical DINESERV attributes and to develop their improvement programs and improvement priority for 18 casual-dining restaurants. For more details on the IPA, the reader is referred to Martilla and James [39].

3.3. Analytic Hierarchy Process

The AHP is a multi-criteria decision-making technique used for organizing and analyzing complex and structured hierarchical decisions. It may aid a decision-maker in setting priorities and revealing the best alternatives or projects by reducing complex decisions into a series of pairwise comparisons and synthesizing the results. Furthermore, the AHP incorporates a useful technique for checking the consistency of the decision-maker's logical evaluations, thus increasing the rationality in the decision-making process.

The procedure of the AHP is as follows: First, the AHP method is used to make the decomposition (or structuring) of the problem as a hierarchy. In general, the AHP method divides the problem into three levels: (a) The goal for resolving the problem, (b) the objectives for achieving the goal, and (c) the evaluation criteria for each objective. Second, after structuring a hierarchy, the pairwise comparison matrix for each level is constructed. During the pairwise comparison, the nominal scale is used for evaluation. Third, for each pairwise comparison matrix (A), using the theory of eigenvector, i.e., $(A - \lambda_{max} I)w = 0$ to calculate the eigenvalue (λ_{max}) and the eigenvector $W = (w_1, w_2, \ldots, w_n)$, weights can be estimated [45]. Finally, the possible inconsistencies are determined based on whether the "inconsistency index" exceed 0.1 (10%). This final step looks for any data inconsistencies using the "inconsistency ratio." This is to determine whether the decision-makers have been logical and consistent in their choices. The consistency ratio value for the outcomes of the results is acceptable if the values are less than 0.1 (10%), as given by Saaty [46]. The AHP is both a subjective and objective evaluation technique that provides a useful mechanism for checking the consistency of the evaluation measures and alternatives and reducing bias in decision-making. In addition, this technique is useful in determining the weight of competing alternatives by using the expert's qualitative knowledge in decision-making where performing quantitative analysis is difficult. The detailed description of the AHP technique in our study is presented in the Appendix A.

In the hospitality or food service industry, Chow and Luk [23] adapted the AHP methodology to the measurement of service quality, involving five steps—referred to as "analytical hierarchy process for service quality." Subsequently, they demonstrated how the technique can be applied to the fast-food restaurants and identified which service quality dimensions require attention to create a sustainable competitive advantage. Min and Min [9] measured the service performances of USA fast-food restaurant franchises via the AHP technique and identified salient factors influencing the service performances of fast-food restaurants over time. Furthermore, Oyewole [6] reported a two-phase exploratory study conducted to determine the multi-attribute dimensions of service quality in the fast food industry from the consumer's perspective. Yildiz and Yildiz [47] determined the factors affecting service quality at restaurants and ultimately identified a best restaurant alternative using the AHP and TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) method. Marinkovic et al. [32] identified the key determinants of choosing a particular ethnic-themed restaurant in Serbia, as well as factors that have an impact on an ethnic restaurant's perceived image. In this research, the AHP model was used for ranking factors significant for choosing an ethnic restaurant, while in

the second stage, a structural equation modeling model was used to identify the triggers of perceived image after a visit to an ethnic restaurant. Ulkhaq et al. [2] employed a fuzzy AHP to evaluate the service quality at five Korean restaurants in Semarang, Indonesia. In this paper, they provided the managers with valuable insights into the attributes that reflected customers' perceptions, in addition to positioning their service based on their competitors. Duman et al. [8] presented a thorough, equitable and accurate evaluation framework for operations management in a food retail and delivery franchise using a hybrid approach combining the fuzzy AHP, DEA (Data Envelopment Analysis) and TOPSIS methodologies. For more details on the AHP, the reader is referred to Saaty [46] and Brunnelli [48].

4. Study 1: Importance-Performance Analysis

Authors should discuss the results and how they can be interpreted in perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

In this study, we analyzed the service attributes important to customers' value perceptions and customer satisfaction in a buffet restaurant using the IPA methodology. The IPA is based on customer satisfaction as a function of customer expectations of important attributes and the judgment of the performance of those attributes. It focuses on the gap between customer expectations and judgment of the performance of specific attributes of the service consumed. The IPA evaluation methodology can help evaluate buffet restaurant service attributes and provide guidance to formulate restaurant operation strategies for accurately allocating resources to maximize financial or non-financial performance.

4.1. Sample Characteristics for Importance-Performance Analysis

In this study, we used convenience and quota sampling methods for a total of 357 respondents who experienced a HBR, SBR, and a CBR within six months. The characteristics of the sample used in the IPA varied in gender (female, 54.1%; male, 45.9%), age (20s, 26.9%; 30s, 16.2%; 40s, 30.8%; ≥50s, 26.1%), the purpose of visit (meeting for various events, 23.2%; family meals, 51.8%; meeting for business, 4.8%; and simply meals, 20.2%), and visiting frequency per month (once, 66.1%; twice, 21.3%; three times, 2.5%; beyond four, 2.0%).

4.2. Importance-Performance Analysis Results

This study conducted the paired t-test to verify the difference between importance and satisfaction, and it uncovered the service attributes that customers regard as essential factors in buffet restaurants to improve customer satisfaction. The t-tests were also conducted to analyze customers' perception gap on various restaurant service attributes, set up reference values for plotting the IPA grid, and identify the relative importance of individual service attributes. Table 2 and Figure 3 show the results of the IPA evaluation for the service attributes of the buffet restaurant. Among the 16 service attributes, all except the "interior design and décor (total, hotel, casual)" showed statistically significant differences between importance and satisfaction, as seen in Table 2.

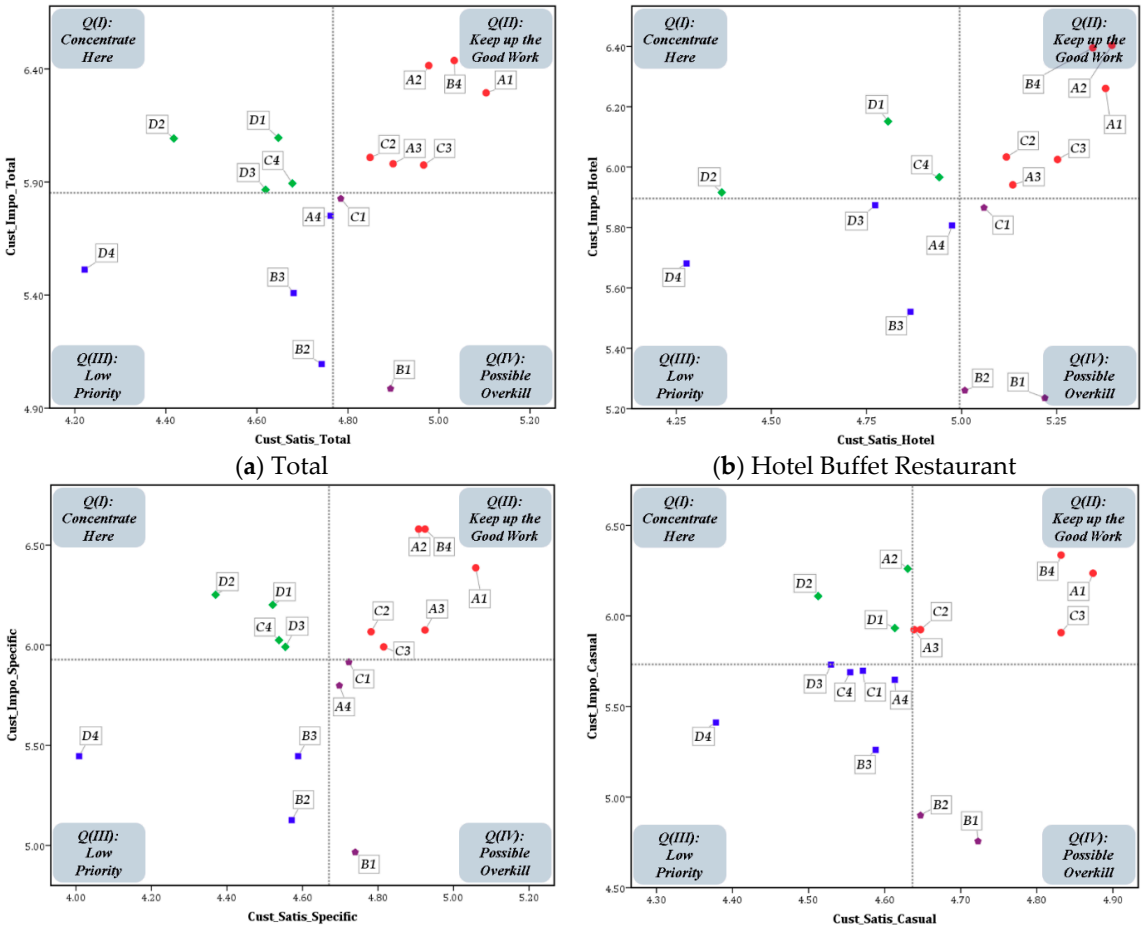
Figure 3a shows the results of the overall IPA evaluation, including HBR, SBR, and CBR. The service attributes situated in Quadrant I (concentrate here) are C_4, D_1, D_2, and D_3; those located in the Quadrant II (keep up the good work) are A_1, A_2, A_3, B_4, C_2, and C_3; Quadrant III (low priority) has A_4, B_2, B_3, and D_4; and lastly, Quadrant IV (possible overkill) has the two restaurant service attributes B_1 and C_1 that are rated by customers as of low importance with high performance.

In this study, all-you-can-eat buffet restaurants were divided into HBR, SBR, and CBR according to their operational characteristics and the price differentiation strategy for food service. From the customers' perspective, the types of buffet restaurants we studied have major differences in the level importance of individual service attributes, and customer satisfaction depends on their unique characteristics.

Table 2. IPA results for buffet restaurants.

Category	Factor		Importance		Performance		*t*-Test (*p*-Value)	Quadrant
			M ± SD	Rank	M ± SD	Rank		
Food Quality (A)	Taste of Food (A_1)	Total	6.294 ± 0.865	3	5.104 ± 1.064	1	18.960 (0.000) **	2
		HBR	6.261 ± 0.943	3	5.378 ± 0.965	2	8.763 (0.000) **	2
		SBR	6.387 ± 0.804	3	5.059 ± 1.044	1	12.752 (0.000) **	2
		CBR	6.235 ± 0.841	3	4.874 ± 1.124	1	11.720 (0.000) **	2
	Freshness of Food (A_2)	Total	6.415 ± 0.808	2	4.978 ± 1.159	3	22.131 (0.000) **	2
		HBR	6.403 ± 0.896	1	5.395 ± 1.122	1	9.537 (0.000) **	2
		SBR	6.580 ± 0.719	1	4.908 ± 1.066	4	15.655 (0.000) **	2
		CBR	6.261 ± 0.775	2	4.630 ± 1.163	8	14.175 (0.000) **	1
	Menu Variety (A_3)	Total	5.980 ± 0.970	7	4.899 ± 1.115	5	14.521 (0.000) **	2
		HBR	5.941 ± 1.107	8	5.134 ± 1.178	6	6.379 (0.000) **	2
		SBR	6.076 ± 0.875	6	4.924 ± 1.106	2	8.572 (0.000) **	2
		CBR	5.924 ± 0.913	7	4.639 ± 1.133	7	10.457 (0.000) **	2
	Temperature of Food (A_4)	Total	5.751 ± 0.996	12	4.762 ± 1.103	9	14.089 (0.000) **	3
		HBR	5.807 ± 1.174	12	4.975 ± 1.131	10	6.667 (0.000) **	3
		SBR	5.798 ± 0.850	12	4.697 ± 1.054	9	9.347 (0.000) **	4
		CBR	5.647 ± 0.935	12	4.613 ± 1.098	9	8.495 (0.000) **	3
Interior (B)	Interior Design and Décor (B_1)	Total	4.986 ± 1.105	16	4.894 ± 0.991	6	1.345 (0.179)	4
		HBR	5.235 ± 1.170	16	5.218 ± 1.018	5	0.142 (0.887)	4
		SBR	4.966 ± 0.999	16	4.739 ± 0.906	7	2.069 (0.041) *	4
		CBR	4.756 ± 1.097	16	4.723 ± 0.94	4	0.262 (0.794)	4
	Table Setting (B_2)	Total	5.095 ± 1.029	15	4.742 ± 0.978	10	5.542 (0.000) **	3
		HBR	5.261 ± 1.093	15	5.008 ± 1.062	9	2.050 (0.043) *	4
		SBR	5.126 ± 0.970	15	4.571 ± 0.849	11	5.306 (0.000) **	3
		CBR	4.899 ± 0.995	15	4.647 ± 0.962	5	2.503 (0.014) *	4
	Customer-Friendly Layout (B_3)	Total	5.409 ± 1.028	14	4.681 ± 1.027	11	10.559 (0.000) **	3
		HBR	5.521 ± 1.065	14	4.866 ± 1.157	12	5.203 (0.000) **	3
		SBR	5.445 ± 0.972	13	4.588 ± 0.978	10	7.033 (0.000) **	3
		CBR	5.261 ± 1.037	14	4.588 ± 0.915	11	6.106 (0.000) **	3
	Environmental Cleanliness (B_4)	Total	6.437 ± 0.807	1	5.034 ± 1.173	2	20.811 (0.000) **	2
		HBR	6.395 ± 0.913	2	5.345 ± 1.175	3	9.234 (0.000) **	2
		SBR	6.580 ± 0.695	2	4.924 ± 1.187	3	13.981 (0.000) **	2
		CBR	6.336 ± 0.784	1	4.832 ± 1.099	2	13.445 (0.000) **	2
Service Quality (C)	Chef's Knowledge and Cooking Skill (C_1)	Total	5.826 ± 0.982	11	4.784 ± 0.984	8	16.810 (0.000) **	4
		HBR	5.866 ± 1.065	11	5.059 ± 1.028	8	7.277 (0.000) **	4
		SBR	5.916 ± 0.944	11	4.723 ± 0.911	8	11.230 (0.000) **	4
		CBR	5.697 ± 0.926	10	4.571 ± 0.953	12	11.002 (0.000) **	3
	Quick Service Response (C_2)	Total	6.008 ± 0.885	6	4.849 ± 1.124	7	17.257 (0.000) **	2
		HBR	6.034 ± 0.920	5	5.118 ± 1.202	7	8.064 (0.000) **	2
		SBR	6.067 ± 0.899	7	4.782 ± 1.051	6	10.712 (0.000) **	2
		CBR	5.924 ± 0.835	6	4.647 ± 1.070	6	11.286 (0.000) **	2
	Friendly and Kind Staff Attitude (C_3)	Total	5.975 ± 0.891	8	4.966 ± 1.185	4	14.915 (0.000) **	2
		HBR	6.025 ± 0.897	6	5.252 ± 1.310	4	6.192 (0.000) **	2
		SBR	5.992 ± 0.943	10	4.815 ± 1.089	5	9.925 (0.000) **	2
		CBR	5.908 ± 0.834	8	4.832 ± 1.099	3	10.260 (0.000) **	2
	Efficient Service Failure Recovery (C_4)	Total	5.894 ± 1.014	9	4.678 ± 1.086	12	17.837 (0.000) **	1
		HBR	5.966 ± 1.081	7	4.941 ± 1.167	11	8.365 (0.000) **	1
		SBR	6.025 ± 0.934	8	4.538 ± 1.080	13	12.796 (0.000) **	1
		CBR	5.689 ± 0.998	11	4.555 ± 0.963	13	10.138 (0.000) **	3
Price and Value (D)	Value for Absolute and Asking Price (D_1)	Total	6.095 ± 0.885	4	4.647 ± 1.158	13	19.882 (0.000) **	1
		HBR	6.151 ± 1.065	4	4.807 ± 1.271	13	9.681 (0.000) **	1
		SBR	6.202 ± 0.798	5	4.521 ± 1.134	14	14.017 (0.000) **	1
		CBR	5.933 ± 0.880	5	4.613 ± 1.050	10	11.287 (0.000) **	1
	Value for Comparative and Reasonable Price (D_2)	Total	6.092 ± 0.957	5	4.417 ± 1.162	15	22.250 (0.000) **	1
		HBR	5.916 ± 0.920	9	4.370 ± 1.261	15	10.695 (0.000) **	1
		SBR	6.252 ± 0.875	4	4.370 ± 1.185	15	14.509 (0.000) **	1
		CBR	6.109 ± 0.852	4	4.513 ± 1.032	15	14.000 (0.000) **	1
	Overall Value of the Dining Experience (D_3)	Total	5.866 ± 0.902	10	4.619 ± 1.132	14	17.728 (0.000) **	1
		HBR	5.874 ± 0.897	10	4.773 ± 1.311	14	8.172 (0.000) **	3
		SBR	5.992 ± 0.878	9	4.555 ± 1.095	12	12.062 (0.000) **	1
		CBR	5.731 ± 0.927	9	4.529 ± 0.955	14	11.014 (0.000) **	3
	Discount/Coupon/Sales Promotion (D_4)	Total	5.513 ± 1.194	13	4.221 ± 1.144	16	15.082 (0.000) **	3
		HBR	5.681 ± 1.081	13	4.277 ± 1.221	16	9.559 (0.000) **	3
		SBR	5.445 ± 1.267	14	4.008 ± 1.204	16	8.396 (0.000) **	3
		CBR	5.412 ± 1.138	13	4.378 ± 0.965	16	8.537 (0.000) **	3

Note: * Significant at $p < 0.05$, ** is $p < 0.01$.



(**a**) Total (**b**) Hotel Buffet Restaurant

(**c**) Specific Buffet Restaurant (**d**) Casual Buffet Restaurant

Figure 3. The results of the importance-performance analysis.

For instance, the A_2 attribute for CBR, "increasing freshness of food (A_2)," was located in Quadrant I, while the A_2 attributes of HBR and SBR were located in Quadrant II, indicating that the A_2 of CBR provides high satisfaction to customers. This suggests that even in the case of CBR, which is relatively inexpensive compared to the other two types of buffet restaurants, A_2 is a crucial factor that could increase customer satisfaction. Moreover, the A_4 attribute for SBR, 'proper temperature of the food (A_4),' was located in Quadrant IV, whereas the corresponding attributes for HBR and CBR were in Quadrant III. In the case of SBRs, which provide limited menus to customers, A_4 was the key service attribute for increasing customer satisfaction.

The B_2 attribute (table setting such as tableware and linens) for SBR was located in the Quadrant III, while those for HBR and CBR were in the Quadrant IV, indicating that SBR customers regard this service attribute as irrelevant to customer satisfaction, perhaps due to specific facilities or tables that are already installed for specialty menus of SBRs. The attribute C_1 (chef's knowledge and cooking skill) was included in Quadrant IV for HBR and SBR, while C_1 was in Quadrant III for CBR, indicating low customer satisfaction for this attribute for CBR. The chefs at HBR and SBR communicate with customers to provide the information about the food and prepare it on the spot; however, customers at CBR have relatively limited communication with the chef, potentially resulting in low customer satisfaction for the C_1 attribute. Similarly, the C_4 attribute (efficient service failure recovery) for HBR and SBR was located in Quadrant I, while for CBR, it was in Quadrant III. These results indicate that efficient recovery from service failures plays a crucial role in HBR and SBR where customers experience high-quality food service with relatively high prices. On the other hand, the D_3 attribute (overall value of the dining experience) for HBR and CBR was included in the Quadrant III, whereas that of SBR is in

Quadrant I, which illustrates that this is a factor of high importance for SBR. This result demonstrates that the customers of SBR, where the menu composition and the interior/mood of restaurants focus only on a specific menu, tend to consider the service experience to be the most important attribute.

Among the sixteen service attributes examined, ten attributes were categorized into the same region of importance and customer satisfaction, regardless of restaurant type. However, six restaurant service attributes (A_2, A_4, B_2, C_1, C_4, and D_3) were in different quadrants for different restaurant types, demonstrating a need for differentiated operation initiatives tailored to the characteristics of the restaurant.

5. Study 2: Analytic Hierarchy Process Analysis

This study used the AHP technique to investigate the priority ranking of service attributes by buffet restaurant operators. The AHP is a multi-criteria decision-making methodology used to quantify the weights of criteria. It sets a goal as a top priority and creates a decision hierarchy from the highest to the lowest criteria in terms of importance. In general, the AHP establishes a decision hierarchy based on interrelated decisions and estimates the relative ratio scales of factors through pair-wise comparisons using individual experts' knowledge, experience, and intuition. This methodology is a systematic and quantitative method that been used to make decisions in situations where there are a number of conflicting measures.

5.1. Sample Characteristics for the Analytic Hierarchy Process

In this study, we surveyed 31 buffet restaurant experts from the all-you-can-eat buffet restaurant industry. The characteristics of sample used in this study varied in tenure of service (≤5 years, 6.5%; 5–10 years, 19.4%; 10–15 years, 3.2%; 15–20 years, 35.5%; ≥20 years, 35.5%), gender (female, 41.9%; male, 58.1%), hotel buffet restaurant (54.8%), specific dining buffet restaurant (25.8%), and casual dining buffet restaurant (19.4%). The consistency ratio (CR) was used to verify the reliability of the completed questionnaire. In cases where the CR score exceeded 10% (0.1), the survey responses may have been too inconsistent to be reliable, and the respondents would have needed to perform a pairwise comparison [46]. However, of all collected questionnaires used for the AHP analysis, the CR scores of the hierarchies 1 and 2 were between 0.002 and 0.043, as seen in Table 3.

5.2. Analytic Hierarchy Process Results

According to the results of the overall AHP analysis including HBR, SBR, and CBR shown in Table 3, buffet restaurant experts prioritized the following attributes: Food quality (36.97%), price and value (25.11%), service quality (22.49), and interior (15.44%) (1st CR = 0.002). Among "food quality" attributes, A_2 was ranked first, followed by A_1, A_4, and A_3 (2nd CR = 0.005). In the "price and value" attributes, D_1 was ranked first, followed by D_2, D_3, and D_4 (2nd CR = 0.007). C_4 was prioritized the highest, followed by C_3, C_2, and C_1 in the "service quality" attribute (2nd CR = 0.004). Finally, for the attribute "interior," B_4 was the most prioritized, followed by B_1, B_3, and B_2 (2nd CR = 0.006).

In the analysis of service attributes by types of buffet restaurants, HBR and CBR showed a ranking from highest to lowest of food quality, price and value, service quality, and interior (HBR's 1st CR = 0.007 and CB's 1st CR = 0.017), but the SBR showed a higher priority for "service quality" than "price and value" (SBR's 1st CR = 0.003).

At the global level, A_1 and A_2 were ranked as the top two criteria in all buffet restaurants, while B_1, B_2, and B_3 were the lowest, as seen in Table 4. D_1 and D_2 of the HBR and CBR had a relatively high priority, while those of the SBR were relatively low. In addition, the C_3 and C_4 attributes of HBR and SBR were high ranking, while those of CBR were low, and for SBR C_1 and C_2 had very high priorities, but in HBR and CBR, they were relatively low.

Table 3. Analytic hierarchy process (AHP) results for buffet restaurants.

Factor		Total						HBR						SBR						CBR					
		First Level (1st CR = 0.002)		Second Level		Global-Level		First Level (1st CR = 0.007)		Second Level		Global-Level		First Level (1st CR = 0.003)		Second Level		Global-Level		First Level (1st CR = 0.017)		Second Level		Global-Level	
		wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority	wt.(%)	Priority
Food Quality (A)	A_1	36.97	1	32.13	2	11.88	2	33.68	1	30.17	2	10.16	2	39.17	1	30.31	2	11.87	2	40.06	1	39.68	1	15.90	1
	A_2			33.82	1	12.51	1			37.37	1	12.59	1			33.83	1	13.25	1			24.16	2	9.68	4
	A_3			17.02	4	6.29	7			16.81	3	5.66	8			14.58	4	5.71	10			20.74	3	8.31	5
	A_4			17.03	3	6.30	6			15.65	4	5.27	11			21.28	3	8.34	3			15.42	4	6.18	8
				2nd CR = 0.005						2nd CR = 0.010						2nd CR = 0.003						2nd CR = 0.009			
Interior (B)	B_1	15.44	4	21.85	2	3.37	14	18.51	4	23.64	2	4.38	12	13.88	4	24.15	2	3.35	13	9.77	4	14.27	2	1.39	14
	B_2			13.41	4	2.07	16			14.79	4	2.74	16			14.58	4	2.02	16			8.26	4	0.81	16
	B_3			17.66	3	2.73	15			18.70	3	3.46	15			17.97	3	2.49	15			13.63	3	1.33	15
	B_4			47.08	1	7.27	4			42.87	1	7.93	4			43.30	1	6.01	8			63.85	1	6.24	7
				2nd CR = 0.006						2nd CR = 0.009						2nd CR = 0.019						2nd CR = 0.015			
Service Quality (C)	C_1	22.49	3	19.43	4	4.37	12	22.38	3	17.03	4	3.81	14	29.15	2	27.18	2	7.92	5	14.90	3	16.58	4	2.47	13
	C_2			25.12	3	5.65	11			24.07	3	5.39	10			28.01	1	8.17	4			22.61	2	3.37	11
	C_3			27.56	2	6.20	9			26.25	2	5.88	7			21.77	4	6.35	7			39.56	1	5.89	9
	C_4			27.89	1	6.27	8			32.65	1	7.31	6			23.05	3	6.72	6			21.26	3	3.17	12
				2nd CR = 0.004						2nd CR = 0.004						2nd CR = 0.011						2nd CR = 0.007			
Price and Value (D)	D_1	25.11	2	32.17	1	8.08	3	25.43	2	32.72	1	8.32	3	17.80	3	27.72	2	4.93	11	35.27	2	35.80	1	12.63	2
	D_2			28.76	2	7.22	5			29.96	2	7.62	5			22.54	3	4.01	12			33.26	2	11.73	3
	D_3			23.97	3	6.02	10			21.56	3	5.48	9			33.32	1	5.93	9			19.79	3	6.98	6
	D_4			15.10	4	3.79	13			15.76	4	4.01	13			16.43	4	2.93	14			11.15	4	3.93	10
				2nd CR = 0.007						2nd CR = 0.017						2nd CR = 0.006						2nd CR = 0.043			

Table 4. Priority/importance results for buffet restaurants

		Quadrant (I): Priority (H)/Importance (L)			Quadrant (II): Priority (H)/Importance (H)			Quadrant (III): Priority (L)/Importance (L)			Quadrant (IV): Priority (L)/Importance (H)		
		HBR	**SBR**	**CBR**	**HBR**	**SBR**	**CBR**	**HBR**	**SBR**	**CBR**	**HBR**	**SBR**	**CBR**
Food Quality (A)	A_1				✓	✓	✓						
	A_2				✓	✓	✓						
	A_3						✓				✓	✓	
	A_4		✓					✓		✓			
Interior (B)	B_1							✓	✓	✓			
	B_2							✓	✓	✓			
	B_3							✓	✓	✓			
	B_4				✓							✓	✓
Service Quality (C)	C_1		✓					✓		✓			
	C_2					✓					✓		✓
	C_3					✓					✓		✓
	C_4				✓	✓				✓			
Price and Value (D)	D_1				✓		✓					✓	
	D_2				✓		✓					✓	
	D_3						✓	✓				✓	
	D_4							✓	✓	✓			

The ranking of restaurant attributes "food quality" and "interior" by managers and operators were similar across all restaurants, regardless of the type of buffet restaurant. However, the buffet restaurant attributes "service quality" and "price and value" had different patterns according to the characteristics of the buffet restaurants. This suggests buffet restaurant managers require more efficient service quality management and pricing strategies tailored to the type of buffet restaurant to increase customer satisfaction and sustainable growth of their buffet restaurant.

6. Study 3: Integration of Importance-Performance Analysis and Analytic Hierarchy Process Techniques

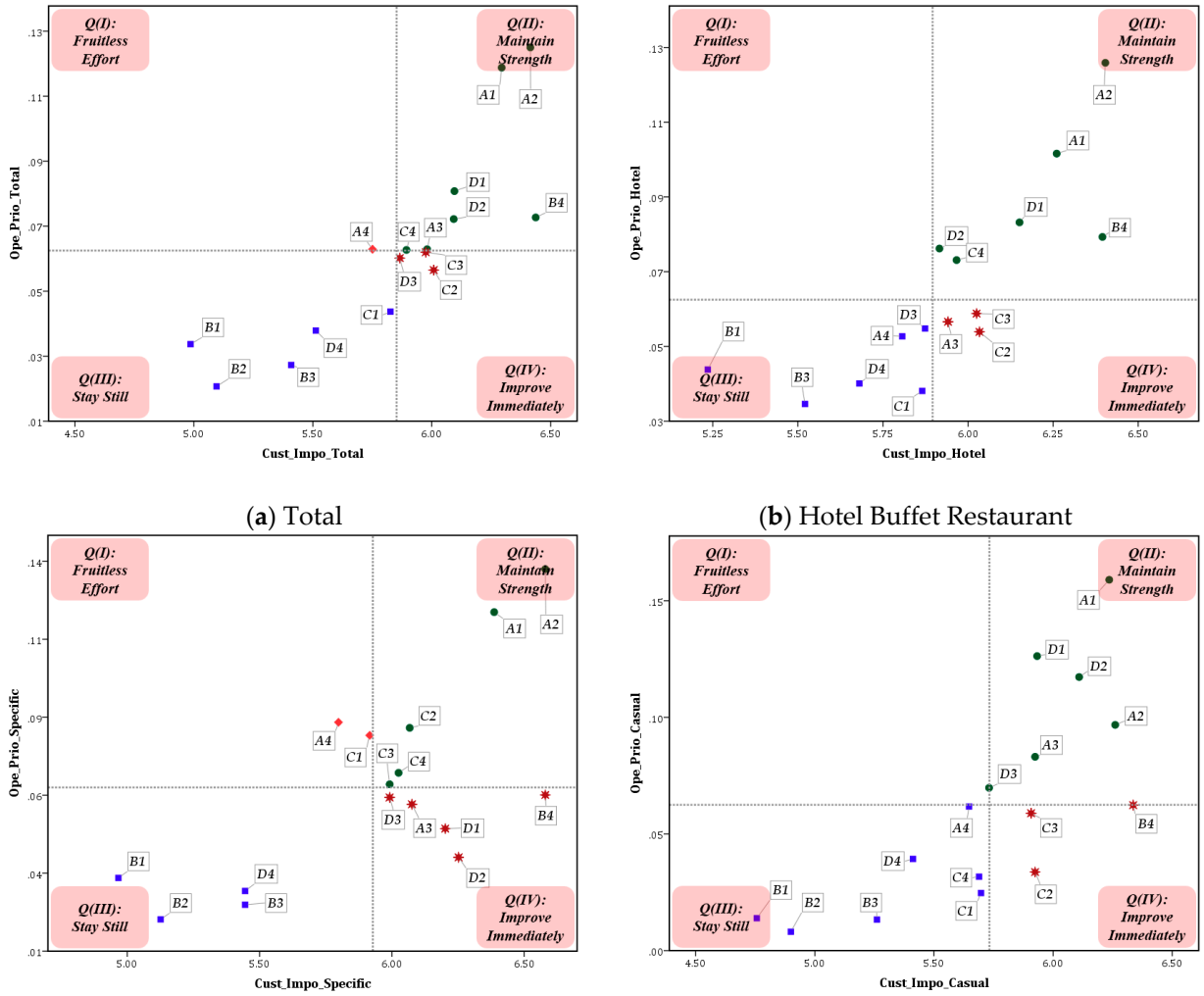
In this study, we attempted to combine the IPA and AHP techniques to analyze the perception gaps between the importance of restaurant service attributes as perceived by customers and the priorities of service resource allocation by managers. The results are shown in Figure 4 and Table 4.

As the results in (**a**) Total in Figure 4 illustrate, Quadrants I and IV were the regions with a significant perception gap between customers and operators; Quadrant I represents operators' inefficient efforts with attributes of low importance and high priority, while Quadrant IV requires managers' immediate actions and enhancements with attributes given low priority and high importance. For instance, A_4 was located in Quadrant I, whereas the attributes of C_2, C_3, and D_3 were in Quadrant IV. This should direct restaurant operators to focus their attention on the restaurant service attributes with large discrepancies between customer's importance and manager's priority, A_4, C_2, C_3, and D_3.

In the results of integrated the IPA-AHP for individual types of the buffet restaurants, the A_4 and C_1 of the SBR showed the operators' inefficient efforts, indicating that SBR operators regard these service attributes as crucial, but, in fact, customers view these items as relatively unimportant. By contrast, the A_4 and C_1 of the HBR and CBR in the Quadrant III illustrate that service providers and customers both placed low importance and priority on these attributes. Therefore, the SBR operators need a strategic approach to reconcile differences of perception with their customers.

The restaurant attributes A_1 and A_2 in Quadrant II had a high importance and high priority in all restaurant types. Therefore, these attributes need to be continuously maintained. The C_4 of the HBR and SBR was located in Quadrant II, while that of the CBR was in Quadrant III, representing low priority by providers. This result is illustrated by the fact that HBRs and SBRs provide high quality, professional foodservice, and are prepared to efficiently respond to service failures, but the CBR, where

various food services are available at a relatively low price, does not put a high priority on the service attribute "efficient service failure recovery".



(**a**) Total (**b**) Hotel Buffet Restaurant

(**c**) Specific Buffet Restaurant (**d**) Casual Buffet Restaurant

Figure 4. The results of priority-importance analysis.

Moreover, the D_1 and D_2 of the HBR and CBR were included in Quadrant II, but those of the SBR were in Quadrant IV. This result indicates that there is a large perception discrepancy on the D_1 and D_2 between the service providers and customers of SBR; therefore, SBRs must optimize their pricing strategies such as seasonal/timely discounts, frequent buyer discounts, and age discounts. The B_1, B_2, and D_4 of all buffet restaurants were located in Quadrant III with low priority and low importance, and there was little or no perception gap on restaurant service attributes; thus, these restaurant attributes do not require any attention.

The B_4 of the HBR was located in Quadrant II with high priority by operators, while those of the SBR and CBR were in Quadrant IV with low priority. The "cleanliness of the powder room and other facilities in the hotel" that is representative of high quality or a luxury image is a very important attribute to enhance customer satisfaction from the perspective of the service operator, but it seemed that the SBR and CBR focus more on the menu or food quality-related attributes than environmental cleanliness. The managers and service operators of SBR and CBR pay more attention to maintaining the cleanliness of employees' uniforms, cooking facilities, and powder rooms. In addition, the attributes of C_2 and C_3 of the HBR and CBR were located Quadrant IV in with low priority, whereas those of the SBR were in Quadrant II with high priority. Thus, the HBR and CBR should require employee

education and training programs to enable service operators to respond to customers' needs promptly and efficiently and to welcome customers in a kind and friendly manner.

In summary, HBR operators would benefit from improving the attributes A_3, C_2, and C_3, while the CBR should focus on the improvement of B_1, C_2, and C_3. The buffet restaurant operators should be able to minimize the perception gap between themselves and their customers through these improvements. Furthermore, we suggest the SBR service operators pursue strategic adjustment of priorities for A_4 and C_1, as well as make efforts to immediately improve the attributes of A_3, B_4, D_1, D_2, and D_3 to increase customer satisfaction, financial, and non-financial performance.

7. Discussion and Conclusions

7.1. Implications for Theoretical and Restaurant Operating Practice

This study simultaneously analyzed various service attributes of Korean buffet restaurants from the perspective of both customers and operators. We investigated the combined results of the IPA and AHP to reveal the perception gap between managers' prioritization and customers' view of the importance of service attributes of Korean buffet restaurants. Our results offer strategic alternatives for managing restaurant service attributes and are customized according to the characteristics of the three types of buffet restaurants we studied—HBR, SBR, and CBR.

The theoretical and managerial contributions of this study are as follows. First, most previous IPA related restaurant studies have primarily focused on the importance and performance of service attributes from the perspective on customers [10,31,35,37,42,44]. Several AHP-related restaurant studies have measured the ranking of strategic prioritization of operational resources [1,2,8,9,23,32]. Moreover, some previous studies such as those of Hsu et al. [49] and Wang et al. [21] have sequentially employed the AHP and IPA methods to measure the service attributes of container terminals and tourist attraction. However, these studies have mainly focused on customer perspectives such as terminal users and tourists. However, the main research limitations of these previous studies were that the service attributes were analyzed individually rather than comprehensively from the perspective of either the customer or the provider. Furthermore, most previous studies have neglected the perception gap between the strategic priorities of service attributes perceived by the managers and the importance of service attributes perceived by the customers. Thus, this study is an unprecedented attempt to integrate the IPA and AHP and to carry out this this unexplored research avenue on combined IPA-AHP matrix to measure the perception gap between restaurant managers and their customers.

The increasing rate of change to which restaurant service organizations are exposed along with the growing eat-out experience of customers and competitive environment among restaurants has highlighted the need for more comprehensive and integrated modeling approaches to cope with strategic issues in restaurant management. The two-dimensional IPA-AHP matrix based on customer's importance rankings and manager's priorities for restaurant service attributes provides a useful approach for better understanding the critical issues pertinent to restaurant management. With the results of this analysis, we can offer strategic initiatives by quadrant to reduce the perception gap. The actionable results provide intuitively appealing strategies for managers and operators in Korean buffet restaurants to set priorities for increasing customer satisfaction and improving financial/non-financial performances through food service attributes. Second, this paper also offers new managerial insights on the practices of operating a Korean buffet restaurant. From the IPA-AHP matrix results, we can suggest strategic alternatives to reduce large discrepancies of the perception of restaurant service attributes between managers and customers. Additionally, Table 5 shows that operators' priority, customers' importance, and satisfaction were considered.

Table 5. IPA and AHP results for buffet restaurants

Category	Criteria			Category	Food Quality (A)				Interior (B)				Service Quality (C)				Price and Value (D)			
	Operators' Priority	Customers' Importance	Customer's Satisfaction		A_1	A_2	A_3	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4	D_1	D_2	D_3	D_4
Quadrant (I)	Above Ave.(⬆)	Above Ave.(⬆)	Above Ave.(⬆)	HBR	✓	✓						✓								
				SBR	✓	✓								✓	✓					
				CBR	✓		✓					✓								
Quadrant (II)	Above Ave.(⬆)	Above Ave.(⬆)	Below Ave.(⬇)	HBR												✓	✓	✓		
				SBR												✓				
				CBR		✓											✓	✓		
Quadrant (III)	Above Ave.(⬆)	Below Ave.(⬇)	Above Ave.(⬆)	HBR								N/A								
				SBR								N/A								
				CBR								N/A								
Quadrant (IV)	Above Ave.(⬆)	Below Ave.(⬇)	Below Ave.(⬇)	HBR								N/A								
				SBR				✓					✓							
				CBR															✓	
Quadrant (V)	Below Ave.(⬇)	Above Ave.(⬆)	Above Ave.(⬆)	HBR			✓							✓	✓					
				SBR			✓					✓								
				CBR										✓	✓					
Quadrant (VI)	Below Ave.(⬇)	Above Ave.(⬆)	Below Ave.(⬇)	HBR								N/A								
				SBR													✓	✓	✓	
				CBR								N/A								
Quadrant (VII)	Below Ave.(⬇)	Below Ave.(⬇)	Above Ave.(⬆)	HBR					✓	✓			✓							
				SBR					✓											
				CBR					✓	✓										
Quadrant (VIII)	Below Ave.(⬇)	Below Ave.(⬇)	Below Ave.(⬇)	HBR				✓			✓								✓	✓
				SBR						✓	✓									✓
				CBR				✓			✓		✓			✓				✓

As shown in Table 5, the region from Quadrant III to Quadrant VI has a large perception gap for service attributes between customers and service operators, while the rest of the attributes show relatively small perception discrepancies. This suggests that operators should maintain their existing strategy with the restaurant service attributes in Quadrant I, whereas attributes in Quadrant VIII show lower priority for both service provider and customer. Though the attributes in Quadrant IV were classified as "low priority" by customers in the IPA, the operator classified them as very high priority. Therefore, the service providers should reduce the priority level of these service attributes, eliminating unnecessary operating costs and allocating limited service resources efficiently. By contrast, Quadrant V was categorized as "keep up the good work" in the IPA, but the service providers perceived these service attributes as a lower priority. To correct this discrepancy, manager and service providers should not only boost the resources devoted to these attributes but also carry out intensive operation management on them. For instance, the restaurant service attributes A_3 in HBR and SBR, B_4 in SBR, C_2/C_3 in HBR and CBR were located in this region, and service providers need to intensify their efforts to manage these attributes.

In the IPA analysis, Quadrants II and VI comprised the region of "concentrate here;" Quadrant II had high priority among service providers, and Quadrant VI had low priority. Therefore, the service operators need to maintain priority levels of the service attributes located in Quadrant II, while the priority levels of the attributes in the Quadrant VI should be increased. For example, the SBRs' service operators need to focus their attention on the D_1, D_2, and D_3, attributes which were recognized as crucial service attributes for customers. Quadrants III and VII are the regions of "possible overkill" from the IPA, where operators carry out efforts in excess of what is required for the corresponding level of importance. There were no service attributes corresponding to Quadrant III. However, the attributes in Quadrant VII show the need to develop a strategy to keep the service operator's priority low.

In summary, this study outlines a way for Korean buffet restaurant practitioners to understand consumer key service attributes and to carry out efficient restaurant strategies from both a consumer and operators' perspective. Moreover, this study addresses strategic operational plans tailored to individual buffet restaurant such as HBR, SBR, and CBR to reduce the perception gap on restaurant attributes between restaurant service operators and their customers.

This research model can be applied to other service industries as well as restaurant industry. By measuring perception discrepancies on various service quality between service managers and customers, these results may help service practitioner to identify their service level from the perspective of operators and customers. In addition, this study provides strategic service initiatives to increase customer satisfaction and improve financial/non-financial performance with more efficient internal resource allocation and coordination.

7.2. Limitations and Future Research

While providing important insights to both restaurant management theory and practice, this study has the following limitations. First, this study employed 16 service attributes of buffet restaurants to analyze operational priorities and customers' perspective of their importance and satisfaction using IPA and AHP. However, there are other attributes that have an important impact on customer restaurant choice and customer satisfaction: Convenient location, convenience of parking, and food styling/presentation (eye appeal of the food) [30–32]. Thus, a future study including these DINESERV attributes is required to further determine the factors that affect customer restaurant choices and the sustainable growth of buffet restaurants. Second, this study did not consider the detailed characteristics of customers. In general, the customers of buffet restaurants may have different usage patterns and service preferences according to the purpose of their visit or their customer characteristics (e.g., gender, age, and visiting frequency). Hence, an additional detailed analysis that considers the customer characteristics is warranted.

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Appendix A. AHP Procedure

The AHP is a systematic procedure for hierarchically representing the elements of a problem. According to Kallas et al. [50], Kheybari et al. [45], and Satty [46], the procedures for the AHP technique are as follows. In order to evaluate the weight (preference) of criteria (alternatives), known as a Saaty matrix, was formed as following Equation (A1):

$$A = \left(P_{ij}\right)_{n\times n} = \begin{pmatrix} p_{11} & p_{11} & \cdots & p_{1n} \\ p_{11} & p_{11} & \cdots & p_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ p_{n1} & p_{n2} & \cdots & p_{nn} \end{pmatrix} = \begin{pmatrix} 1 & \frac{w_1}{w_2} & \cdots & \frac{w_1}{w_n} \\ \frac{w_2}{w_1} & 1 & \cdots & \frac{w_2}{w_n} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{w_n}{w_1} & \frac{w_n}{w_2} & \cdots & 1 \end{pmatrix} \quad \text{(A1)}$$

where P_{ij} is the relative importance value obtained from the pairwise comparison between criterion (alternative) i and criterion (alternative) j. The fundamental properties of this comparison matrix are: (a) if $p_{ij} = x$ then $p_{ji} = 1/x$ (reciprocal comparison); (b) if characteristics i and j are judged to be of equal relative importance, then $p_{ij} = p_{ji} = 1$ (homogeneity); and (c) all the elements along the main diagonal take a value of one ($p_{ii} = 1\ \forall i$). For the pairwise comparison, nine-point scale is generally used to measure the strength of this preference. In the next step, the elements of the comparison matrix were normalized using Equation (A2).

$$P^*_{ij} = \frac{P_{ij}}{\sum_{j=1}^{n} P_{kj}} \quad \forall i \text{ and } j = 1,\ 2, \ldots,\ n \quad \text{(A2)}$$

To obtain the relative weights of each criterion, Equation (A3) was applied.

$$w^*_i = \sum_{j=1}^{n} P^*_{ij} \quad \forall i = 1,\ 2, \ldots,\ n \quad \text{(A3)}$$

In the next step, the criteria weight vector, $\mathrm{W} = (w_1,\ w_2, \ldots, w_n)$, was calculated using Equation (A4):

$$w_i = \frac{w^*_i}{\sum_{k=1}^{n} w^*_k} \quad \forall i \text{ and } j = 1,\ 2, \ldots,\ n \quad \text{(A4)}$$

Meanwhile, perfect consistency is seldom present in reality, where personal subjectivity plays an important role in the pairwise comparison. Thus, Saaty [46] proposed the redefinition: $p_{ij} \times w = \lambda_{max} \times w$, where λ_{max} is the maximum eigenvalue of matrix p_{ij}, which is determined by:

$$\lambda_{max} = \frac{1}{n} \sum_{i=1}^{n} \frac{(pw)_i}{w_i} \quad \text{(A5)}$$

To determine the reliability of compactions performed between criteria in each branch of the hierarchy tree, CI is the consistency index calculated by Equation (A6). Saaty [46] proved that $\lambda_{max} \geq n$ (attributes) and $\lambda_{max} \geq s$ (levels) enable one to test the degree of inconsistency in respondent ratings.

Thus the quantity $\lambda_{max} - n$ (attribute) and $\lambda_{max} - s$ (levels) measure the degree of inconsistency within P_{ij}. In this line, Saaty proposes the consistency index (CI), as follows:

$$CI = \frac{\lambda_{max} - n}{n-1}(for\ attributes)\ and\ \frac{\lambda_{max} - s}{s-1}(for\ levels) \quad \text{(A6)}$$

Saaty [46] defined the consistency ratio as $CR = CI/RI$, where RI is a random index which denotes the CI for a randomly generated P_{ij} matrix. If the result of CR is less than 0.1, consistency is accepted and there is an adequate degree of reliability.

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