

High School Students' Satisfaction with Foodservice Quality Is Affected by Foodservice Management Type

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Abstract

This study was designed to examine the satisfaction of high school students with different types of foodservice management programs. The importance and the performance of foodservice management programs were evaluated based on the perceptions of high school students about foodservice characteristics affecting customer satisfactions. The average score of the attributes affecting the importance of school foodservice program was 4.27 ± 0.49 and the most important attribute was identified as "the food safety (4.68 ± 0.67)", followed by "the taste of food (4.66 ± 0.65)". The average scores of all performance dimensions were lower than 3 point. "Menu dimension" was rated as the lowest dimension (2.61 ± 0.89) and "Food dimension (2.79 ± 0.70)" was rated as the highest dimension. Significant differences among different types of foodservice management were perceived by respondents in the overall performance ($F=40.244$, $p<0.001$). Students who served by contract-conventional management rated significantly higher performance score on all of the performance attributes than the students served by other types of foodservice management. The results of the importance and the performance analysis present that student satisfaction is affected with the type of foodservice management programs and substantial differences lies between the perceptions of foodservice operations and students.

Key words: students' satisfaction, school foodservice quality, foodservice management type, importance and performance analysis

INTRODUCTION

School foodservice is critically important in providing an ideal environment for good nutrition and dietary habit to students (1). According to The Ministry of Education & Human Resources Development of Korea (MEHRDK), school foodservice programs served more than 7.2 million students from 10,586 schools in 2004. The number of high schools participating in school foodservice programs has rapidly increased since the late 1990s; an average 98.7% school (2,052 out of 2,078 high schools in Korea) participated in the school foodservice program. The 1,073 high schools were operated by self-managed and 979 operated by contract-managed foodservice (2).

Especially in Daegu/Gyeongbuk province, 384,049 students (92% from total students in this province) per day were served by the school foodservice program. Considering the management types, the number of self-managed foodservice operations (365 schools) are significantly higher than that of contract-managed (43 schools) (2). However, the number of schools participating in contract-managed foodservice has been in-

creased slowly but steadily over the years with the expansion of national school foodservice programs.

Recently, the contract-managed foodservice companies, faced with fierce competition, have emphasized customer-driven quality than ever before (3). Quality plays a significant role in determining and influencing customers' satisfaction. Although appealing to the student customer is not easy today, customer satisfaction is a primary concern for all foodservice operators (3). With respect to the customer satisfaction, previous studies identified factors, e.g. variety of menu, taste of food, food safety, and courtesy of staff, which influence high school students' satisfaction in school foodservice (4-6). In another research, students served by contract-conventional school foodservice were less satisfied than the students in self-managed school foodservice, which was explained by several obstacles identified in contract-conventional school foodservice (7).

Consumers' satisfaction is influenced by the attributes affecting the importance and the performance of school foodservice management (8). The Importance and Performance Analysis (IPA) is a convenient and simple

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approach to measure the quality of school foodservice management by comparing the average scores of the attributes affecting the importance and performance of foodservice management (9).

The mission of school foodservice has been shifted from providing a meal to satisfying students' needs. The level of students' satisfaction in terms of school foodservice quality is determined by how favorably their expectations have been met with organizations' performance.

This study was conducted to examine the satisfaction of high school students with different types of foodservice management programs. The importance and the performance of foodservice management programs were evaluated based on the perceptions of high school students about foodservice characteristics affecting customer satisfactions.

METHODS

Pilot study and survey administration

The questionnaire was pilot tested with 35 students who were high school students in Daegu and modified to improve reliability and clarity of wording using coefficient alphas.

The population for this study was high school students participating in school foodservice programs in Daegu. The convenience sample was composed of 1,050 students enrolled in 30 high schools. With the permission of the instructors, the researchers administered the survey in the class. Prior to administering the survey, one of researchers announced the purpose of the study and encouraged students to participate in.

Questionnaires

An instrument was developed to measure the importance and performance of the quality of foodservice program based on the management type of school foodservice. The questionnaire consisted of three sections. The first section contained 24 importance statements about the quality of food, menu, sanitation, and service provided by school foodservice programs. The second section consisted of 24 items that measured performance against students' expectation toward the quality attributes. Based on the literature, the school foodservice importance and performance statements were grouped into 4 dimensions: Food, menu, sanitation, and service (4,7). Each dimension is consisted with five to seven statements. Food dimension assessed the outcomes of the food and meals served including the taste, appearance, nutrition, quality of ingredients, temperature, and amount. Menu dimension implied the variety and currency of

menu, seasonal items, regular cycling, and price. Sanitation dimension related to the safety of food, utensil, table and chair, interior, tray and staff. Service referred to the willingness to help customer including courtesy and communication with staff, prompt service, improvement and responsiveness of complains, providing menu information, and atmosphere of dining area. The value for the importance scale ranges from 1 (not important at all) to 5 (extremely important), while the values for the performance scale ranges from 1 (very poor) to 5 (very good). The third section requested demographic information, including age, gender, and type of foodservice management.

Data analysis

Statistical analyses were performed using SPSS 11.5 for Windows (SPSS, Inc., Chicago). In the first stage, descriptive analysis was performed on all measurement items. In addition, frequency analysis was performed to determine overall characteristics of students. The reliability of statements was acceptable since the coefficient alphas were >0.70 (10). ANOVA were conducted to test significance of mean scores depending on the type of foodservice management. Students' satisfaction concerning foodservice quality characteristics were evaluated using by importance-performance analysis (IPA) (11). The result of the IPA may be illustrated with four quadrants by positioning of the horizontal and vertical grid lines serve as a guide in relative terms. The quadrant A indicates "Concentrate here": school foodservice is not performed well enough and need to be concentrated. The quadrant B means "Keep up with the good work": students are pleased with the quality of foodservice. The interpretation of quadrant C is "Low priority": students value only slight importance. The quadrant D implies "Possible overkill": foodservice program is doing more than necessary.

RESULTS AND DISCUSSION

Demographics of respondents

The 1,050 questionnaires were distributed in 30 high schools; 978 were returned with a response rate of 93.1%. Table 1 presents demographic profiles of respondents. The 456 respondents participated in self-managed foodservice (SM), 288 in contracted-delivery foodservice (CD), and 234 in contracted-conventional foodservice (CC). Female respondents were 454 and all respondents were in first grade. Average age of the respondents was 17 years.

Attributes affecting foodservice importance perceived by students

The average score of the attributes affecting food

Table 1. Descriptive characteristics of respondents

	Variables	N (%)
Gender	Male	454 (46.4)
	Female	524 (53.8)
School level	First grade	978 (100)
Type of foodservice management	Self-managed	456 (46.6)
	Contract-delivery	288 (29.4)
	Contract-conventional	234 (23.9)
Total		978 (100)

service importance was 4.27 ± 0.49 on 5-point Likert scale (Table 2). The top five important attributes were “the food safety (4.68 ± 0.67)”, “the taste of food (4.66 ± 0.65)”, “the quality of ingredients (4.63 ± 0.69)”, “the sanitation of utensil (4.62 ± 0.72)”, and “the sanitation of dining area (4.51 ± 0.81)”. The bottom five items of

importance were “the appearance of food (3.41 ± 1.04)”, “the communication with staff (3.86 ± 1.07)”, “the temperature of food (4.01 ± 0.90)”, “the atmosphere of dining area (4.02 ± 1.00)”, and “the sanitation of table & chair (4.02 ± 0.99)”.

The respondents evaluated “the variety of menu” as the most important attribute (4.47 ± 0.75) and “the seasonal menu item” as the lowest (4.21 ± 0.90) in the menu dimension. In the service dimension, “the responsiveness to complains (4.44 ± 0.82)” was evaluated as the most important attribute.

The students’ perception on the attributes of importance were compared among different types of foodservice management (SM, CD, and CC). Five attributes were found to be significantly different with the type

Table 2. Comparison of important attributes perceived by students among different foodservice management types¹⁾

Items	Self-managed foodservice		Contracted-delivery foodservice		Contract-conventional foodservice		Total		F	
	N ²⁾	Mean \pm SD	N	Mean \pm SD	N	Mean \pm SD	N	Mean \pm SD		
Food ($\alpha=0.716$)	Taste	455	4.65 ± 0.69	287	4.64 ± 0.66	234	4.69 ± 0.56	976	4.66 ± 0.65	0.309
	Appearance	455	3.39 ± 1.11	287	3.43 ± 0.95	233	3.42 ± 0.99	975	3.41 ± 1.04	0.100
	Nutritional balance	452	4.35 ± 0.79	287	4.40 ± 0.79	231	4.44 ± 0.71	970	4.39 ± 0.77	1.244
	Quality of ingredients	452	4.64 ± 0.69	287	4.58 ± 0.73	232	4.66 ± 0.63	971	4.63 ± 0.69	0.920
	Temperature	455	4.01 ± 0.91	281	4.04 ± 0.90	233	3.98 ± 0.88	969	4.01 ± 0.90	0.291
	Amount	456	$4.25 \pm 0.85^{b3)}$	287	4.09 ± 0.86^a	234	3.99 ± 0.88^a	977	4.14 ± 0.87	7.450**
Sub-total	445	4.21 ± 0.56	276	4.20 ± 0.51	227	4.20 ± 0.50	948	4.21 ± 0.53	0.094	
Menu ($\alpha=0.818$)	Variety	456	4.50 ± 0.73	288	4.41 ± 0.78	233	4.48 ± 0.76	977	4.47 ± 0.75	1.433
	Currency	456	4.39 ± 0.82	288	4.35 ± 0.83	234	4.29 ± 0.84	978	4.35 ± 0.83	1.177
	Seasonal item	456	4.25 ± 0.89	286	4.14 ± 0.90	234	4.21 ± 0.91	976	4.21 ± 0.90	1.249
	Regular cycling	453	4.25 ± 0.92	285	4.24 ± 0.87	233	4.28 ± 0.89	971	4.25 ± 0.90	0.162
	Price	454	4.26 ± 0.98	287	4.24 ± 0.98	233	4.40 ± 0.87	974	4.29 ± 0.96	2.132
Sub-total	453	4.35 ± 0.67	284	4.29 ± 0.68	232	4.32 ± 0.68	969	4.32 ± 0.68	0.740	
Hygiene ($\alpha=0.853$)	Food	456	4.67 ± 0.69	288	4.69 ± 0.66	233	4.69 ± 0.64	977	4.68 ± 0.67	0.107
	Utensil	456	4.61 ± 0.72	288	4.61 ± 0.72	234	4.66 ± 0.70	978	4.62 ± 0.72	0.333
	Table & chair	453	4.04 ± 1.00^b	288	3.87 ± 1.04^a	233	4.16 ± 0.91^b	974	4.02 ± 0.99	5.754**
	Dining area	456	4.55 ± 0.79^b	287	4.37 ± 0.91^a	234	4.61 ± 0.67^b	977	4.51 ± 0.81	6.827**
	Tray	456	4.43 ± 0.92	287	4.39 ± 0.89	234	4.49 ± 0.80	977	4.44 ± 0.89	0.791
	Staff	455	4.20 ± 1.08	286	4.15 ± 0.98	234	4.21 ± 0.97	975	4.19 ± 1.03	0.311
Sub-total	452	4.43 ± 0.67	286	4.35 ± 0.67	232	4.47 ± 0.57	970	4.41 ± 0.65	2.483	
Service ($\alpha=0.835$)	Courtesy of staff	456	4.21 ± 0.91^a	288	4.15 ± 0.90^a	234	4.41 ± 0.74^b	978	4.24 ± 0.88	6.367**
	Communication with staff	455	3.84 ± 1.09	287	3.83 ± 1.01	234	3.93 ± 1.08	976	3.86 ± 1.07	0.706
	Prompt service	455	4.11 ± 0.94^{ab}	287	3.99 ± 0.95^a	234	4.20 ± 0.82^b	976	4.10 ± 0.92	3.538*
	Amelioration on complains	456	4.47 ± 0.81	287	4.37 ± 0.88	234	4.42 ± 0.82	977	4.43 ± 0.83	1.199
	Responsiveness to complains	456	4.44 ± 0.81	288	4.42 ± 0.85	234	4.44 ± 0.81	978	4.44 ± 0.82	0.049
	Providing menu information	455	4.23 ± 0.92	288	4.23 ± 0.92	234	4.13 ± 0.97	977	4.21 ± 0.93	0.953
	Atmosphere of dining area	454	4.03 ± 1.06	287	3.95 ± 0.93	233	4.06 ± 0.95	974	4.02 ± 1.00	0.836
Sub-total	453	4.22 ± 0.68	285	4.17 ± 0.70	234	4.26 ± 0.64	972	4.21 ± 0.67	1.000	
Total	456	4.28 ± 0.51	288	4.23 ± 0.47	234	4.30 ± 0.46	919	4.27 ± 0.49	1.409	

Scale: 5-point scale from 1 (not important at all) to 5 (extremely important).

¹⁾ANOVA computed to compare means of importance by the type of foodservice management. * $p < 0.05$, ** $p < 0.01$.

²⁾Number of respondents answered applicably was different (inapplicable answers were treated as missing data).

³⁾Values with different superscripts within a column are significantly different.

of foodservice management. Students served by contract-conventional foodservice rated higher score on the importance of "the sanitation of table & chair", "the sanitation of dining area", "courtesy of staff", and "prompt service", than the students served by contracted-delivery foodservice.

Assessment of performance among different types of foodservice management

The average scores of all dimensions were lower than 3 on a five-point scale (Table 3), which reflects that respondents had unfavorable perception on performance quality and were not satisfied with school foodservice quality in general. Students rated "menu dimension" as the lowest (2.61 ± 0.89). On the other hand, "Food dimension (2.79 ± 0.70)" was rated the highest, followed by "Sanitation dimension (2.69 ± 1.02)". The average

score of all performance attributes was 2.71 ± 0.68 , which was apparently lower than respondents' perception on importance attributes. "Nutritional balance (2.98 ± 0.89)", "responsiveness to complaints (2.98 ± 1.01)", and "courtesy of staff (2.96 ± 1.14)" were three attributes rated high, but still the scores were lower than 3 point.

The significant difference was found in the overall performance ($F=40.244$, $p<0.001$) with different foodservice management type (SM, CD, and CC). The students who served by contract-conventional management evaluated significantly high performance score than the other students on all of the performance attributes. This finding is not consistent with the previous research which found that self-managed foodservice operations' performance was better than that of contract foodservice operations in school foodservice (3,7). They also found

Table 3. Comparison of service performance by different foodservice management type¹⁾

Items	Self-managed foodservice		Contracted-delivery foodservice		Contract-conventional foodservice		Total		F	
	N ²⁾	Mean \pm SD	N	Mean \pm SD	N	Mean \pm SD	N	Mean \pm SD		
Food ($\alpha=0.840$)	Taste	456	$2.69 \pm 0.97^{a3)}$	287	2.39 ± 0.91^b	234	3.08 ± 0.92^c	977	2.70 ± 0.97	34.426***
	Appearance	455	2.80 ± 0.82^a	286	2.53 ± 0.80^b	232	3.03 ± 0.80^c	973	2.77 ± 0.83	24.291***
	Nutritional balance	453	3.05 ± 0.86^a	285	2.62 ± 0.89^b	232	3.29 ± 0.82^c	970	2.98 ± 0.89	40.992***
	Quality of ingredients	451	2.72 ± 0.92^a	286	2.38 ± 0.89^b	232	3.07 ± 0.93^c	969	2.70 ± 0.95	36.668***
	Temperature	454	2.92 ± 0.85^a	285	2.68 ± 0.88^b	233	3.18 ± 0.93^c	972	2.91 ± 0.90	20.428***
	Amount	455	2.62 ± 1.10^a	288	2.61 ± 1.00^a	234	2.85 ± 1.14^b	977	2.67 ± 1.09	4.105*
	Sub-total	444	2.80 ± 0.68^a	277	2.53 ± 0.66^b	228	3.07 ± 0.68^c	949	2.79 ± 0.70	41.091***
Menu ($\alpha=0.879$)	Variety	456	2.80 ± 1.05^a	288	2.43 ± 1.01^b	233	3.13 ± 1.09^c	977	2.77 ± 1.08	29.363***
	Currency	456	2.59 ± 1.05^a	288	2.26 ± 1.00^b	234	2.91 ± 1.03^c	978	2.57 ± 1.05	26.630***
	Seasonal menu	456	2.75 ± 1.01^a	286	2.28 ± 0.92^b	234	3.07 ± 1.03^c	976	2.69 ± 1.03	41.958***
	Regular cycling	455	2.67 ± 0.96^a	286	2.33 ± 0.98^b	233	2.88 ± 1.02^c	974	2.62 ± 1.00	21.711***
	Price	454	2.40 ± 1.09^a	288	2.20 ± 1.04^b	234	2.63 ± 1.14^c	976	2.40 ± 1.10	10.138***
Sub-total	455	2.70 ± 0.86^a	285	2.32 ± 0.84^b	232	2.99 ± 0.88^c	972	2.61 ± 0.89	39.877***	
Sanitation ($\alpha=0.890$)	Food	453	2.49 ± 1.02^a	288	2.05 ± 0.95^b	233	2.48 ± 0.98^a	974	2.36 ± 1.01	19.182***
	Utensil	452	2.53 ± 0.98^{ab}	287	2.44 ± 0.91^a	231	2.67 ± 1.09^b	970	2.54 ± 0.99	3.315*
	Table & chair	455	2.87 ± 1.05^a	288	2.43 ± 0.96^b	233	3.19 ± 1.07^c	976	2.82 ± 1.07	35.870***
	Dining area	456	2.58 ± 1.04^a	287	2.24 ± 0.90^b	234	2.90 ± 1.11^c	977	2.56 ± 1.04	27.458***
	Tray	455	2.81 ± 0.99^a	287	2.75 ± 0.86^a	234	3.16 ± 1.01^b	976	2.88 ± 0.97	13.755***
	Staff	452	2.81 ± 1.03^a	286	2.55 ± 0.88^b	234	3.19 ± 1.04^c	972	2.83 ± 1.02	27.028***
Sub-total	456	2.67 ± 1.04^a	286	2.50 ± 0.86^b	232	2.95 ± 1.11^c	974	2.69 ± 1.02	12.734***	
Service ($\alpha=0.854$)	Courtesy of staff	455	2.90 ± 1.16^a	286	2.69 ± 0.99^b	234	3.42 ± 1.12^c	975	2.96 ± 1.14	29.766***
	Communication with staff	450	2.77 ± 0.84^a	282	2.53 ± 0.71^b	231	3.14 ± 0.86^c	963	2.79 ± 0.84	36.329***
	Prompt service	456	2.73 ± 1.19^a	288	2.75 ± 1.09^a	233	3.14 ± 1.23^b	977	2.84 ± 1.18	10.483***
	Amelioration on complains	456	2.60 ± 1.14^a	285	2.62 ± 0.97^a	233	2.92 ± 1.19^b	974	2.68 ± 1.11	6.918**
	Responsiveness to complains	456	2.93 ± 1.05^a	287	2.91 ± 0.88^a	234	3.18 ± 1.06^b	977	2.98 ± 1.01	5.788**
	Providing menu information	455	2.42 ± 1.06^a	286	2.23 ± 1.01^b	234	2.64 ± 1.09^c	975	2.41 ± 1.06	9.760***
	Atmosphere of dining area	455	2.93 ± 1.17^a	288	2.52 ± 1.03^b	234	3.12 ± 1.20^c	977	2.85 ± 1.16	20.060***
	Sub-total	452	2.67 ± 0.85^a	282	2.53 ± 0.73^b	232	2.94 ± 0.89^c	966	2.69 ± 0.84	16.017***
Total	428	2.73 ± 0.67^a	263	2.46 ± 0.60^b	217	3.00 ± 0.70^c	908	2.71 ± 0.68	40.244***	

Scale: 5-point scale from 1 (not important at all) to 5 (extremely important).

¹⁾ANOVA computed to compare means of importance by the type of foodservice management. * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

²⁾Number of respondents answered applicably was different (inapplicable answers were treated as missing data).

³⁾Values with different superscripts within a column are significantly different.

that most of middle and high school students did not satisfied with contract-managed foodservice in terms of the quality of food, variety of menu, sanitary conditions, comparing with self-managed foodservice operations. This suggests that the type of management is important variable influencing students' satisfaction on school foodservice. However, individual foodservice firms' specific skills and efforts, even within same type of foodservice management operation, would be positioned on higher priority to make customer satisfy. Therefore, self-managed foodservice firms involved in this study need to reinforce and monitor student's interests for improving performance attributes.

Analysis of importance and performance among different foodservice management

Fig. 1 shows the importance-performance grid for the attributes constructed by using informations obtained from students. The results of quadrants A in the Fig. 1-1 suggest that self-managed foodservice operation is not performed well enough on attributes 1 (Taste of food), 4 (Quality of ingredient), 8 (Currency of menu), 14 (Sanitation of utensil), 17 (Sanitation of tray), 22 (Amelioration on complains), and 23 (Responsiveness to complains) in spite that the respondents place higher priority on them. The respondents also suggest that the firms do more than necessary with respect to eight attributes in quadrant D; 2 (Appearance of food), 5 (Temperature of food), 9 (Seasonal menu), 15 (Sanitation of utensil), 18 (Sanitation of staff), 19 (Courtesy of staff),

21 (Prompt serving), and 24 (Providing meni information). While quadrant B, comprising four attributes (3: Nutritional balance, 7: Variety of menu, 13: Food safety, and 16: Sanitation of dinning area) is the area where the firm is doing well and needs to keep up with the good work. Similar result was interpreted in Fig. 1-2 with Fig. 1-1. However, the result of contract managed foodservice operation presented in the Fig. 1-3, showed that the quadrant B had more attributes than the other two figures. Attributes 1 (Taste of food), 3 (Nutritional balance), 4 (Quality of ingredients), 7 (Variety of menu), 13 (Food safety), 16 (Sanitation of dinning area), and 19 (Courtesy of staff) in quadrant B were performed well enough to make students satisfy and needed to keep it up with.

In order to make proper comparisons, IPA matrix was presented in Table 4. Three different foodservice operations had common attributes in quadrant A, 14, 22, and 23; in quadrant B, 3; in quadrant C, 12; and in quadrant D, 2, 5, 15, 18, 21, and 24, which presents a number of interesting observations. First, quadrant D, "Possible overkill", had many attributes, suggesting that firms did more than necessary on six attributes (Appearance, Temperature of food, Sanitation of table & chair, Communication with staff, Response to complains, Atmosphere of dinning area) even though it is not well met with students' expectations. In addition, attributes 14 (Sanitation of utensil), 22 (Amelioration on complains), and 23 (Responsiveness to complains) fell into

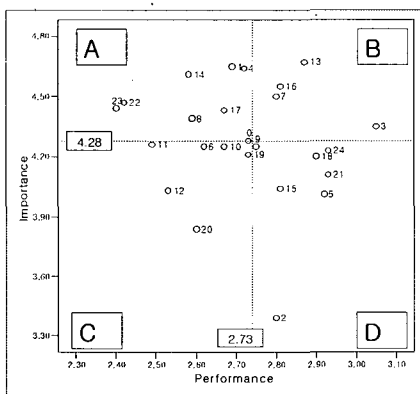


Fig. 1-1. Self-managed foodservice

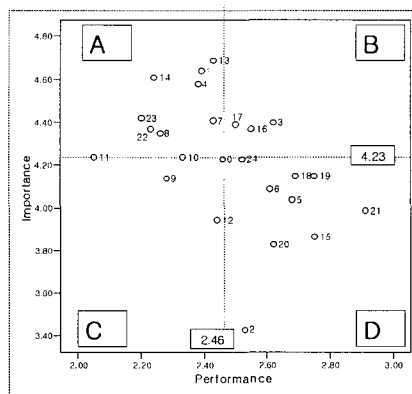


Fig. 1-2. Contracted-delivery foodservice

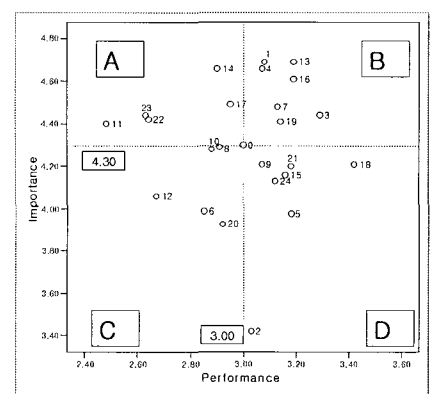


Fig. 1-3. Contract-conventional foodservice

Fig. 1. Importance-performance grid based on foodservice quality perceived by respondents.

A: Concentrate here, B: Keep up with the good work, C: Low priority, D: Possible overkill.

- | | | |
|---------------------------|---------------------------------|-----------------------------------|
| 1. Taste of food | 9. Seasonal menu | 17. Sanitation of tray |
| 2. Appearance of food | 10. Regular cycling | 18. Sanitation of staff |
| 3. Nutritional balance | 11. Price of menu | 19. Courtesy of staff |
| 4. Quality of ingredients | 12. Atmosphere of dinning area | 20. Communication with staff |
| 5. Temperature of food | 13. Food safety | 21. Prompt serving |
| 6. Amount of food | 14. Sanitation of utensil | 22. Amelioration on complain |
| 7. Variety of menu | 15. Sanitation of table & chair | 23. Response to complain |
| 8. Currency of menu | 16. Sanitation of dinning area | 24. Providing information of menu |

Table 4. Importance-performance analysis matrix for self-managed foodservice, contracted-delivery foodservice, and contract-conventional foodservice

Quadrants	Self-managed foodservice (SM)	Contracted-delivery foodservice (CD)	Contract-conventional foodservice (CC)	Total	Common factor in SM, CD, and CC
A	1, 4, 8, 14, 17, 22, 23	1, 4, 7, 8, 10, 11, 13, 14, 22, 23	11, 14, 17, 22, 23	1, 4, 8, 11, 14, 17, 22, 23	14, 22, 23
B	3, 7, 13, 16	3, 16, 17	1, 3, 4, 7, 13, 16, 19	3, 7, 13, 14	3
C	6, 10, 11, 12, 20	9, 12	6, 8, 10, 12, 20	6, 9, 10, 12, 20	12
D	2, 5, 9, 15, 18, 19, 21, 24	2, 5, 6, 15, 18, 19, 20, 21, 24	2, 5, 9, 15, 18, 21, 24	2, 5, 15, 18, 19, 21, 24	2, 5, 15, 18, 21, 24

1. Taste of food, 2. Appearance of food, 3. Nutritional balance, 4. Quality of ingredients, 5. Temperature of food, 6. Amount of food, 7. Variety of menu, 8. Currency of menu, 9. Seasonal menu, 10. Regular cycling of menu, 11. Price of menu, 12. Atmosphere of dining area, 13. Food safety, 14. Sanitation of utensil, 15. Sanitation of table & chair, 16. Sanitation of dining area, 17. Sanitation of tray, 18. Sanitation of staff, 19. Courtesy of staff, 20. Communication with staff, 21. Prompt serving, 22. Amelioration on complains, 23. Response to complains, 24. Providing information of menu.

quadrant A, "Concentrate here", showing that the respondents' expectations were not exactly performed. Second, each of quadrants B and C had only one attribute (Nutritional balancing and Atmosphere of dining area, respectively) implying that respondents and foodservice firms agree on "Keep up with the good work" and "Low priority," respectively.

These results highlighted the substantial differences between the perception of foodservice firms and respondents in terms of the foodservice organization's performance as well as the relative importance of the attributes affecting foodservice quality. Furthermore, our results make the foodservice firms aware of areas of shortcomings on which they need to concentrate and improve, and also help the foodservice firms to identify areas where they are doing more than necessary for incorporating customer preferences and satisfying student customers.

Despite the important implications, this study has several limitations. The results cannot be generalized to all school foodservice operation programs because this study was conducted with school foodservices in one province. Thus, nation-wide survey should be done to collect representative data addressing geographical and socio-demographic differences.

REFERENCES

1. Position of the American Dietetic Association. 1996. Child and adolescent food and nutrition programs. *J Am Diet*

- Assoc 96: 913-917.
2. Ministry of Education & Human Resources Development of Korea. 2005. School foodservice inspection requirement. Available at: <http://www.moe.go.kr/search/search01.html> Accessed at November 9, 2005.
3. Cha YS, Kwak TK, Hong WS. 2004. The analysis of customers satisfaction with foodservice quality according to the types of foodservice. *J Korean Diet Assoc* 10: 309-321.
4. Han KS, Hong SH. 2002. A study of the operation of contract foodservice management and menu preference of middle school students in Seoul. *Korean J Comm Nutr* 7: 559-570.
5. Choi YS. 2000. A study on the high school students' satisfaction of school foodservice. *MS Thesis*. Sejong University.
6. Park YS, Lee JW, Lee MS. 1997. Comparisons of students' and their parents' satisfaction of school lunch program in middle school by food service management. *Korean J Comm Nutr* 2: 218-231.
7. Kim SH, Lee KA, Yu CH, Song YS, Kim WK, Yoon HR, Kim JH, Lee HS, Kim MK. 2003. Comparisons of students satisfaction with the school foodservice programs in middle and high schools by food service management types. *Korean J Nutr* 36: 211-222.
8. Dube L, Trudeau E, Belanger MC. 1994. Determining the complexity of patient satisfaction with foodservice. *J Am Diet Assoc* 94: 393-401.
9. Martilla G, Levesque T. 1977. Importance- performance analysis. *J Marketing* 41: 77-79.
10. Nunally JC. 1978 *Psychometric Theory*. McGraw-Hill, New York.
11. Jang MR, Kim JY. 2005. Comparison of importance and performance to the school lunch service according of male and female middle school students in the Gangwon province. *J Korean Diet Assoc* 11: 95-104.

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