

## Comparison of foodservice management performance level between dietitians and non-dietitians in senior centers using IPA

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### Abstract

This study investigated the management importance and performance level of foodservice managers at senior centers. Using the survey, perceived importance and performance levels of seven foodservice management areas were evaluated and analyzed. Data showed the foodservice facilities were being managed by dietitians (61.6%) or non-dietitians (38.9%). The result indicated that overall importance level (3.43) was higher than performance level (3.02) ( $p < .01$ ). As of the IPA result, dietitians and non-dietitians had different perspectives in terms of managing the eight categories of foodservice areas. The differences in the IPA results between the two groups may reflect bias attributable to the respondents' degrees of knowledge and professional preparation. The research findings could enhance our understanding of importance of hiring professional dietitians to operate foodservice at senior centers and find out which management area should be concentrated for more effective foodservice management.

**Key Words:** Foodservice management, dietitians, non-dietitians, senior center, IPA

### Introduction

In Korea, senior centers are common community facilities for elderly. The services offered at senior centers are varied from recreational events to social actions or health services including foodservice. Among the various services offered at the senior centers, foodservice plays an important role in improving the quality of life and health status of seniors. The benefits of foodservice at senior centers are: (1) providing nutritional value (2) giving the pleasure of eating with friends, (3) offering social exchange (Rim *et al.*, 1999). As the population of the elderly is growing rapidly, the users of the senior centers are increasing. This implies that foodservice in senior centers has become busy and also has been requested for the appropriate quality and quantity of foods for the seniors. According to the research on nutrition intake status of the elderly who took the congregate lunch meals (Lee *et al.*, 1998), the lunch served by congregate meal service was very important for the nutrition intakes of the seniors with low-incomes. Hanson (1978) also emphasized earlier the importance of social nutrition for seniors' health maintenances and improvements. Regardless of the importance of proper foodservice for the elderly, many of the foodservice operations in senior centers have been troubled by budgeting and employee shortages and lack of professional dietitians (Han *et al.*, 2002; Suh *et al.*, 2004). Several researchers found that food

assistant programs for the elderly were operated by non-dietitians such as caring professionals or cooks (Han *et al.*, 2002; Suh *et al.*, 2004; Yang *et al.*, 1998). The absence of professional dietitians could cause problems including unsystematic operation management, insufficient nutrition education, and unhealthy menus; a variety of menus could be offered but it may also be nutritionally unbalanced (Han *et al.*, 2002; Hong & Jang 1998). While there are many researchers who emphasized the importance of dietitians at senior centers as stated above, there is little research on foodservice job performance level of dietitians and non-dietitians. Therefore, the objective of this research is to identify the differences of performance levels between dietitians and non-dietitians. These findings could enhance our understanding of the importance of hiring professional dietitians to operate foodservice at senior centers and to find the specific management areas of attention for the effective foodservice management.

### Subjects and Methods

#### Subjects

A survey was conducted on foodservice managers at senior centers in August 2007 to identify their perceived importance

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and performance levels of foodservice management duties. The survey was distributed to and completed by 90 out of 169 foodservice managers at senior centers nationwide registered at Korean Senior Welfare Association (response rate: 53.3%).

### Questionnaires

A written questionnaire was developed based on previously published findings (Jung *et al.*, 2004; Yoon & Messersmith 2002) as well as the opinions of five former senior centers foodservice managers. The questionnaire addressed the quantitative data regarding foodservice management performance level (1: not performed at all~4: performed very well) and perceived importance (1: not at all important~4: very important) of 21 foodservice management duties in 7 categories (human resources management, financial management, purchasing management, food production management, menu and nutrition management, facility management, etc.). The other information sought in the survey was demographic information about the respondents (gender, age, educational background, experience of foodservice manager, and job title) and their foodservice facilities (operation subject, operation period, guest size, operation time, etc.). The questionnaire was validated before the start of the study by five dietitians working at senior centers. The pilot test by 10 dietitians was performed to clarify language and response options.

### Statistical analysis

Descriptive statistics, such as means, standard deviations, frequency distributions, and percentages were used. Comparison analysis was done by using the *t-test*. All of the tests were conducted by computerized statistical package, SPSS 12.0. A 5% probability level was designated as the level of significance, but higher levels of significance ( $p < .01$  and  $p < .001$ ) were also indicated.

In performing the IPA, importance and performance mean scores for each dimension of the two groups, dietitians and non-dietitians, were calculated and plotted into the IPA grid.

## Results

### General characteristics of the respondents and the foodservice facilities in the senior centers

General information about the restaurants in the senior centers is shown in Table 1. More than half of the senior centers (58.9%) were operated by the social welfare corporations. Sixty percent of the foodservice facilities have been operating for more than five years. Fifty percent of the facilities served 201 to 300 customers per day and most frequently, facilities (37.8%) served meals at the price of ₩1,501~2,000. In terms of customer payment method, the ratio of private payment and reimbursement

**Table 1.** General characteristics of senior center foodservices

Characteristics		No.	%
Operation subject	Government-affiliated organization	5	5.6
	Religious community (Church, Buddhist temple, etc)	18	20.0
	Social welfare corporation	53	58.9
	School corporation	7	7.8
	Public community (women community, public corporation, etc)	1	1.1
	Others	6	6.7
Operation period (year)	≤ 1	3	3.3
	≤ 3	16	17.0
	≤ 5	17	18.9
	> 5	54	60.0
Average guest number/ day	≤ 100	2	2.2
	≤ 200	26	28.9
	≤ 400	45	50.0
	> 400	17	18.9
Operation day/ week	6 days	39	43.3
	5 days	48	53.3
	3~4 days	3	3.3
Person in charge for foodservice	Dietitians	55	61.1
	Non-dietitians	35	38.9
Meal price (₩)	≤ 1,000	13	14.4
	≤ 1,500	19	21.1
	≤ 2,000	34	37.8
	> 2,000	24	26.7
Payment method	Private pay	55	61.4
	Reimbursement	35	38.6
Other foodservice operated with restaurant <sup>1)</sup>	Lunch box delivery service	62	68.9
	Side dish delivery service	57	63.3
	Meal service to day care centers	56	62.2
	Meal service to short-term care centers	7	7.8

<sup>1)</sup> Multiple response

**Table 2.** General characteristics of foodservice managers in senior centers

Characteristics	Dietitian (n=55)		Non-Dietitian (n=35)		Total (n=90)		
	No.	%	No.	%	No.	%	
Gender	Female	53	96.4	28	80.0	81	90.0
	Male	2	3.6	7	20.0	9	10.0
Age (years)	<25	4	7.3	0	0.0	4	4.4
	25~30	21	38.2	9	25.7	30	33.3
	31~35	19	34.5	5	14.3	24	26.7
	36~40	7	12.7	6	17.1	13	14.4
	> 40	4	7.3	15	42.9	19	21.1
Educational background	High school	0	0.0	12	34.3	12	13.3
	Two-year College	25	45.5	10	28.6	35	38.9
	University	24	43.6	13	37.1	37	41.1
	≥ Graduate school	6	10.9	0	0.0	6	6.7
Experience as foodservice manager in the senior center	≤ 3 years	27	49.1	16	45.7	43	47.8
	4-5 years	13	23.6	7	20.0	20	22.2
	6-10 years	15	27.3	12	34.3	27	30.0
	Total	55	100.0	35	100.0	90	100.0

were 61.4% to 38.6%. Most senior centers had other foodservice features in the restaurants including lunch box delivery services (68.9%), side dish delivery services (63.3%), and meal services for day care centers (62.2%).

The questionnaire was completed by 55 dietitians and 35 non-dietitians who worked as foodservice managers at the senior centers. Table 2 represents the descriptive results extracted from the questionnaire. Most of the respondents (90.0%) were female. In the case of dietitians, the majority of the participants (38.2%) were 25 to 30 years of age. Meanwhile the common age for the non-dietitian participants (42.9%) were over 40 years old. 89.1% of the dietitians reported that they had graduated college or university. Among them, about eleven percent had a master's degree or higher. On the other hand, only sixty-six percent of the non-dietitian participants had graduated college or university. The rest, (34.3%) answered that they had graduated high school. None of the total participants had a higher degree than a Bachelor

of Science. The majority of the respondents (47.8%) had equal or less than three-years of experience as a foodservice manager at the senior centers, those following on the list was six to ten years.

#### *Importance vs. job performance levels of restaurant managers*

For the overall interpretational purposes, the total mean importance and performance scores of each job activity were analyzed (Table 3). All of the 22 job activities had the perceived importance mean scores between 3.03 and 3.77, and the total mean score was 3.43, indicating restaurant managers' perceived importance on all of the job activities. On the other hand, the mean results of the performance scores demonstrated 11 out of the 22 activities (50%) were rated below 2.99, especially low in human resource management (all 4 activities), purchasing management (2 out of 3 activities), and menu and nutrition

**Table 3.** The difference between importance and performance level of foodservice managers in the senior centers

Category	Job activity	Perception		
		Importance	Performance	t-value
Human Resource Management	Collecting information for the relevant regulation (labor law) or occupation of workforce	3.03 ± 0.79	2.46 ± 0.80	6.273**
	Using the programs for employee motivation	3.28 ± 0.70	2.80 ± 0.90	5.691**
	Carrying employee communication through employee meeting	3.30 ± 0.74	2.90 ± 0.85	4.489**
	Collecting, placing and training volunteers	3.36 ± 0.75	2.88 ± 0.81	5.326**
	<i>Sub total</i>	3.24 ± 0.47	2.76 ± 0.54	8.234**
Financial Management	Designing yearly business plan and budget plan for the elderly restaurant	3.77 ± 0.52	3.61 ± 0.76	2.326*
	Writing monthly account and profit and loss Statements	3.67 ± 0.70	3.43 ± 0.90	3.686**
	<i>Sub total</i>	3.72 ± 0.54	3.52 ± 0.73	3.390**
Purchasing Management	Carrying market research	3.32 ± 0.70	2.83 ± 0.86	5.287**
	Writing and approving purchase order & receiving Record	3.58 ± 0.73	3.43 ± 0.94	1.472
	Writing and managing report of receipts & disbursements	3.06 ± 1.01	2.79 ± 1.24	2.861**
	<i>Sub total</i>	3.32 ± 0.60	3.02 ± 0.75	4.268**
Production & Distribution Management	Making work schedule and work instruction for employees & volunteers	3.27 ± 0.78	2.74 ± 1.03	5.649**
	Supervising & leading the production & distribution	3.54 ± 0.64	3.17 ± 0.94	4.189**
	Performing meal round at lunch time	3.56 ± 0.69	3.30 ± 0.95	3.138**
	<i>Sub total</i>	3.46 ± 0.57	3.07 ± 0.76	5.838**
Menu & Nutrition Management	Offering nutrition information of menu	3.49 ± 0.64	2.67 ± 1.10	7.390**
	Developing menus through various sources	3.69 ± 0.55	3.21 ± 0.87	5.500**
	Carrying the counseling and nutrition education	3.32 ± 0.81	2.54 ± 1.02	8.008**
	Regular research on menu preference and customer satisfaction	3.40 ± 0.67	2.96 ± 0.85	7.007**
	Planning and carrying special meal events	3.57 ± 0.60	3.41 ± 0.85	1.972
	<i>Sub total</i>	3.49 ± 0.48	2.96 ± 0.62	9.491**
Facility Management	Mastering operation method on production facility and machinery & keeping manuals	3.59 ± 0.58	3.07 ± 0.91	7.348**
	Inspecting and managing restaurant facilities	3.53 ± 0.62	3.01 ± 0.99	6.113**
	<i>Sub total</i>	3.56 ± 0.53	3.04 ± 0.81	7.741**
Other Area	Making out other documents	3.48 ± 0.66	3.32 ± 0.82	2.852**
	Performing administration work and cooperation with other departments	3.20 ± 0.86	2.99 ± 0.92	3.394**
	<i>Sub total</i>	3.34 ± 0.69	3.16 ± 0.80	3.742**
	Total	3.43 ± 0.38	3.02 ± 0.47	10.325**

\*\*p<0.01, \*p<0.05

<sup>1)</sup> 4 point Likert-type scale : 1=not important at all to 4=very important

<sup>2)</sup> 4 point Likert-type scale : 1=not performed at all to 4=performed very well

**Table 4.** Perceived level of importance & performance of foodservice management jobs by dietitians & non-dietitians

Category	Job activity	Importance			Performance		
		Dietitian (n=55)	Non-dietitian (n=35)	t-value	Dietitian (n=55)	Non-dietitian (n=35)	t-value
Human Resource Management	1. Collecting information for the relevant regulation (labor law) or occupation of workforce	3.05 ± 0.73	3.00 ± 0.87	0.102	2.45 ± 0.77	2.46 ± 0.85	0.000
	2. Using the programs for employee motivation	3.35 ± 0.67	3.17 ± 0.75	1.313	2.82 ± 0.84	2.77 ± 1.00	0.057
	3. Carrying employee communication through employee meeting	3.49 ± 0.64	3.00 ± 0.80	10.369**	3.02 ± 0.73	2.71 ± 0.99	2.798
	4. Collecting, placing and training volunteers	3.24 ± 0.74	3.54 ± 0.74	3.637	2.82 ± 0.70	2.97 ± 0.95	0.773
	<i>Sub total</i>	3.28 ± 0.47	3.18 ± 0.48	1.018	2.78 ± 0.50	2.73 ± 0.60	0.175
Financial Management	5. Designing yearly business plan and budget plan for the elderly restaurant	3.80 ± 0.40	3.71 ± 0.67	0.578	3.62 ± 0.78	3.60 ± 0.74	0.012
	6. Writing monthly account and profit and loss statements	3.67 ± 0.72	3.66 ± 0.68	0.010	3.42 ± 0.98	3.46 ± 0.78	0.040
	<i>Sub total</i>	3.74 ± 0.48	3.69 ± 0.63	0.186	3.52 ± 0.75	3.53 ± 0.72	0.004
Purchasing Management	7. Carrying market research	3.31 ± 0.74	3.34 ± 0.64	0.049	2.82 ± 0.86	2.86 ± 0.88	0.043
	8. Writing and approving purchase order & receiving Record	3.62 ± 0.81	3.51 ± 0.61	0.426	3.60 ± 0.85	3.17 ± 1.01	4.661*
	9. Writing and managing report of receipts & disbursements	3.15 ± 0.93	2.91 ± 1.12	1.123	3.02 ± 1.13	2.43 ± 1.34	5.051*
	<i>Sub total</i>	3.36 ± 0.63	3.26 ± 0.57	0.589	3.15 ± 0.71	2.82 ± 0.79	4.176*
Production & Distribution Management	10. Making work schedule and work instruction for employees & volunteers	3.45 ± 0.74	2.97 ± 0.75	9.038**	2.98 ± 1.01	2.37 ± 0.97	8.046**
	11. Supervising & leading the production & distribution	3.65 ± 0.55	3.37 ± 0.73	4.359*	3.27 ± 0.89	3.00 ± 1.00	1.820
	12. Performing meal round at lunch time	3.71 ± 0.53	3.31 ± 0.83	7.544**	3.45 ± 0.84	3.06 ± 1.08	3.834
	<i>Sub total</i>	3.61 ± 0.50	3.22 ± 0.59	11.028**	3.24 ± 0.71	2.81 ± 0.79	7.146**
Menu & Nutrition Management	13. Offering nutrition information of menu	3.56 ± 0.66	3.37 ± 0.60	1.948	2.96 ± 1.02	2.20 ± 1.08	11.490**
	14. Developing menus through various sources	3.75 ± 0.48	3.60 ± 0.65	1.484	3.45 ± 0.66	2.83 ± 1.01	12.584**
	15. Carrying the counseling and nutrition education	3.40 ± 0.83	3.20 ± 0.76	1.326	2.78 ± 1.01	2.17 ± .92	8.313**
	16. Regular research on menu preference and customer satisfaction	3.53 ± 0.57	3.20 ± 0.76	5.404*	3.22 ± 0.85	2.54 ± 0.66	15.877**
	17. Planning and carrying special meal events	3.51 ± 0.66	3.66 ± 0.48	1.304	3.29 ± 0.90	3.60 ± 0.74	2.912
	<i>Sub total</i>	3.55 ± 0.50	3.41 ± 0.45	1.899	3.14 ± 0.62	2.67 ± 0.49	14.612**
Facility Management	18. Mastering operation method on production facility and machinery & keeping manuals	3.58 ± 0.63	3.60 ± 0.50	0.021	3.15 ± 0.83	2.94 ± 1.03	1.062
	19. Inspecting and managing restaurant facilities	3.45 ± 0.66	3.66 ± 0.54	2.305	2.93 ± 0.98	3.14 ± 1.00	1.017
	<i>Sub total</i>	3.52 ± 0.57	3.63 ± 0.46	0.930	3.04 ± 0.76	3.04 ± 0.88	0.001
Other Area	20. Making out other documents	3.53 ± 0.63	3.40 ± 0.70	0.800	3.42 ± 0.79	3.17 ± 0.86	1.964
	21. Performing administration work and cooperation with other departments	3.27 ± 0.85	3.09 ± 0.89	1.003	3.15 ± 0.80	2.74 ± 1.04	4.266*
	<i>Sub total</i>	3.40 ± 0.68	3.24 ± 0.71	1.097	3.28 ± 0.73	2.96 ± 0.88	3.636

\*\*p&lt;0,01, \*p&lt;0,05

management (4 out of 5 activities) categories. The total performances mean score of performance was 3.02. The comparison of the importance and performance means displayed significant differences on 21 out of 22 job activities. Overall, the perceived importance mean score (3.43) was significantly higher than the performance mean score (3.02) of the job activities.

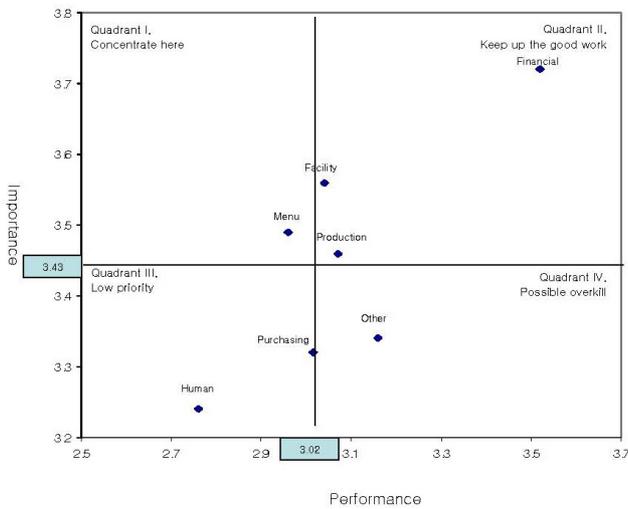
The perceived importance and performance mean scores of dietitians and non-dietitians were compared by the t-test (Table 4). The four job activities, carrying employee communication, work schedule management, meal round performance, and menu preference research (No. 3, 10, 12, 16) were significantly different in the perceived importance mean scores. All four scores were rated higher for dietitians than for non-dietitians. In terms of the performance mean score, significant differences were noted for eight job activities: two of purchasing management activities (No. 8, 9), work schedule management (No. 10), four within

menu and nutrition managements category (No.13, 14, 15,16), and administration work performance (No. 21). Again, the dietitians' mean score were much greater compared to non-dietitians.

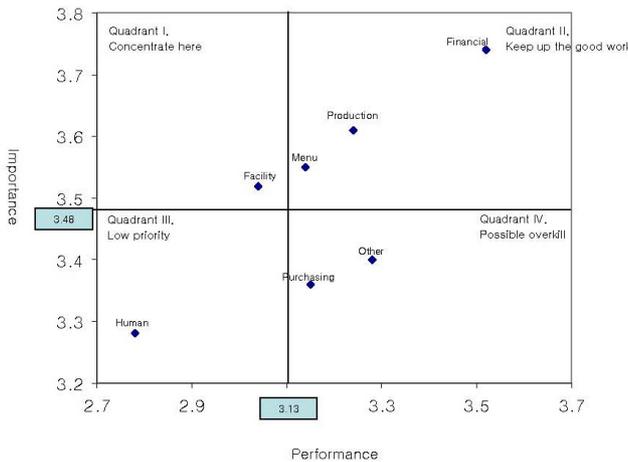
The IPA analysis was applied to both importance and performance mean scores of each of the 21 job activities (Fig. 1 and Table 5). The seven categories' grand mean scores were plotted on the IPA grid in relation to the participants' perceived importance and job performance scores. The pooled data of the seven categories', both the importance and performance mean scores (3.43, 3.02 respectively), were used to split the axes. The overall mean values of each of the seven categories were identified in four quadrants: menu and nutrition management category in Quadrant I ("concentrate here"), three categories (financial management, production and distribution management, facility management) in Quadrant II ("keep up the good work"), two categories (human resource management, purchasing

**Table 5.** Importance-performance analysis results

Category	Quadrant		
	Overall	Dietitian	Non-dietitian
Menu & nutrition management	I	II	I
Financial management	II	II	II
Production & distribution management	II	II	III
Facility management	II	I	II
Human resources management	III	III	III
Purchasing management	III	IV	III
Other area	IV	IV	IV



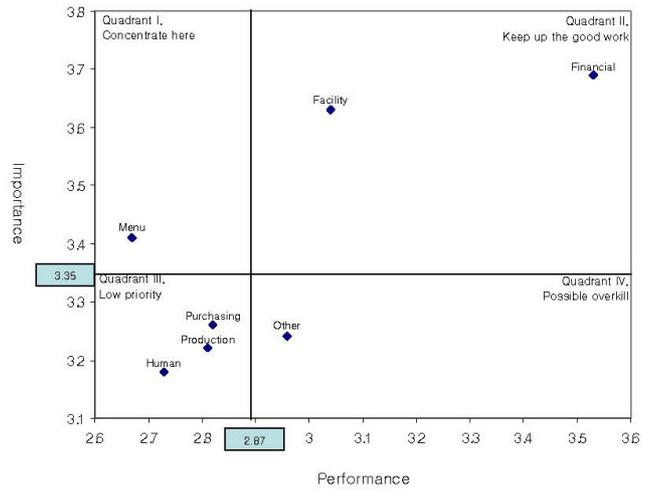
**Fig. 1.** Importance-performance matrix based on overall means



**Fig. 2.** Important-performance matrix based on dietitians' means

management) in Quadrant III (“low priority”), and the last category (other area) in Quadrant IV (“possible overkill”).

In order to make the differences clear between dietitians and non-dietitians in their perceptions of importance-performance scores, the modified IPA was applied to both the importance and performance for each of the two groups (Fig. 2, Fig. 3 and Table 5). In terms of the dietitian group IPA, Quadrant II included financial management, production and distribution management,



**Fig. 3.** Importance-performance matrix based on non-dietitians' means

and menu and nutrition management. Facility management was identified as high in importance but low in performance (Quadrant I). Human resource management located in Quadrant III was indicated as less likely to be important and performance was also low. The categories of other areas and purchasing management were shown in the area of “possible overkill” (Quadrant IV) (Fig. 2). Fig. 3 also shows the IPA by mean scores of non-dietitians. Facility management moved to Quadrant II from the dietitian group’s Quadrant I (dietitians’ group), whereas menu and nutrition management moved to Quadrant I from Quadrant II. Production and distribution management and purchasing management also moved to Quadrant III from Quadrant II and from Quadrant IV respectively. Financial management and human resource management remained in the same quadrants as revealed in the dietitians’ group.

**Discussion**

This study examined the perceived importance and job performance levels of foodservice managers at senior centers. Data showed that the foodservice facilities were managed more by dietitians. However, thirty-four percent of non dietitian managers had limited educational backgrounds and had graduated only from high school. The purpose of senior centers is the contribution to the welfare of the elderly, and one of the most important programs for achieving this purpose is the proper nutritional care. For this reason, the importance of foodservice management by professionals such as dietitians at senior centers has to be emphasized (Joo & Chon 1997; Jung *et al.*, 2004; Lee *et al.*, 1999; Yang *et al.*, 1996). The small size senior centers’ financial problems and job ambiguities of the foodservice managers, however, make it difficult to hire dietitians (Jung *et al.*, 2004).

The grand mean scores of importance and performance were

3.43 and 3.02 respectively and these scores were significantly different. These results indicated that the low performance level did not mean that foodservice management job activities were not important for operating the restaurant for the elderly. This result supports findings by Cho *et al.* (2006) about job activities and demand for dietitians at elderly health-care facilities, in which the perceived importance scores (5.66 out of 7.00) were higher than the performance score (4.77) for dietitians' job activities.

In terms of importance score, financial management (3.72) and facility management (3.56) categories were perceived as the most important, whereas human resource management (3.24) and purchasing management (3.32) were evaluated relatively lesser of importance by the respondents. The performance levels of these categories also had similar tendencies to the importance scores. In the study about dietitians' job performances at elderly health-care facilities (Cho *et al.*, 2006), the performance level of human resources management was rated lower than other management areas. Cho and Hong (1998) also identified that the dietitians working at the university cafeterias received low scores on human resources management performances. The dietitians' performance levels of financial management were low in those two previous researches however, contrary to what the current research has founded, the results displayed the reverse. The findings suggested that the senior center foodservice managers considered the financial management as one focus of their current duty performances. Even though respondents were rated lower on human resources management than any other management categories, the importance of human resources management skills of foodservice managers were stressed by the researchers (Dowling *et al.*, 1990; Lafferty & Dowling 1997). Therefore, senior center foodservice managers who are always dealing with employees and volunteers must be knowledgeable about the concepts regarding human resources management concepts and have access to appropriate organizational support in order to successfully manage foodservice personnel.

According to Fig. 1 and Table 5, menu and nutrition management which is important in management of restaurants for the elderly, but performed poorly by the foodservice managers, is located in Quadrant I. Foodservices for the elderly should include management and development of menus in consideration with nutritional and health status and socio-emotional factors (Chang, 2008). If the menu management fails, it may lead to low quality menus insufficient for achieving proper nutritional balance and customer satisfaction. The results may imply that the restaurant management should pay more attention to improving the menu and nutrition managements especially for the elderly customers. Three categories identified in the Quadrant II (Financial, Production and distribution, Facility management) are comprised of variables that are critical in managing restaurants for the elderly, and such job performances by the foodservice managers are likely to be high. The foodservice managers should maintain "keep up the good work" in these areas

as the categories are important factors for the success of foodservice operation. Finally, Quadrant IV displays the categories that are of low importance but which the foodservice managers scored high in terms of performance. This quadrant shows "possible overkill", since the foodservice managers are putting excessive efforts on the activities that are not of critical importance to manage restaurants for the elderly. From the open-ended question about additional work beside foodservice management, it was found that foodservice managers worked extra hours on recreation area management, making various programs for their senior centers, doing administration work and so on. The foodservice management, therefore, should consider reallocation of their management efforts identified in Quadrant II and IV into Quadrant I and III to improve the performance scores.

In order to demonstrate the differences in the results between the modified IPA and the overall IPA analysis, a person in charge of foodservice at a senior center was used as a criterion variable in the modified IPA. The IPA of the dietitian group suggested the categories including financial management, production and distribution management, and menu and nutrition management were perceived as important factors and were performed very well by the dietitians (Quadrant II). For the non-dietitian group, menu and nutrition management was shifted to Quadrant I, and production and distribution management moved to Quadrant III from Quadrant II (of the dietitian group). As for Quadrant I in assessing the results of the modified IPA for the non-dietitian group, menu and nutrition management required immediate attention in order to improve customers' nutritional balance and satisfaction as this was identified as the key factor by the foodservice managers but were not appropriately maintained. The non-dietitians should put further efforts in improving the efforts in the areas such as menu development, customers' satisfaction survey distribution, and nutrition education for the elderly.

In Quadrant III, only one category human resources management was found for the dietitian group, purchasing management and production and distribution management were included in this quadrant for the non-dietitian group. Facility management was identified as highly important but low performance was shown for the dietitian group, whereas for the non-dietitians group, menu and nutrition management was identified in Quadrant I. These results show that the non-dietitians group was less likely to be interested in foodservice management and the examples of the category include food purchasing, foodservice production operation, and distribution. One caution to this result is that although additional effort by non-dietitians may not be focused on these activities, it does not mean the attempts to improve foodservice management are ignored attempts to improve on these aspects which are, in fact, the key attributes for any foodservice operation.

The modified IPA results identified that the two management groups revealed somewhat different pictures. As the results show, the differences in the IPA analysis between the two groups may

reflect some bias attributable to the respondents' degree of knowledge and professional preparation ability. These results imply that dietitians were more self-aware and better able to recognize what they perceived as important, and performed the overall foodservice management activities with more ease than non-dietitians. Joo and Chon (1997) identified that foodservice facilities with dietitians had more productivity than those facilities without professional dietitians as in the frequent cases with dietitians; they had even carried out menu evaluation and nutrition education for the employees. The results of the study support the information presented by previous researches emphasizing the importance of hiring a dietitian as a foodservice manager for the elderly foodservice facilities (Park *et al.*, 1991; Yang *et al.*, 2001).

From management's perspective, the results of this study provide both dietitians and non-dietitians with insights regarding how they view foodservice management and where to allocate their efforts. Both dietitians and non-dietitians, who are responsible foodservices should be aware that the applications of IPA results need to be balanced with other considerations. Moreover, careful understanding of the necessity of dietitians is critical to improve foodservice and nutrition qualities which influence the overall satisfaction of the elderly at senior centers.

One limitation of the study is that there may be other differing aspects influencing the participants' perceptions and performances of foodservice management performance at senior centers. This study was limited to the management activities which were repeatedly mentioned in the results of the previous literature. Therefore, the results of this study may have eliminated additional management categories that might help with understanding the responsibilities of foodservice managers at senior centers. One future research opportunity can be to discover effective techniques and resources that foodservice managers should effectively use to manage foodservices for the elderly.

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